2022-2023 ACADEMIC CATALOGUE

Contents

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Academic Calendar

Calendar for the Academic Year 2022/2023				
Semester Week No.	**Dates**	**Comments (e.g. Public Holidays)**	**Bachelor / Master**	**Foundation**
	28-08-2022		Final Exam Week for Summer Semester	
Winter Semester (WS) 2022				
1	04-09-2022	Professional Development Days	Boards of Examiners Meetings & Release of Grades	
2	11-09-2022	Registration for returning students (only)	Orientation & Repeat Exams & Academic Advising	Orientation
3	18-09-2022	Registration for all students	Teaching week 1 & Boards of Examiners Meetings (repeat exams)	Teaching week 1
4	25-09-2022	Registration for all students	Teaching week 2	Teaching week 2
5	02-10-2022		Teaching week 3	Teaching week 3
6	09-10-2022	9 Oct: Prophet's Birthday (Tentative)	Teaching week 4	Teaching week 4
7	16-10-2022		Teaching week 5	Teaching week 5
8	23-10-2022	Sat, 29 Oct: Make-up teaching day (schedule determined by department)	Teaching week 6	Teaching week 6
9	30-10-2022		Teaching week 7	Teaching week 7
10	06-11-2022		Teaching week 8	Teaching week 8
11	13-11-2022	18 Nov: National Day (tentative)	Teaching week 9	Teaching week 9
12	20-11-2022		Teaching week 10	Teaching week 10
13	27-11-2022		Teaching week 11	Teaching week 11
14	04-12-2022	Sat, 10 Dec: Make-up teaching day (schedule determined by department)	Teaching week 12	Teaching week 12
15	11-12-2022		Teaching week 13	Teaching week 13
16	18-12-2022	24 Dec: GUtech holiday	Teaching week 14	Teaching week 14
17	25-12-2022		Teaching week 15 / Exam preparation week / Final Exams	Self-study week
18	01-01-2023		Final exam week 1	Teaching week 15
19	08-01-2023		Final exam week 2	Teaching week 16
20	15-01-2023		Boards of Examiners Meetings	Final Exams
21	22-01-2023		Release of Grades	
22	29-01-2023		Repeat exams	Boards of Examiners Meetings

Spring Semester (SS) 2023				
1	05-02-2023		Repeat exams & Boards of Examiners Meetings (repeat exams)	Repeat exams
2	12-02-2023	Registration for returning students (only)	Academic Advising	Boards of Examiners Meetings (repeat exams)
3	19-02-2023	Registration for all students 18 Feb: Ascension of the Prophet (tentative)	Teaching week 1	Teaching week 1
4	26-02-2023	Registration for all students	Teaching week 2	Teaching week 2
5	05-03-2023		Teaching week 3	Teaching week 3
6	12-03-2023		Teaching week 4	Teaching week 4
7	19-03-2023	23 March: Start of Ramadan (tentative)	Teaching week 5	Teaching week 5
8	26-03-2023		Teaching week 6	Teaching week 6
9	02-04-2023		Teaching week 7	Teaching week 7
10	09-04-2023	Sat, 8 April: Make-up teaching day (schedule determined by department)	Teaching week 8	Teaching week 8
11	16-04-2023	21-24 April: Eid al Fitr (tentative)	Teaching week 9	Teaching week 9
12	23-04-2023		Teaching week 10	Self-study week
13	30-04-2023		Teaching week 11	Teaching week 10
14	07-05-2023		Teaching week 12	Teaching week 11
15	14-05-2023	Sat, 13 May: Make-up teaching day (schedule determined by department)	Teaching week 13	Teaching week 12
16	21-05-2023		Teaching week 14	Teaching week 13
17	28-05-2023		Teaching week 15 / Exam preparation week / Final Exams	Teaching week 14
18	04-06-2023		Final exam week 1	Teaching week 15
19	11-06-2023		Final exam week 2	Teaching week 16
20	18-06-2023		Boards of Examiners Meetings	Final Exams
21	25-06-2023	28 June-1 July: Eid al Adha (tentative) Registration for all students	Release of Grades	

Summer Semester (SUM) 2023				
1	02-07-2023	Registration for all students	Repeat exams	Boards of Examiners Meetings
2	09-07-2023		Teaching week 1 & Repeat exams & Boards of Examiners Meetings (repeat exams)	Repeat Exams & Boards of Examiners Meetings (repeat exams)
3	16-07-2023	19 July: Al Hijra (tentative)	Teaching week 2	
4	23-07-2023		Teaching week 3	
5	30-07-2023		Teaching week 4	
6	06-08-2023		Teaching week 5	
7	13-08-2023		Teaching week 6	
8	20-08-2023		Teaching week 7	
9	27-08-2023		Final Exams	
Winter Semester (WS) 2023 (TENTATIVE)				
1	03-09-2023	Professional Development Days	Boards of Examiners Meetings & Release of Grades	
2	10-09-2023	Registration for returning students (only)	Orientation & Repeat Exams & Academic Advising	Orientation
3	17-09-2023	Registration for all students	Teaching week 1 & Boards of Examiners Meetings (repeat exams)	Teaching week 1
4	24-09-2023	Registration for all students	Teaching week 2	Teaching week 2

Regular Class Timing	Ramadan Timing
08:00 – 10:00	08:00 – 09:15
10:00 – 12:00	09:15 – 10:30
12:00 – 02:00	10:30 – 11:45
02:00 – 04:00	11:45 – 01:00
04:00 – 06:00	01:00 – 02:15

Vision, Mission, Values

The German University of Technology in Oman was established in Muscat through Ministerial Decree Number 9/2007. In October 2007, the University welcomed its first intake of students and has since developed into a recognised provider of quality education and research.

The Vision of the German University of Technology in Oman (GUtech) is to become a leading university of technology in the wider region, by building on the three pillars of education, research and innovation. This focus on education, research and innovation allows the University to meet the needs of the Sultanate of Oman in terms of human resources development and capacity building in applied research. The Vision of GUtech is being achieved in affiliation with RWTH Aachen University, one of the leading universities of technology in Europe.

Vision

Become a leading university in the region, achieving internationally recognised standards in education, research, and innovation.

Mission

Provide a diverse student body with the education required to become highly qualified and socially responsible graduates, guided by German excellence in science and technology and with a firm grounding in Oman's culture and heritage. The University fosters creative and critical thinking to advance research and innovation and, through this, aims at serving society as a whole.

Values

GUtech is committed to ethical principles in all of its undertakings. In particular, the University welcomes students and staff from both genders, and from all ethnic, geographical, cultural, and religious backgrounds. The University encourages association in peace and with tolerance, and welcomes further intercultural exchange between Oman, Germany, and the World.

Brief History

The history of the German University of Technology (GUtech) can be traced back to 2003, when visionary Omanis contemplated to establish a high-quality university of technology in Oman. This vision was inspired by His Majesty Sultan Qaboos directions for the provision of quality higher education in Oman by private investors.

RWTH Aachen University in Germany was approached with the intention of bringing German excellence in education to Oman. After few years of discussion and negotiation, the founders were ready to begin a plan of action for establishing a university. In August 2006, Oman Educational Services L.L.C. (OES), a limited liability company under the laws of the Sultanate was formally incorporated to establish a university on formal footing. OES is the legally responsible entity for initiating education related future projects.

A Collaborative Agreement between RWTH Aachen University and OES was signed in December 2006, paving the way for the establishment of a private German University in the Sultanate of Oman. This cemented the groundwork for everything the founder envisioned: A high quality university of technology in the Sultanate of Oman. Specifically, the agreement laid the framework for collaboration between OES and RWTH Aachen University in terms of academic curricula, quality assurance, expertise, and the overall setting up of a technological university.

In March 2007, The Ministry of Higher Education of the Sultanate of Oman issued a Ministerial Decision No. 9/2007 for the establishment of the University. In September 2007, the university opened its doors to students in rented premises in Athaibah, known as the Beach Campus. Initially, sixty students joined the Foundation Year Programme, a preparatory study programme that bridges between high school and university education.

Shortly thereafter in July 2009, GUtech was the first private university in the Sultanate of Oman to receive international accreditation by ACQUIN, a German-based accreditation agency, for its Bachelor of Science programmes.

The university opened a second campus in October 2010. Given its location, beside Muscat International Airport, the campus was known as the Airport Campus where all Bachelor degree programmes were taught. In 2012, the number of students studying at GUtech reached nearly 700.

A renowned architecture office was commissioned to design a building for the flourishing university, which would reflect Oman heritage and German Precision. In 2011, construction work began to establish a state-of-the-art campus in Halban area, 25 minutes away from Muscat International Airport.

In September 2012, GUtech moved into its permanent campus in Halban, the first-ever Green Campus in Oman. The building earned the 2013 award for the best commercial building of the year in Oman, and in the Middle East. Currently GUtech has approximately 2,500 students.

Affiliation and Accreditation

Affiliation

GUtech is affiliated to RWTH Aachen University in Germany. RWTH Aachen University is one of Europe's leading institutions for science and research. The scientific education students receive at RWTH Aachen University is firmly rooted in real-world applications. As a result, RWTH Aachen graduates are highly sought after by businesses in Germany and abroad as trainees and for executive positions. RWTH Aachen graduates have a high aptitude for managing complex tasks, constructive problem solving in teams, and taking on leadership responsibilities. Work conducted in the research centres at RWTH Aachen University is strongly oriented toward the current needs of industry, commerce, and the professions. RWTH Aachen University was appointed to provide academic curricula, quality assurance and expertise in setting up the operations of GUtech.

GUtech promotes cooperation and exchange with other universities worldwide. The university has signed Memoranda of Understanding (MoUs) with the University of Brescia (Italy), Hochschule Neu-Ulm (Germany), Hochschule 21 Buxtehude (Germany), CBS International Business School (Germany), Brandenburg University of Technology Cottbus-Senftenberg (Germany), Indian Institute of Technology Bombay (India), GUtech also signed agreements with the Munich University of Applied Sciences (Germany), the University of Applied Sciences in Stralsund (Germany), Univeriteit Hasselt (Belgium), Executive Academy of Vienna University for Economics and Business (WU) (Austria), University of Salzburg (Austria) University of Bologna (Italy), and Wilkes University (USA).

Accreditation

Ministry of Higher Education Research and Innovation (MoHERI)

The Ministry is the regulatory body for Higher Education in the Sultanate of Oman. For more information see www.moheri.gov.om.

Oman Academic Accreditation Authority and Quality Assurance of Education (OAAAQA)

The OAAAQA is charged regulating the quality of higher education in Oman to ensure the maintenance of a level that meets international standards, and to encourage higher education institutions to improve their internal quality. The main responsibilities of the OAAAQA include institutional and programme accreditation, in addition to the development and maintenance of the national qualifications framework. The GUtech Institutional Standards Review resulted in an Accreditation Outcome of 'Accredited'. For more information see www.oaaaqa.gov.om.

Accreditation, Certification and Quality Assurance Institute (ACQUIN)

ACQUIN is an international Germany-based non-profit agency committed to supporting the enhancement of quality standards for teaching and learning in higher education worldwide. ACQUIN is a full member of the European Association for Quality Assurance in Higher Education operating in Germany, Austria, Switzerland, Middle and Eastern Europe, North Africa, and Middle East.

The German University of Technology in Oman (GUtech) is the first private university in the Sultanate to receive international re-accreditation for its Bachelor of Science programmes in Computer Science, Urban Planning and Architectural Design, and Applied Geosciences and first accreditation for its Bachelor of Engineering degree programmes in Environmental Engineering, Process Engineering and Mechanical Engineering, and its Bachelor of Science degree programmes in Logistics, and in International Business and Service Management.

Having an international accreditation means that the University's programmes are developed at the highest standards, equivalent to the education received at established and reputable universities in Europe, the United States or Australia. For more information see www.acquin.org.

Entry Requirements

The entry requirements for each Programme of Study are determined in accordance with the Academic Regulations of the University. They are also available on the website www.gutech.edu.om.

Duration of Studies and Completion Requirements

For each Programme of Study, the duration of studies and completion requirements are established in accordance with the Academic Regulations of the University included in this Catalogue.

The Degree is awarded when a student has earned sufficient credits points for all the Courses that make up the Programme of Study, including core Courses, elective Courses, Internship, and a Thesis. Additional completion requirements may apply but must all be listed in the programme overview included in this Catalogue.

Scholarships

Scholarships are a matter between a student and a scholarship provider. However, if GUtech is to offer proper support, there needs to be a copy of the Scholarship Agreement on file, and the student must give their permission for GUtech to share their grades and any Disciplinary Offences warnings with the scholarship provider.

Where there is a pre-determined GPA or cGPA that must be maintained, GUtech will report that to the scholarship provider after each relevant Board of Examiners. GUtech will also advise where there is an issue which needs to be taken into consideration, for example a course which is In Progress, or a make-up assessment which is still to be completed.

On occasion there may be a situation where a student's grades in the one semester would not allow the GPA to be met. In that case GUtech may suggest an alternate standard for a limited period to ensure the student has the opportunity to make up any gaps in performance and expectations. This would be subject to the approval of the scholarship provider.

Academic Regulations

1. INTRODUCTION

1.1 Scope

1.1.1 These regulations apply to all programmes of study which lead to an award by the University.

1.2 Validity and Applicability

1.2.1 These regulations are valid for all students and applicable to all matters relating to academic life of students enrolled in the University in any programme.

1.2.2 Any change to the Regulations shall be subject to the approval of the University's Board of Governors.

1.3 Responsibility

1.3.1 The Deputy Rector for Academic Affairs (DRAA) is responsible for publishing this document on an annual basis. Any revisions require the approval of the Board of Governors and the Ministry of Higher Education, Research and Innovation.

1.3.2

1.4 Language

1.4.1 English is the language of instruction, examinations, assessments, and administration.

2. PROGRAMMES OF STUDY

2.1 Goals of the Programmes of Study

2.1.1 Teaching and Learning activities within a programme of study are aimed at equipping students with the knowledge, skills and methods required to apply scientific reasoning, to critically classify scientific findings and to act in a responsible manner. Knowledge and competence are conveyed in consideration of the demands and changes within the professional environment and within an interdisciplinary context.

2.1.2 The University is committed to:

- An alignment of the University's teaching and learning activities with the strategic plan for education for the Sultanate of Oman. In particular, the University is dedicated to the education of highly qualified and responsible-minded students according to German standards and with a firm grounding in Omani heritage; it fosters creative and critical thinking to advance research and development and aims at transferring research results for the benefit of the society, the industry, and the region.

- An alignment of the attributes and skills of University graduates, with the learning outcomes for each course and the forms of assessment for each course.

- A student-centred approach to learning, which includes an environment that is supportive to learning, timely and helpful feedback on student's learning, and assessments tasks that are fair, transparent, adequate, valid, reliable and consistent.

2.2 Regulations concerning Programmes of Study

2.2.1 The Programmes of Study are defined annually in the Academic Catalogue.

2.2.2 A Programme of Study leads to the award of a degree by the University.

2.2.3 Although the Foundation Programme does not lead to the award of an undergraduate or a postgraduate degree by the University, it is also considered to be a Programme of Study offered by the University.

2.2.4 The Academic Catalogue describes the content and structure of the programme of study and comment on the courses and academic achievements required for successful completion of the programme.

2.2.5 For each course offered within a programme of study, there shall be a Course Specification with the following information:

- Course Code *
- Course Title *
- Credit Points *
- Catalogue Description *
- Prerequisite(s) *
- Co-requisite(s) *
- Required For *
- Learning Outcomes *
- Topics *
- Distribution of Student Workload *
- Forms of Learning
- Forms of Assessment and Weighting
- Requirements to pass the Course
- Textbooks / Recommended Reading / Supporting Material

In addition, there is a semester or section specific part with the following:
- Faculty Member's Name, Office Location, and E-mail Address
- Semester
- Start and End Dates

Note: * Changes to these sections require formal approval.

2.3 Semesters

2.3.1 The academic year shall comprise of three semesters.

2.3.2 The first semester of the academic year shall be called Winter Semester, starting in September or October. The second semester of the academic year shall be called the Spring Semester starting in February or March. The third semester of the academic year shall be called the Summer Semester starting in June or July.

2.3.3   The summer semester may not have any course offerings.

2.3.4   The length of the Winter and Spring Semesters shall be 15 teaching weeks and 2 weeks for examinations. The length of the Summer Semester shall be 8 teaching weeks and 1 week for examinations.

2.4 Credit Points

2.4.1   A Credit Point is a measure for the average student workload required to achieve the learning outcomes of a particular course. Student workload consists of the time required to complete all planned learning activities such as attending lectures, seminars, independent and private study, preparation of projects and examinations. Typically, one credit point corresponds to 25 hours of student workload. This is based on the ECTS system.

2.5 Requirements for Graduation

2.5.1   The number of credit points required for the award of a Bachelor Degree is 240 Credit Points.

2.5.2   The number of credit points required for the award of a regular Master Degree is 120 credit points.

2.5.3   The number of credit points required for the award of a professional Master Degree is a minimum of 80 credit points.

2.5.4   Three German language courses and one Entrepreneurship course are taught as a compulsory part of all Bachelor Programmes.

2.5.5   All students enrolled in one of the Bachelor Programmes of the University must complete 24 Credit Points in Life Skills, which includes skills such as IT, and soft skills.

2.5.6   Requirements for completing a degree shall be stated in the respective Programme Specifications and Examination Regulations.

2.6 Duration of Studies

2.6.1   The nominal duration of studies is the period of studies in which a Programme of Study can be completed, including semesters abroad, industrial placements and other professional training, and examinations.

2.6.2   The nominal duration of a Programme of Study concluding with a Bachelor degree is four years.

2.6.3   The nominal duration of a Programme of Study concluding with a regular Master degree is two years full-time and three years part-time. In case of professional Master degree programmes, the nominal duration is 18 months.

2.7 Study Plan and Scheduling of Courses

2.7.1 Each programme of study shall have a Study Plan which must outline course requirements to progress towards graduation. This Study Plan is published annually in the Academic Catalogue.

2.7.2 By generating an annual Study Plan, the University ensures that the courses offered each semester allow students to progress towards graduation, in accordance with the requirements stipulated in the respective Programme Specifications.

2.7.3 The Study Plan reflects normal student progression, as described in the Programme Specifications. Students who are progressing more slowly or more quickly than what is stipulated in the respective Programme Specifications cannot be guaranteed a conflict-free timetable.

2.8 Changes to Programme Specification

2.8.1 Every effort is made to maintain the structure of the programme of study described in the Study Plan. However, changing circumstances may require a revision/change to the Programme Specifications. Any such changes must be approved by the Academic Board of the University and the Ministry of Higher Education, Research and Innovation, and will be published in the next version of the Academic Catalogue.

3. ADMISSION OF STUDENTS

3.1 Principles of Admissions

3.1.1 Admission to a Programme of Study leading to the award of an award is subject to respective Admission Requirements and the availability of study places for the programme.

3.1.2 The procedures for the admission of students are non-discriminatory and aligned with the University's Mission and Values. It is described in the Admissions Policy.

3.1.3 Admission is open to both Omani and non-Omani students.

3.1.4 Students who do not have a GED from the Sultanate of Oman but hold an equivalent secondary school qualification are eligible to apply to the University, subject to fulfilling the requirements from the Ministry of Higher Education of the Sultanate of Oman (e.g. the submission of a Letter of Equivalency from the Ministry of Education).

3.2 Admission Requirements

3.2.1 Admission to the Foundation Programme:

Admission Requirements for the Foundation Programme are (i) proposed by the relevant academic committee, (ii) approved by the Rectorate of the University and (iii) communicated to the Higher Education Admission Centre of the Ministry of Higher Education of the Sultanate of Oman within the stipulated timeframe. Admission to the Foundation Programme requires at least a pass in the General Education Diploma (GED) of the Sultanate of Oman. Additional requirements such as minimum grade in specific subjects, entrance examinations and/or interviews may be required.

Admission to the Foundation Programme is subject to the availability of study places in this programme.

3.2.2 Admission to an Undergraduate Programme:

Direct admission to any of the University's Bachelor Programmes requires International Baccalaureate Certificate or Diploma, A-Levels, Indian High-School Certificate, Advanced Placement (AP), or equivalent. The specific levels and subjects required are published annually on the GUtech website. The University reserves the right to decide what qualification it considers to be equivalent.

Applicants with at least a pass in a relevant stream of the University's Foundation Programme are also eligible for admission to the University's undergraduate programmes.

Admission to an Undergraduate Programme is subject to the availability of study places in this programme.

3.2.3 Admission to a Postgraduate Programme

Admission to any of the University's Postgraduate Programmes normally requires at least a pass in a relevant undergraduate degree. Additional requirements such as work experience, entrance examinations and/or interviews may be imposed. Specific requirements are published annually on the GUtech website.

Admission is subject to fulfilling the requirements from the Ministry of Higher Education of the Sultanate of Oman (e.g. the submission of a Letter of Equivalency from the Ministry of Higher Education for Undergraduate study).

Admission to a Postgraduate Programme is subject to the availability of study places in this programme.

3.3 English Language Requirements

3.3.1 Adequate English language proficiency is a prerequisite for the admission of students to any programme of study leading to the award of a degree by the University. This includes admission to the University's Foundation Programme as well as admission into all the University's undergraduate and postgraduate programmes.

3.3.2 Students admitted into the Foundation Programme must take an English Language Placement Test.

3.3.3 At the discretion of the University, the English Language Placement Test may be waived for students who have acquired their secondary school qualifications in an institution where English is the medium of instruction or for students who can submit language certificates such as TOEFL or IELTS as proof of their English language proficiency.

3.3.4 The minimum language requirement for admission to one of the University's undergraduate and postgraduate programmes is IELTS 6.0 or equivalent. Students must submit language certificates such as TOEFL or IELTS as proof of their English language proficiency. The actual language requirements for admission to a programme of study are determined by the respective Faculty and may not be lower than the stipulated minimum language requirements.

3.4 German Language Requirements

3.4.1 German language proficiency is not a prerequisite for the admission of students to a programme of study leading to an award by the University.

3.5 Credit Transfer

3.5.1 Credit Transfer is the recognition of prior learning through prior studies.

3.5.2 Applicants may be granted credit transfer at the University on the basis of certificates awarded by other colleges and universities, provided that they can submit sufficient evidence.

3.5.3 The procedures related to the award of credit transfer for a given Programme of Study are described in the Credit Transfer Policy. The implementation of these procedures is the responsibility of the respective Faculty within the University in collaboration with the Department of Registration and Student Admissions.

3.5.4 Applications for Admission with credit transfer are to be submitted to the Registration and Student Admissions Department, who will forward them to the respective Faculty for consideration. Applications must include original and official certificates, transcripts, and other relevant documentation (e.g., programme specifications, course outlines and/or study plans).

3.6 Advanced Standing

3.6.1 Advanced standing is the recognition of prior learning through study at school, college, or training institutions. Examples might include O-level study of an IT or English subject giving Advanced Standing for an IT or English course in the Foundation programme,

3.6.2 Applicants may be granted advanced standing at the University on the basis of a Special Assessment Examination. Knowledge and competence required for successful studies but acquired outside the degree programme may be proven by a Special Assessment Examination. Upon determination of the test results, the applicant will be admitted into the appropriate segment of the degree programme.

3.7 Admission Policy

3.7.1 The Head of Registration and Student Admissions or a person designated by the Rectorate is responsible for developing and implementing the Admission Policy, in accordance with these Academic Regulations and with the approval of the Rectorate.

3.7.2 The Admission Policy provides information on Admission Procedures, Requirements for Admission into the Foundation, the undergraduate and postgraduate programmes, Admission of Visiting and Guest Students, Change of Programmes, Admission with Advanced Standing, and Application Fees. The Admission Policy shall also include special reference to International Students.

3.7.3 All applicants for admission into any of the University's programme of study must submit an "Application for Admission" and supporting documents to the Registration and Student Admissions Department of the University, in accordance with the procedure practiced at the University.

3.7.4 The Head of Registration and Student Admissions or a person designated by the Rectorate is responsible for ensuring timely and accurate processing of the submitted Applications for Admission. Where applicable and where required, this includes seeking approval from the respective Faculties on whether admission can be granted to an applicant. All applicants shall be notified in writing of the outcome of their application.

3.8 Change of Programme

3.8.1 Students admitted to and enrolled in a given programme, may apply for admission to a different programme. The respective application for admission must be submitted to the Registration and Student Admissions Department in accordance with the procedure stipulated earlier in these Regulations.

3.8.2 The applicant needs to meet the admissions requirements of the new programme.

3.9 Visiting Students from other Institutions

3.9.1 Visiting students enrolled in other universities may be admitted into the University on a semester basis, subject to the availability of corresponding study places.

3.9.2 Visiting students shall produce evidence of their compliance with the University's Admission Requirements. The Application for Admission must also include proof of enrolment at another university.

3.9.3 A written agreement shall be established between the visiting student, the University, and the university at which the visiting student is enrolled. This Agreement shall outline the courses and examinations to be taken by the student as well as the resulting credit transfer.

3.9.4 Visiting students shall comply with the financial and academic policies and procedures applicable at the University.

3.9.5 Interns are Visiting Students here for experience but no Credit Points.

3.10 Guest Students

3.10.1 Applicants who wish to audit individual classes at the University may be admitted as guest students, subject to the availability of corresponding study places.

3.10.2 No evidence of qualification is required for guest students.

3.10.3 Guest students must pay the tuition fees set out for guest students.

3.10.4 Guest students are not required to take exams or earn credits for completed courses. They may receive a certificate of participation or certificate of achievement for individual courses, in accordance with the regulations.

4. ENROLMENT AND REGISTRATION OF STUDENTS

4.1 Principles of Enrolment and Registration

4.1.1 Applicants acquire the status of students of the University through the enrolment process. For the period of their status as enrolled students, they are members of the University with all resulting rights and duties stipulated in these Academic Regulations and all other regulations, policies, and procedures applicable within the University.

4.1.2 All students must enrol (or re-enrol) each semester into the programme of study for which they were granted admission at the required times.

4.1.3 To complete their enrolment, students must select courses according to their Study Plan and formally register in these courses. The registration into a course is a prerequisite for earning the corresponding credit points.

4.1.4 Only registered students will be permitted to attend classes, to take assignments and exams, to participate in field trips and excursions, to work on their thesis, or to use the library or any other facilities of the University.

4.2 Credit and Audit Status

4.2.1 Students who have registered into courses listed in their Study Plan have "credit" status for those courses.

4.2.2 Students have the right to audit courses that are not listed in their study plan, provided that study opportunities are available. Lecturers have the right to refuse audit status for their course.

4.2.3 Students may participate in tests, assignments, or final examination of courses for which they have "audit" status, but the resulting grades will not appear in the student's transcripts, or in their GPA and cGPA calculations. They may however receive a certificate of participation or certificate of achievement for individual courses, in accordance with the regulations of the respective Faculty.

4.3 Course Load

4.3.1 The recommended course load for Winter and Spring Semesters is 30 Credit Points.

4.3.2 The recommended course load for the Summer Semester is 15 Credit Points.

4.3.3 A student's course load may be extended up to 34 Credit Points of taught courses per semester, subject to the approval of the Head of Department for the student's programme. Such an extended course load may be authorised for students with exceptional academic performance, with a cGPA of 3.3 or above, or for students in the final year.

4.3.4 In exceptional circumstances, for example a student is in their final year, a student's course load may be extended beyond 34 Credit Points, subject to the approval of the Deputy Rector for Academic Affairs.

4.4 Part-time Studies

4.4.1 Students enrolling into a course load of 15 or less Credit Points acquire the status of part-time students.

4.5   Enrolment and Registration Policy

4.5.1   The Head of Registration and Student Admissions or a person designated by the Rectorate is responsible for developing and implementing the Enrolment and Registration Policy, in accordance with these Academic Regulations and with the approval of the Rectorate.

4.5.2   The Enrolment and Registration Policy provides information on Procedures of and Requirements for Enrolment, Re-enrolment, Registration, Postponement of Studies, and Withdrawal from the University.

4.5.3   The Head of Registration and Student Admissions or a person designated by the Rectorate is responsible for defining and communicating the "Important Dates" for the enrolment procedure. These "Important Dates" include, but are not limited to:

- Timeline to which the Deans of each Faculty must adhere, when submitting information related to the courses that will be offered in an academic year;
- Timeline to which students must adhere, when enrolling or re-enrolling into the University.

4.5.4   The Head of Registration and Student Admissions or a person designated by the Rectorate is responsible for ensuring timely and accurate processing of the enrolment and re-enrolment of students.

4.5.5   A prerequisite for enrolment of a student into a Programme of Study is receipt by the student of a Letter of Offer for a study place at the University and the formal acceptance of this Offer by the student.

4.5.6   Another prerequisite for enrolment is the receipt of payment of tuition and other relevant fees by the student to the University, within the stipulated payment dates. Recipient of scholarships may submit proof of award of scholarship by the University or a Third-Party. In the absence of a formal acceptance of the Offer made by the University, the full or partial payment of tuition fees for a given Programme of Study will be considered as a formal acceptance by the student of the Offer made.

4.5.7   In cases where the Offer has conditional character, the student must provide proof that all conditions have been fulfilled before the student's enrolment can be finalised.

4.5.8   Enrolled students will be issued:

- A student ID card;
- A student email address;

4.6 Denial of Enrolment and Registration

4.6.1 A student may be denied enrolment in a Programme of Study or a course for reasons including but not limited to:

- Timelines and procedures for enrolment or registration have not been followed;
- Tuition and other fees have not been paid;
- The student did not abide by the policies and procedures of the University;
- Admission condition have not been met;
- Prerequisites have not been met and cannot be waived;
- The student has definitively failed an examination or lost the right to examination within the registered programme of study;
- The student has failed a mandatory course after two registrations.
- Disciplinary actions of the University against the student.

4.7 External Studies

4.7.1 On the recommendation of the student's Head of Department and the permission of the Deputy Rector for Academic Affairs, students may take credit courses at other recognised institutions towards their degree requirements. Prior to a student's departure, written permission has to be given for each course to ensure credit transfer is possible for courses taken at other institutions.

4.7.2 The student will be subjected to all the academic rules and regulations of the host institution and is responsible for any fees, travel costs, etc. associated with their studies outside the University.

4.7.3 The student will still be liable for GUtech tuition fees for courses taken at other institutions.

5. ASSESSMENT AND GRADING

5.1 Principles of Assessment

5.1.1 The University is dedicated to the education of highly qualified and responsible-minded students according to German standards and with a firm grounding in Omani heritage aims. To achieve this, the University uses an outcome-based approach to learning.

5.1.2 Each Programme of Study is characterised by a set of Graduate Skills and Attributes that must be aligned with the University's Mission. Each Course taught within a Programme is characterised by Learning Outcomes that must be aligned with the corresponding Graduate Skills and Attributes.

5.1.3 Learning Outcomes must be clearly stated, achievable and measurable.

5.2 Assessment and Examination Policy

5.2.1 The Rectorate is responsible for the development and maintenance of an Assessment and Examination Policy that is aligned with the Principles of Assessment.

5.2.2 All academic staff are responsible for the implementation of the Assessment and Examination Policy.

5.2.3 The Assessment and Examination Policy shall include, but not be limited to, the following points:

- Definition and principles of the different forms of assessment and examination;
- Grading systems;
- Board of Examiners within each Department: procedures to appoint a Board of Examiners, structure, duties and responsibilities;
- Scheduling of examinations;
- Qualifications of examiners and co-examiners;
- Requirements and procedures for students to miss an examination;
- Procedures to be followed during examinations;
- Invigilation procedures;
- Moderation procedures, if required;
- Repeat and make-up examinations;
- Rights and responsibilities of students (including procedures in case of academic dishonesty);
- Authority responsible for approving final grades;
- Release of grades to students;
- Procedures in case of failure of an examination;
- Procedures in case of illness of a student.

5.2.4 Students must be enrolled during examinations. To take part in any assessment, students need to be registered in the related course.

5.3 Examiners and co-examiners

5.3.1 Examiners must hold an academic qualification that is equivalent or higher than a Bachelor degree, in a field that is relevant to the subject being examined. Co-examiners must hold an academic qualification that is equivalent or higher than a Bachelor degree, in a field that is relevant to the subject being examined.

5.3.2 The performance in thesis or final project oral or written examinations resulting in the completion of a programme of study shall be graded by at least two persons, i.e. one examiner and one co-examiner.

5.3.3 Any examination which, in case of failure, would result in the termination of enrolment, shall be graded by at least two persons, i.e. one examiner and one co-examiner.

5.4 Board of Examiners

5.4.1 A Board of Examiners shall be established in each Department.

5.4.2 The Head of the Department is the Chair of the Board of Examiners.

5.4.3 No grade is considered final until it is approved by the Board of Examiners

5.4.4 The duties and responsibilities of the Board of Examiners can be found in the Assessment and Examination Policy.

5.5   Grading Scales

5.5.1   The GUtech grading scale is as follows

Grade Letter	Grade Point	Percentage	Description
A	4.0	90 – 100%	Excellent
A-	3.7 – 3.9	86 – 89%	
B+	3.4 – 3.6	82 – 85%	Good
B	3.1 – 3.3	78 – 81%	
B-	2.8 – 3.0	74 – 77%	
C+	2.5 – 2.7	70 – 73%	Satisfactory
C	2.2 – 2.4	66 – 69%	
C-	1.9 – 2.1	62 – 65%	
D+	1.6 – 1.8	58 – 61%	Acceptable
D	1.3 – 1.5	54 – 57%	
D-	1.0 – 1.2	50 – 53%	
F	0.0	0 – 49%	Fail
FSP			Failure with supplemental privilege; student may repeat or resubmit failed elements
FW			Failure to meet the attendance requirement, no credits earned
I			Incomplete: the student has a passing grade but is still to submit some assessment tasks
IP			In Progress: the course is still not completed at the time of grade reporting
OP			Officially Postponed
P/NP			Pass/Not Pass: for courses that are not graded on the 0-100% scale
TC			Transfer Credit: course has been passed at another institution, but credit awarded for the GUtech programme
W			Withdrawn

5.6 Calculations of Grade Point Average

5.6.1 The academic standing of all students shall be determined by the semester Grade Point Average (GPA) and Cumulative Grade Point Average (cGPA)

5.6.2 The Semester GPA is calculated, based on all courses taken in the corresponding semester, as follows:

5.6.3 For each course in which the student was enrolled during the semester, the numeric value of the grade earned in each course is multiplied by the number of credit points for that course. This result is called the "grade points earned" in that course. The sum of the grade points earned in that semester is divided by the total credit points attempted during that semester. In these calculations, only courses with numeric value grades are considered. The resulting quotient is the Semester Grade Point Average.

5.6.4 The Cumulative GPA (cGPA) is calculated, based on all courses taken and all credits attempted by the student while enrolled in a given programme of study, as follows:

5.6.5 For each course in which the student was enrolled for a given programme of study, the numeric value of the grade is multiplied by the number of credit points for the course. The result is called the "grade points earned" in that course. The sum of all the grade points earned by the student while enrolled in a given programme of study is divided by the total of all the credit points attempted in the same period. In these calculations, only courses with numeric-value grades are considered.

5.6.6 In the case of repeated courses, only the most recent grade will be used in the calculation of the cGPA.

5.7 Transcripts

5.7.1 All courses for which a student has registered must appear on the grade transcript.

5.8 Release of Grades

5.8.1 Strict confidentiality shall be maintained when dealing with final grades.

5.8.2 The final grade given for any course is considered the University's property.

5.8.3 The release of grades will follow the procedure stipulated in the University's Assessment and Examination Policy.

5.8.4 The release of grade may be withheld by the University, if a student has an outstanding debt with the University.

5.9 Change of Grades

5.9.1 All grades other than 'I - Incomplete', 'OP – Officially Postponed', and 'IP – In Progress' shall be considered final once formally approved by the Board of Examiners.

5.9.2 Final grades may be changed if there has been a formal appeal; or after repeat and make-up assessments; or as part of Stage 1 of the appeal process. In all cases the change must be recorded and approved by the Board of Examiners.

5.10 Repeated Courses

5.10.1 A student must repeat any failed course that is required for the degree programme. Where the degree programme identifies alternatives or substitutes, a student may replace a failed course with one of these. Any course repeated must be repeated in its entirety, and at the earliest opportunity.

5.10.2 Failed courses may be repeated once. Further attempts require special permission from DRAA.

5.10.3 In all cases of repeated courses, all grades earned shall appear on the transcript, but the most recent grade only shall be used in the calculation of the Grade Point Average, even if it is lower than the original grade.

5.11 Examinations

5.11.1 All students are expected to take examinations at the appointed time.

5.11.2 When illness or extenuating circumstances preclude the student from taking the examinations at the scheduled time, it is the student's responsibility to notify the relevant academic staff of the absence as soon as possible, and to provide the evidence to RSA.

6. ACADEMIC PROGRESSION OF STUDENTS

6.1 Principles of student Progression

6.1.1 Each student enrolled in an undergraduate programme shall be assessed for academic progression.

6.1.2 Academic progression is assessed on the basis of academic work fulfilled by the student in relation to the learning outcomes stated for each course and programme.

6.1.3 The purpose of the academic progression is to ensure that students are progressing toward graduation.

6.1.4 Responsibility for ensuring academic progression lies with the Head of the Department in which the student is enrolled.

6.2 Progression Standards

6.2.1 The progression standards shall be as follows:

a) A student, who achieves a semester Grade Point Average of 1.9, as well as any required minimum grade(s) in specified course(s), is in normal status and may proceed without condition in his/her degree programme.

b) A student who achieves a minimum Grade Point Average of 3.3 on both semester and cumulative averages may be eligible to take credits in excess of the normal course load. Such a student's course load status will be considered accelerated.

c) A student who achieves a semester Grade Point Average of less than 1.9 will be placed on probation in the following semester. In such a case, the student must have a documented interview with his/her Mentor/Academic Adviser before registering for the next semester, and any corrective measures noted. These may include discussion or any of the following:

- reduction of course load;
- postponement of a course to a subsequent semester;
- or any other recovery plan prioritising failed or prerequisite courses.

6.3 Academic Advising

6.3.1 Academic advising for the Programmes of Study offered by the University is provided to both prospective and enrolled students. The Registration and Student Admissions Department provides advice on matters related to eligibility, entry requirements, availability of study places, programme contents, programme structure and completion requirements. Within each Faculty, an Academic Advisor provides advice on matters related to the Study Plan, specialisations of the chosen degree programme, and approaches to learning.

6.4 Academic Warning

6.4.1 The purpose of academic warning shall be to notify students of their unsatisfactory academic progress in any semester.

6.4.2 An oral academic warning can be issued at any time throughout the semester when a student fails to maintain satisfactory academic standards. Such warnings are typically issued by academic staff members in whose course a student does not perform satisfactorily.

6.4.3 A written academic warning is issued based on the recommendation of the Board of Examiners at the end of the semester. It results in the student being placed on probation. Such warnings are issued by the Head of Registration and Student Admissions.

6.5 Attendance

6.5.1 An Attendance Policy shall be established.

6.6 Leave of Absence

6.6.1 A Leave of Absence shall be allowed for a total of two semesters (not counting summer semesters), requested each semester.

6.6.2 No leave of absence is required for non-registration during the Summer Semester.

6.6.3 A Leave of Absence may be granted to a student who:

- Wishes to study at a foreign university or language school;
- Is involved in a practical occupation which serves the educational objective;
- Cannot attend classes and achieve the academic objectives expected for this semester due to illness;
- Is called to military or civilian services;
- Needs to care for a close relative;
- Cannot attend classes and achieve the academic objectives expected for this semester due to pregnancy or childcare;

- Has any other equally important reason for a leave of absence, subject to approval by the Deputy Rector for Academic Affairs.

6.6.4 The application for Leave of Absence must be submitted to the Registration and Student Admissions Department prior to the Add & Drop Period with supporting documentation from relevant authorities.

6.6.5 A retroactive application for a Leave of Absence is not possible, unless an extraordinary and unforeseen event or circumstance beyond the control of the student did not allow the student to apply for a leave of absence in advance. Leave of Absence is usually granted for one semester.

6.6.6 Leave of Absence for more than one semester is only approved in special circumstances and only if the cause for the postponement of studies is proven for each semester within the re-enrolment deadline, with supporting documents.

6.6.7 Students on a leave of absence may not sit examinations at the University except with the recommendation of the Board of Examiners.

6.6.8 Failure to register after the expiration of the leave of absence period shall constitute grounds to terminate a student's enrolment in a given programme of study.

6.7 Withdrawal from the University

6.7.1 Withdrawal from the University may be initiated by the student at any time.

6.7.2 Withdrawal from the University may be initiated by the University if specific academic, financial or disciplinary circumstances arise.

6.7.3 A student's name shall be removed from the students' register if:

- The student applies for withdrawal;
- The student fails to re-enrol after the expiration of a defined leave of absence period;
- The student enrolment was brought about by coercion, deceit or bribery;
- The student has definitively failed an examination or lost the right to examination within the registered programme of study;
- The student has failed a mandatory course after two registrations.
- The student has been terminated for disciplinary reasons

6.7.4 A student's name may be removed from the students' register if:

- Evidence arises after enrolment on facts that would have or may have lead to the denial of enrolment;
- The student does not re-enrol into the programme of study;
- The student does not take up studies and has not applied for postponement of studies;
- The student has not paid tuition and/or other fees within the stipulated timeframe;
- The student has been in breach of the prevailing attendance policy.

6.7.5 Upon withdrawal, a student will receive an official transcript and the return of any original documents provided there are no outstanding issues such as finance, or university property to be returned.

6.7.6 If a student has been awarded a degree and is not enrolled in another programme of study within the University, they shall be deemed as Alumni and shall be removed from the students' register.

6.8 Tuition and other Fees

6.8.1 Tuition fees and transportation and accommodation costs must be paid at the times prescribed by the University. A late payment fee of an amount as specified in the Tuition Payment Policy shall be charged to late payments.

6.8.2 Students who face financial difficulties, may apply to the Deputy Rector for Administration and Finance for consideration for a payment plan.

6.8.3 Without full payment of fees or a payment plan approved by the Deputy Rector for Administration and Finance, a student will not be registered in courses and is not allowed to attend classes, participate in academic activities (e.g., assessments, field trips, projects, thesis, etc.), or use the library or IT facilities.

7. RIGHTS AND RESPONSIBILITIES OF STUDENTS

7.1 Introduction

7.1.1 Academic rights and responsibilities of students are set to maintain quality of the learning environment and to encourage respect for all people involved in the learning process within the University.

7.2 Academic Rights of Students

7.2.1 General

Academic rights of students include but are not limited to the right to academic evaluation, detailed information about Programme Specifications, Examination Regulations, Course Specifications, access to academic records, and academic advising.

7.2.2 Academic Catalogue and Student Handbook

Students have the right to receive the Academic Catalogue and the Student Handbook with pertinent policies and procedures.

7.2.3 Course Specifications:

Students have the right to know the requirements for their courses and the manner in which they will be evaluated and graded.

Students have the right to receive the course specifications for all courses that appear on their transcripts and grade reports.

7.2.4 Feedback:

Students have the right to expect the following from their lecturers:

- Fair, accurate and timely feedback, appropriate to the course objectives;
- Impartial and fair treatment;
- Prompt return of examinations and other assignments with explanations of deficiencies;
- Regularly scheduled office hours, which are convenient to the faculty member and the student.

7.2.5 Academic Advising

- Students have the right to be assigned Academic Advisers to assist them with their academic progression;
- Students have the right to expect timely and accurate academic advising.

7.2.6 Learning Services

- Students have the right to be allowed to all available learning services to support their learning experience at the University;
- Students have the right to expect free access to the library and IT services provided by the University;
- Students shall be advised of all services available to support their learning experience at the University;
- Students have the right to seek assistance from academic and non-academic staff in advising and student development during their enrolment in the University.

7.2.7 Grade Appeals

Students are entitled to get access to their marked examination papers after release of the corresponding grades.

Students are entitled to submit a written request for reappraisal of their grade in any of the assessments within five (5) working days of the announcement of the grade.

Reappraisal must be conducted according to the procedures stipulated by the University. This may include reappraisal by a committee chaired by the Dean and comprising the relevant Head of Department and the concerned Examiner. If the Head of Department is also the concerned Examiner, another academic staff member will be selected.

The outcome of the reappraisal is communicated to Head of Registration and Student Admissions or a person delegated by the Rectorate, who will inform the student and update the corresponding student records accordingly. The results will be presented to the next Board of Examiners for the record.

7.2.8 Student Advisory Council

With enrolment, students are entitled to be elected as members of the Student Advisory Council of the University.

7.3 Academic Responsibilities of Students

7.3.1 Providing information required by the University

Students are responsible for immediately informing the University's Registration and Student Admissions Department about:

- Change of name, address, and any other contact details;
- Failure in meeting the academic requirements for continuation of studies;
- Loss of right to examination;
- Loss of student ID card;
- Concurrent enrolment at another university;
- Any health conditions that might have an impact on their academic performance;
- Anything that might affect their performance.

7.3.2 Enrolment

- It is the responsibility of the student to enrol each semester into the University, within the Add & Drop period.

7.3.3 Payment of fees

- It is the responsibility of the student to ensure that tuition and other fees are paid in a timely manner.

7.3.4 Timely Submission of Assignments:

- Students are expected to submit all assignments in a timely manner as specified in the course syllabi or as specified by the relevant faculty member;
- Students should be aware of the lecturer's expectations about assignments;
- It is the responsibility of the student to inform the course lecturer of any hardship that might cause a delay in the delivery of due assignments.

7.3.5 Plan of Study:

- Students must meet the requirements listed on the plan of study for the academic year;
- It is the responsibility of the student to become informed of his/her degree requirements and to meet those requirements satisfactorily.

7.3.6 Academic Integrity:

- Students must refrain from cheating and plagiarism or any act that may compromise academic integrity;
- Students shall not submit as their own work a work which has been prepared by others;
- Students are expected to demonstrate academic integrity through the following actions:
  o Present their own work for evaluation;
  o Appropriately cite the words and ideas of others.

7.3.7 Course prerequisites and co-requisites:

- Students are expected to familiarise themselves with their relevant plans of study and understand the sequence required to fulfil the requirements of their plan of study to progress in a timely manner toward graduation;
- Students are responsible for satisfying each course prerequisite and/or co-requisite if available before enrolling in a course.

7.3.8 Class Attendance:

- Students are expected to attend classes;
- Students must document the reason of their absences from assessments or field trips by appropriate verifications submitted to the Registration and Student Admissions Department;
- Students are expected to make up missed class work.

7.3.9 Personal belongings

- It is the responsibility of students to look after their personal belongings, books, and equipment whilst on the University premises. The University shall not be held liable for any loss of personal property.

7.3.10 Dress Code:

- Students are expected to abide by the dress code described in the Student Code of Conduct.

7.3.11 Female students must abide by the University ban on face covers, in accordance with the guidelines of the Ministry of Higher Education of the Sultanate of Oman

ASSESSMENT AND EXAMINATION POLICY

1. DEFINITIONS

The University:

The German University of Technology in Oman (GUtech).

Programme of Study:

Any Pre-University, Bachelor or Master programme taught at the University.

Course:

A Programme of Study is made up of several Courses, which typically include: core Courses, elective Courses, life skills courses, internship and Thesis. A Course runs over one semester and carries a certain number of Credit Points.

Student:

The term "Student" refers to any part-time, full-time, visiting or guest student of the University.

Incapacitating Illness:

Usually requires hospitalization, high fever, severe migraines that require prescription medication, etc.

However, usual colds, headaches, dysmenorrhea, or other complaints that result in a student not feeling 100% are not considered to be incapacitating illnesses.

Sick Leave Certificate:

An official note from a governmental health institution (for Omanis) or a private health institution (for non-Omanis) indicating that the student is suffering from an incapacitating illness which prevents the student from participating in University examinations. The certificate has to be signed by a medical doctor registered with the Ministry of Health and stamped with the doctor's stamp bearing the Ministry of Health registration number as well as the health institution stamp. A positive PCR test is also accepted as a sick leave certificate. However, common headaches or other discomfort are not considered as a valid reason to miss an examination.

Excused Absence:

Missing an examination for reasons beyond the control of the student and supported by an official document. Accepted documentation are sick leave certificates, ROP report for an accident on the way to the examination, death of an immediate family member.

RSA:

The abbreviation "RSA" refers to the Department of Registration and Student Admissions.

2. INTENT

The Academic Regulations of the University provide a general regulatory framework for the performance of assessment and examinations at the University.

The intent of the Assessment and Examination Policy is to complement the Academic Regulations, by addressing in more depth matters linked to assessment and examinations.

In the event that there is a contradiction between this policy and the Academic Regulations, the latter shall prevail.

3. SCOPE

The Assessment and Examination Policy applies to all Students of the University, whether full-time, part-time, visiting, or guest students.

4. RESPONSIBILITY

Students are expected to familiarise themselves with this Assessment and Examination Policy.

The responsibility for implementing the Assessment and Examination Policy rests with each member of academic staff and the Registration and Student Admissions Department.

The responsibility to approve and/or amend the Assessment and Examination Policy rests with the Rectorate.

The Deputy Rector for Academic Affairs ensures that the final exam periods as well as the repeat exam periods are published in the Academic Calendar.

5. GENERAL

5.1. Purpose of assessment

Each Programme of Study aims at providing students with an education that prepares them for employment in a specific field.

The purpose of assessment is to ensure that students have met the learning outcomes of each Course and, as a consequence, the overall Graduate Skills and Attributes of their respective Programme of Study.

5.2. Principles of assessment

The University is dedicated to the education of highly qualified and socially responsible graduates, guided by German excellence in science and technology and with a firm grounding in Omani heritage and culture. To achieve this, the University uses an outcome-based approach to learning.

Each Programme of Study is characterised by a set of Graduate Skills and Attributes that must be aligned with the University's Mission. Each Course taught within a Programme of Study is characterised by Learning Outcomes that must be aligned with the corresponding Graduate Skills and Attributes.

Learning Outcomes must be clearly stated, achievable and measurable.

The following principles apply to all assessments:

- Within each Course, the assessment tasks are directly aligned to the Course's Learning Outcomes.

- Assessments measure students' academic progression. Assessment tasks are opportunities for students to demonstrate their achievement of Learning Outcomes. Assessment can either be formative (designed to aid students' learning) or summative (designed to make judgements about students' understanding and performance in relation to the Learning Outcomes of the Course);

- Assessments must be intelligible (i.e. the assessment tasks are described in ways that are clear and meaningful to students), valid (i.e. the assessment tasks really measure what the assessment is designed to measure), and reliable (i.e. the assessment tasks result in reproducible measurements of students' achievements).

- Assessments must be transparent. For each Course taught within a programme of study, the methods of assessment, including the weighting for each assessment task, shall be defined in the Course specifications, which are to be distributed to all students on the first day of class of each Course.

- Assessments must be fair and equitable. Marking and grading are in accordance with clear criteria (criterion-referenced assessment). Where there are multiple assessors, moderation procedures are employed to achieve comparability.

- Assessments must be responsive. Students are entitled to timely and constructive feedback, with the aim of supporting further learning. Students should get feedback no later than two weeks after submitting a piece of assessment that is of formative nature (e.g. any type of continuous assessment).

- Assessments must be timetabled appropriately and professors within the Programme of Study should coordinate assessments in order to ensure that students are not overloaded.

5.3. Examinations and scheduling of examinations

In accordance with the Academic Regulations of the University, all students must (re-)enrol each semester into the Programme of Study for which they were granted admission.

To complete their enrolment, students must select Courses according to their Study Plan and formally register in these Courses. The registration into a Course is a prerequisite for earning the corresponding credit points.

The registration into a Course is simultaneously a registration into all the assessments stipulated in the corresponding Course Specification.

Any student who misses an assessment for good reason (e.g. incapacitating illness supported by a Sick Leave Certificate) must inform the Registration and Student Admissions department immediately by e-mail, that is on the day of the missed assessment. They must also submit a Sick Leave Certificate within 48 hours, by electronic means if necessary. If accepted, the student will be given either a make-up assessment, or their final grade may be calculated out of 100 minus the weighting of the missed assessment. This is normally only applied if the missed assessment is weighted at 20% or less.

Only two University exam periods are offered each semester (Final and Repeat Exams) as scheduled in the Academic Calendar. Two excused absences for the same assessment will not be accepted in the same semester.

If a student is not able to sit for an examination because of a longer lasting illness or a chronic body impairment and the student can submit a medical certificate to attest his/her condition, the Chair of the Board of Examiners must provide the student with the opportunity to prove in an examination with a different format that he/she has achieved the required learning outcomes.

A student failing a Course has the right to sit for a repeat assessment if certain conditions are met. The repeat assessment can be a repeat final examination and/or a resubmission of an element of assessment contributing to the final grade. The element(s) of assessment to be repeated is decided by the Board of Examiners. If an element of assessment is not able to be repeated, an alternative method of assessment may be offered instead by the Board of Examiners.

If a student fails a make-up exam, there is no further opportunity to repeat that exam.

The resubmitted work must be capable of giving an overall passing grade. If that is not mathematically possible, the student Fails the course with no chance of repeat assessment.

If the student has to score 70% or more in the repeat examination in order to pass the course, then the Board of Examiners is authorised to deny the student the right to a repeat examination.

The Board of Examiners may round up a student's final grade from 48% to 50%. Reasons for allowing this must be minuted and it is never a student's right.

The final grade after the repeat examination is calculated with the mark of the repeat examination and is capped at the minimum passing grade. If the grade of the repeat assessment is lower than the original grade, then the original grade is kept.

If a student has both a make-up and a repeat assessment in the same course, they should attend both assessments. The grade for the make-up assessment will be entered first and if the student then passes the course overall, the repeat assessment grade will not be considered as to do so would lead to a capping of the final grade. If the make-up assessment does not lead to a passing grade overall, then the repeat grade will be considered.

If a student fails the Course even after taking a repeat examination, then the student must register in the Course again at the earliest opportunity.

Students must be registered in a course in order to take part in any course assessment (including final examinations).

Students on Leave of Absence are not entitled to sit for examinations. This does not apply to repeat or deferred examinations.

5.4. Final Examinations and examinations worth more than 30%

Any examination done after teaching is complete has to be managed by RSA in terms of timing, room setup, attendance sheets, invigilation, seating plan, and copying of exam papers. RSA has been instructed to schedule such exams during the final exam period published in the University's Academic Calendar. Exceptions are block courses that are completed earlier in the semester or during semester breaks. In this case, the final examination may be scheduled in the weeks following the block courses, instead of the final examination period. Other exceptions have to be approved by DRAA.

Any other examination that is worth more than 30% should also be held under these conditions.

Grades have to be entered within a maximum of 4 calendar days after the examination during Winter and Spring semesters. In the Summer semester, grades have to be entered withing a maximum of 2 calendar days. The Board of Examiners can be held two days after all grades of a programme have been entered and submitted.

The right to attempt the final examination of a Course may be subject to certain prerequisites. These prerequisites shall be clearly stated in the Course Specifications that are distributed to students at the start of each semester or covered in the Academic Regulations (e.g., attendance requirements, completion of field trip or Lab classes, etc.).

If a student has more than two examinations that are worth more than 30% on the same day, s/he may request that one of them be rescheduled within the same examination period.

5.5. Board of Examiners

Structure of the Board of Examiners

A Board of Examiners shall be established for each Department.

The Board of Examiners consists of:

- a chairperson: the Head of the Department offering the Programme of Study (*ex-officio)*;
- the Deputy Rector for Academic Affairs or his/her deputy (*ex-officio)*;
- at least three professors of the Department offering the Programme of Study;
- a representative of any other Department offering Courses in the Programme of Study (e.g. Language courses, Mathematics and Science courses, etc);
- the Head of Registration and Student Admissions or his/her deputy (minute-taker) (*ex-officio)*.

Procedures to appoint the Board of Examiners

The Head of Department appoints the professors of the Department who will serve on the Board of Examiners.

The members of the Board of Examiners are appointed for a period of two years, unless they are members of the Board *ex-officio*. Re-elections/re-appointments are permissible.

Duties and responsibilities of the Board of Examiners

The duties and responsibilities of the Board of Examiners shall include:

- Ensure that within every examination period, examinations (and if required deferred or repeat examinations) are offered for all the Courses taught in the preceding semester;
- Evaluate whether the planning and execution of examinations is in accordance with the Academic Regulations and with the Assessment and Examination Policy, and provide corresponding feedback to the Dean of the Faculty and the Associate Deputy Rector for Academic Affairs;

- Analyse situations where differences, inconsistencies or disputes arise with respect to the examination outcomes and/or examination procedures and decide on how to solve these;
- Review the final grades obtained by students at the end of each semester during the time period indicated in the University's Academic Calendar, and approved the final grades for the semester in the Student Information System (SIS);
- Inform the Faculty at regular intervals (at least once per year) on the general academic performance of students;
- Provide suggestions for revision and improvement of the Assessment and Examination Policy

Other rules

The Board of Examiners has a quorum, when at least two-third of its members are present, including the Chairperson. Decisions are made by simple majority. In the event of a tied vote, the vote of the Chairperson is decisive.

The members of the Board of Examiners are entitled to be present during any examination.

The meetings of the Board of Examiners are not open to the public. The members of the Board of Examiners are under the obligation of confidentiality.

While looking after its assignments the Board of Examiners relies on the administrative support of the Department of Registration and Student Admissions.

5.6. Examiners and co-examiners for all assessment (other than thesis)

The Chairperson of the Board of Examiners appoints the examiners. The examiners appoint their co-examiners.

Examiners must hold an academic qualification that is equivalent or higher than a Bachelors degree, in a field that is relevant to the subject being examined. Furthermore, examiners must have taught the subject being examined in the academic year preceding the examination.

Co-examiners must hold an academic qualification that is equivalent or higher than a Bachelors degree, in a field that is relevant to the subject being examined. Responsibilities of the Co-Examiner include checking draft examination papers and documentation for other assessment tasks and confirming the accuracy of final marks.

Co-examiners may also mark assessments where a second marker is required. Where two markers are used, an average of the two grades will be the final grade. If the marks vary by more than 10% points, post-exam moderation procedures will be applied (see below).

The examiners are independent in defining the content of their examinations, as long as the learning outcomes specified for their course are being adequately assessed.

Examiners and co-examiners are under the obligation of confidentiality.

Any major assessment component (e.g., final project oral or written examinations) resulting in the completion of a programme of study shall be graded by at least two persons, i.e., one examiner and one co-examiner.

Any examination which, in case of failure, would result in the termination of enrolment, shall be graded by at least two persons, i.e., one examiner and one co-examiner.

5.7. Non-attendance at an examination

If a student doesn't present himself/herself for an examination without a valid reason, an examination is considered failed (F). In this case, the student will not be given the right to a repeat exam.

RSA must be informed within 48 hours in writing of the cause for the student's absence from the examination and supporting documents must be submitted to justify the absence. In the event of sickness of the student, a medical attestation must be submitted to the University.

5.8. Moderation of exams

Pre-exam moderation:

An examination is developed by the examiner who has to ensure that the assessment addresses an appropriate set of the learning outcomes listed in the course specification. The co-examiner reviews the assessment to ensure its content is correct, appropriate and can be completed by students within the given time limit. In addition, an English Reviewer checks that the language used in the assessment is grammatically correct and matches the expected language skills of the students.

Post-exam moderation:

If an assessment is graded by two examiners, the final grade shall be equal to the average of the grades given by each examiner. If the grades proposed by the examiner and the co-examiner differ by more than 10% points, the opinion of a third examiner is sought, and the Board of Examiners will decide the final grade.

Examination papers of multi-section courses taught by different instructors should have a limited number of exam papers cross-marked for comparability.

6. FORMS OF ASSESSEMENT AND EXAMINATION

6.1. Requirements to pass a Course

The Course Specification needs to clearly specify all the requirements to pass a Course. After the start of the semester, they cannot be changed without the written consent of all students registered in the course. The requirements to pass a Course may differ from one Course to the other. The requirements can be:

- based solely on continuous assessment,
- a combination of continuous assessment and final examination for the Course;
- based solely on a final examination for the Course.

By meeting the requirements to pass the Course, the student earns the corresponding credits for the Course.

6.2. Written examinations

The aim of a written examination is for students to demonstrate their ability to understand and solve a given problem with the typical methods applied in their field of study, within a limited timeframe and with the help of limited resources.

For final written examination during Winter and Spring semesters, students must be informed at least four weeks in advance of the date, time, duration, and venue of the examination, as well as if there are any resources that they are allowed to use during the written examination.

For repeat or make-up exams, students need to be informed at least one week in advance.

Invigilation procedures are to be clearly communicated to students taking a written examination.

All departments have to provide qualified invigilators.

Final written examinations are normally submitted for marking anonymously. The identity of the student will be matched to the examination script after marking is complete.

Students are entitled to review their marked assessments. In the case a final exam, students can review their final examination paper after the Board of Examiners has confirmed the course grade. This access shall be facilitated by the academic concerned and normally be by appointment.

6.3. Oral examinations

The aim of an oral examination is for students to demonstrate their understanding of the coherence of the field of study being examined. In addition, the oral examination aims at assessing the basic knowledge of students in the field of study being examined.

Oral Examinations can be used to verify the authenticity of other assessment. In this case, the examination might be recorded. If the authenticity is questionable, GUtech's procedure for the investigation of suspected academic dishonesty will be initiated. The recorded oral examination may be used in the investigation.

During an oral examination, an individual student is assessed by an examiner and co-examiner.

The main aspects of the oral examination and the decision taken must be documented in the form of minutes.

6.4. Other types of examinations

Other types of examinations include but are not limited to project work, presentations and assignments.

Project work consists of a well-defined problem, which students must solve under adequate guidance of the instructor, with the results presented in the form of a report.

The presentation is delivered in front of the participants of a Course in the form of a lecture or seminar about a given subject.

Assignments cover a given subject, are submitted in writing and typically do not contain more than 5,000 words. This also includes excursion reports, lab reports, and seminar reports.

In exceptional circumstances, online exams may be carried out with permission of the Deputy Rector for Academic Affairs. Such exams require careful arrangements to ensure authenticity of the assessment.

6.5. Thesis

The aim of the Thesis is for students to demonstrate their ability to understand and solve a problem related to their field of study in a self-directed manner but under supervision, within a determined timeframe and with the typical scientific methods applied in that particular field of study.

The Thesis is to be submitted in writing, unless it consists of creative work that cannot be expressed in writing.

Each student will be assigned two thesis supervisors (a main supervisor and a co-supervisor) by the Chair of the Board of Examiners. The Thesis can be supervised by any of the academic staff teaching and researching within the respective Department. Students may suggest supervisors and co-supervisors for their Thesis.

As far as possible, consideration must be given to these suggestions. However, the suggestions made by students are not binding. The co-supervisor can be any academic or scientific staff from within or from outside the University and has relevant knowledge in the field of the thesis. Exceptions are regulated by the Board of Examiners.

Both supervisors will assess the final version of the Thesis, thus becoming examiners of the Thesis.

The Chair of the Board of Examiners makes sure that each eligible student is given a topic for a Thesis. The topic of the Thesis shall only be given to the student once all prerequisites for the Thesis have been fulfilled. This includes that the student needs to have achieved at least IELTS 6.0 (or equivalent).

The student may propose topics for the Thesis. However, these proposals are not binding. The topic of the Thesis can be amended only once and only within the first two weeks of the Thesis.

Ethics approval is required for theses.

The starting date of the Thesis is the first day of lectures of the semester in which the student is registered in the Course entitled "Thesis".

The time allocated to complete the Thesis is not less than 12 weeks and not more than 15 weeks for full-time students. Part-time students who are full-time employees are given an appropriate duration for the thesis. The general and specific objectives of the Thesis must be formulated in such a manner that the Thesis can be completed within the set timeframe. The Chairperson of the Board of Examiners communicates to the student the submission date for the completed Thesis.

Exceptionally, the Board of Examiners can prolong the time allocated for the completion of the Thesis at the request of the student and with the approval of the supervisor of the Thesis.

The length of a written Bachelor Thesis should be approximately 10,000 words and the length of a written Master Thesis should be approximately 15,000 words. The word counts exclude appendices, cover pages, and lists of contents/figures/tables/symbols/ references etc. Deviations of more than ±10%, for example due to exceptional empirical research efforts, have to be agreed upon with the main supervisor.

When submitting the Thesis, the student must include a written declaration confirming that he/she:

- has completed the Thesis independently,
- has acknowledged through proper referencing all resources, aids and ideas that are not his/her own,
- has followed the tenets of academic integrity.

6.6. Assessment of the Thesis

The Thesis is to be submitted on or before the stated closing date for submission to the Chair of the Board of Examiners (i.e., the Head of Department). If the Thesis is not submitted on or before the closing date for submission, and no acceptable reason for late submission is notified, the Thesis is marked with "F – Fail".

The main supervisor and the co-supervisor of a thesis are also the examiners. Each thesis has to be marked by at least two examiners. Rubrics are to be used to ensure a rigorous, consistent, and transparent approach to approach to grading.

The marking of the Thesis is to be done according to the Grading Scale outlined in the Academic Regulations. The examiner and the co-examiner must both justify in writing the grade that they propose for the Thesis. The final grade for the Thesis shall be the arithmetic average of the grades given by the examiner and the co-examiner.

If the grades proposed for the Thesis by the examiner and the co-examiner differ by more than 10% points, the opinion of a third examiner is sought, and the Board of Examiners will decide the final grade.

Should a student earn the grade "F – Fail" for his/her Thesis, then the Board of Examiners may decide whether a resubmission is possible and would define the timeline for the resubmission in consultation with the supervisors. If the resubmitted Thesis meets the passing requirements, the grade of the resubmitted Thesis is capped at the minimum passing grade. However, if the resubmitted Thesis does not meet the passing requirements, then the student fails the Course, needs to register into the Course again the next time it is offered and must submit a new Thesis on a new topic.

The number of credit points to be earned for a Thesis is defined in the corresponding Programme Specifications.

The release of the grade for the Thesis to the Department of Registration and Student Admissions shall take place at the latest four weeks after the submission date of the Thesis.

6.7. Grading Scales

The overall Grading System of GUtech is described in the Academic Regulations.

The grading for most Courses follows an alphanumerical approach.

A small number of Courses follow a Pass/Incomplete/Not Pass approach:

- English:

  Not Pass (NP): Student fails to achieve 50% in the continuous assessment

  Incomplete (I): Student achieves at least 50% in the continuous assessment but did not pass the final examination. This grade can be changed to a Pass grade at a later stage, e.g., after a successfully completing the repeat examination.

  Pass (P): Student achieves at least 50% in the continuous assessment and passes the final examination

- Information Technology:

  Not Pass (NP): Student fails to pass two or more of the three IC3 module tests

  Incomplete (I): Student passes two out of three IC3 module tests but fails to pass all three tests. This grade can be changed to a Pass grade at a later stage, e.g., after successfully completing the failed module.

  Pass (P): Student passes all three IC3 module tests.

- All Internships:

  All Internship Courses are to be graded with

  Not Pass (NP): Student fails to complete internship and/or submit relevant reports within allocated timeline.

  Incomplete (I): Student is in the process of completing internship and/or submitting relevant reports within allocated timeline.

  Pass (P): Student has completed the internship successfully and submitted relevant reports of an acceptable standard within allocated timeline.

In special cases, the Board of Examiners has the right to change an alphanumerical grade to Pass/Not Pass. The grounds for this decision are to be included in the minutes of the respective Board meeting.

6.8. Calculation of Grade Point Average

As described in the Academic Regulations.

6.9. Grade Reports

As described in the Academic Regulations.

6.10. Release of Grades to Students

As described in the Academic Regulations.

Strict confidentiality shall be maintained when dealing with final grades.

The final grade given for any Course is considered the University's property.

The Board of Examiners reviews the final grades obtained by students at the end of each semester and forwards the approved final grades for the semester to the Department of Registration and Student Admissions. No grade is official until confirmed by the Board of Examiners.

Grades that were delayed due to reasons beyond the student's control (such as out of semester courses and delayed Thesis, Internship) can be released based on Chair's Action. These grades will then be officially confirmed later in the next scheduled BoE.

The release of grades may be withheld by the University if a student has an outstanding debt with the University.

6.11. Change of Grades

Final grades may be changed if there has been a formal appeal; or after repeat and make-up assessments; or as part of Stage 1 of the Grade Appeal Process. In all cases, the change must be recorded and approved by the Board of Examiners.

6.12. Late submissions

In case of late submission of an on-course assignment or final project, the professor in charge of the course has the right to mark the assignment with zero or deduct any amount from the awarded mark, as long as the same principles are applied to all students within a Course.

Professors must also inform all students of the penalty that will be applied for late submission at the start of the semester.

6.13. Plagiarism

Cases of plagiarism are to be reported to Associate Deputy Rector for Academic Affairs for investigation and for record keeping in the respective student's file.

Cases of plagiarism are to be addressed as described in the "Student Code of Academic Conduct" and the "Student Academic Integrity Policy".

6.14. Procedure in case of failure of a Course or failure of the Thesis

A student must repeat any failed Course that is required to complete the Programme of Study. Where the Programme of Study identifies alternatives or substitutes, a student may replace a failed Course with one of these. Any Course repeated must be repeated in its entirety, including attendance requirements (if any) and all assessments must be new.

Failed Courses may be repeated once. Further attempts require special permission from the DRAA.

In all cases of repeated Courses, all grades earned shall appear on the transcript, but the most recent grade only shall be used in the calculation of the Grade Point Average (even if it is lower than the original grade).

7. OTHER PROVISIONS

7.1. Access to the examination documents

After concluding the examination process, the student may request access to his/her written examination and corresponding marking schemes by sending an e-mail to the instructor of the course. The request is to be raised within 5 working days after the student has been informed of the grade of examination.

Final examination scripts will be kept as per the regulations of the Ministry of Higher Education of the Sultanate of Oman, and for at least one year.

The University does not expect its academic staff to systematically keep copies of pieces of assessment that are of formative nature, as these pieces of assessment should be returned to students for them to learn from the feedback provided.

7.2. Academic integrity and discipline

Students are expected to demonstrate academic integrity throughout their studies. In particular, students must refrain from cheating and plagiarising.

The Student Academic Integrity Policy provides a regulatory framework to handle cases of academic misconduct.

8. Regulations about invigilators

Each staff member should have a yearly number of N invigilation duties. If she/he does m duties in winter semester (where 0 <= m <= N), she/he has to do N-m duties in the Spring semester. If for some reasons she/he cannot do the N-m duties in Spring, it will be reported to the next academic year.

All departments (academic as well as non-academic) should equally take part in the invigilation process.

HoDs are not required to invigilate but can do it voluntarily.

Admin staff are also requested to invigilate. Exempted are any admin staff whose job requires full day commitment such as the nurse and security personnel.

Admin staff with no invigilation experience may serve as second assistants. Once they have more experience, they may be asked to be first assistant or Chief invigilator.

The target student/invigilator ratio is 1/25. The minimum number of invigilators per exam is 2.

9. Invigilation Procedures for Written Final Examinations

Before the examination:

- Students are briefed about the invigilation procedures by RSA.
- Invigilators are briefed about the invigilation procedures by RSA.
- Students are informed that they have to be on campus at least 30 minutes prior to the start of the examination.
- Students are informed that they must bring their student ID card to the examination.
- Students are informed that they should use transparent zip-lock bags for their pens & pencils.
- Students should find out from their lecturers, which resources will be allowed during the examination. Calculators, laptops, notes, formula sheets, dictionaries, books, or other resources are only allowed if explicitly stated on the examination paper.
- If laptops are required for the examination, students must make sure that they are fully charged prior to the examination. Extension cords may be available in some cases but that should not be assumed or relied upon.
- Students should leave bags and handbags in their lockers.
- To be placed on each table prior to exam:
    - Examination paper, face down;
    - One answer booklet (last pages of the answer booklet can be used as scrap paper).
- The number of invigilators is as follows:

Class Size	# of Invigilators
< 50	2
50 - 74	3
75 - 99	4
100 - 124	5
125 - 150	6

- The chief invigilator responsible for the correct implementation of the invigilation procedures.
- The chief invigilator gets the examination papers, the examination answer booklets (if required), the list of students taking the examination and the Incident Report Form from the Registration and Student Admissions Department, at least 30 minutes prior to the start of the examination.
- The chief invigilator distributes one examination paper (face down) and exam slip with the help of co-invigilator on each desk and ensures that the examination venue is ready for the examination.

During the examination:

- Ten to fifteen minutes prior to the start of the examination, students are asked to enter the room in an orderly manner and without talking.
- Should students bring any bags or handbags to the examination room, they are to be placed at the front of the room, next to the invigilator's desk.
- Invigilators should take attendance at this point, checking ID, and ensuring there is nothing on or around the candidate which is not required for the examination. Bottled water is allowed.
- Students are not allowed to turn exam papers around until they are explicitly instructed to do so.

- The Chief invigilator reads out an announcement (text to be provided). The announcement includes the name of the course being examined, the length of the examination and reminds students of the main invigilation rules. The chief invigilator also asks students to place their Student ID Card in a visible place on their desks and to fill-in the "Identification slip" on the cover of the examination booklets, or the separate slip if the answers are to be written on the question paper itself.

Main invigilation rules:

- Students are not allowed to carry mobile phone, iPods, MP3 players, smart watches, or similar devices.
- No exchange of pens, rubbers, rulers, calculators, paper, etc. between students is allowed during the examination;
- No talking or other exchange of information between students is allowed during the examination;
- No student is allowed to leave the examination room within the first 30 minutes of the examination;
- No student is allowed to leave the examination room within the last 15 minutes of the examination.
- Students are not allowed to re-enter the examination room after leaving it (including toilet breaks).
- Students with a medical condition that may require them to leave the room will need to present a medical report from a medical doctor registered with the Ministry of Health to RSA at least one day before the exam. Examples include late stage of pregnancy; a recent operation; or an ongoing infection. In exceptional cases, the chief invigilator needs to use discretion.
- The invigilators check the attendance and identity of each student. If a student has forgotten his/her ID Card, this is noted on the Incident Report Form and the student must stay back after the examination until a positive identification is carried out.
- The chief invigilator announces that students are allowed to turn the examination paper around. This is the official start of the examination.
- The official start time of the exam is noted.
- Invigilators must be attentive during the entire invigilation period. Only the Chief invigilator is allowed to bring a mobile phone to the exam room and it should be on silent mode. No other invigilator is allowed to bring a phone, laptop or any reading material.
- The lecturer who set the examination paper should be available on call during the full duration of the examination. They should be present in the Examination Hall for the first 15 minutes and students should be encouraged to read through the whole paper and ask any questions during those 15 minutes.
- If the lecturer is asked about a particular point by more than one student, they should consider making an announcement to the whole group with the clarification or explanation.
- The lecturer who set the examination paper cannot be an invigilator of the examination. There is one exception to this rule: In cases where a language examination also includes a listening and speaking section, the lecturer who set the examination may have to be present.
- The chief invigilator announces when half of the examination time has elapsed.
- The chief invigilator announces when 30, respectively 15 minutes are left before the end of the examination.
- The chief invigilator announces the end of the examination.
- Students who are late will not be allowed into the examination room after the first 30 minutes of the examination have elapsed. There is one exception to this rule: Students taking a Listening examination will not be allowed into the examination room after the examination have started. If there are missing students at the official start time, and no message of absence, the invigilator may delay the start of the listening test by a maximum of 5 minutes.
- At the end of the examination, students are asked to put down their pens and remain seated without talking. The invigilators collect all the students' examination papers and answer booklets. The invigilators then count all the examination papers and answer booklets. When the chief invigilator has confirmed that all the examination papers and answer booklets have been collected, the chief invigilator announces that students are allowed to leave the examination room.

- Should a case of academic or non-academic misconduct be detected, it should be handled by the invigilators in a way that cause as little disturbance as possible to the other students who are taking the examination. In cases of suspected plagiarism, the cause for the plagiarism is removed. The incident is documented in the Incident Report Form and on the students examination answer booklet or question paper and, wherever possible, the student(s) involved is (are) left to finish the examination.

After the examination:

- The chief invigilator hands all the examination papers and answer booklets to the Registration and Student Admissions Department. The Registration and Student Admissions Department counts the number of examination papers and answer booklets and confirms receipt.
- The chief invigilator hands the Incident Report Form to the Registration and Student Admissions Department, who confirms receipt. In the case of a suspected case of plagiarism, the Registration and Student Admissions Department ensures that proper action is taken.
- The Registration and Student Admissions Department tears off the "exam slips" of each exam paper and keeps them. The Registration and Student Admissions Department hands all the examination papers and answer booklets to the lecturer who set the examination. The lecturer counts the number of examination papers and answer booklets and confirms receipt.
- Once marked (need to show marked papers) to collect the exam slips from Registration and Student Admissions Department. Attach exam slips to exam papers and enter marks in self-service. Lecturers should return exam papers to RSA for filing.

Listening Exam, Interns and etc

- Examiner needs to brief invigilator about Listening exam separately before the exam starts.
- All interns should carry their ID Card when they come for invigilation.
- All examiners should make any announcements at the beginning of exam and try to avoid during exams.

10. Grades

10.1. Grading System

GUtech's grading system is described in the Academic Regulations. For most courses a percentage grading system is used. A grade of less than 50% is a failing grade for graduate and post-graduate programs. Depending on the nature of the subject, certain of the following descriptions may not be applicable in all programmes.

10.2. Grading Scales

GUtech's Grading Scale can be found in the Academic Regulations contained in the Academic Catalogue. This grading scale also describes the conversion of Percentage Grades into Letter Grades and Grade Points.

10.3. Grading Guidelines for Percentage grades

86-100

An *excellent* performance:

- superior knowledge and understanding of the subject material, relevant issues, literature, and techniques
- the work demonstrates original thinking, new analysis, high level of creativity, or new interpretation and outstanding ability to integrate multiple perspectives in comprehensive and complex ways
- demonstrates outstanding depth/scope of research, theory, and techniques supported extensively by the relevant literature and exceeding course expectations
- outstanding level of integration of course material demonstrating analytical and critical insight, understanding, and independent application or extension of course expectations in relation to difficult problems related to the subject material
- the work contains no errors in grammar, spelling, format, citation style, or referencing and is well communicated, coherent, clear, and highly persuasive

74-85

A *good* performance:

- good knowledge and understanding of the subject material, relevant issues, literature, and techniques
- the work demonstrates ability to apply knowledge and understanding in new ways and/or to provide new analysis or new interpretation
- demonstrates a good depth/scope of research, theory, and techniques relevant to course expectations and appropriate literature
- very good ability to solve moderately difficult problems related to the subject material and/or to examine the material in a critical and analytical manner
- the work is relatively free of errors in grammar, spelling, format, citation style, or referencing and demonstrates very good communication, coherence, and clarity

62-73

A *satisfactory* performance:

- satisfactory knowledge and understanding of the subject material, relevant issues, literature, and techniques
- the work is complete, and some new analysis, new interpretation, or creative solution is provided
- arguments are supported by evidence and demonstrate a good depth/scope relevant to course expectations and relevant literature
- good ability to solve moderately difficult problems related to the subject material and/or to examine the material in a critical and analytical manner
- the work contains few errors in grammar, spelling, format, citation style, or referencing and demonstrates satisfactory communication, coherence, and clarity

54-61

An *acceptable* performance:

- an acceptable knowledge of the subject material, relevant issues, literature and techniques
- the work is complete, but few new analysis, new interpretation, or creative solution is provided
- arguments are sufficiently supported by evidence and demonstrate acceptable depth/scope relevant to course expectations and relevant literature
- ability to solve moderately difficult problems related to the subject material and/or to examine the material in a critical and analytical manner
- the work contains some errors in grammar, spelling, format, citation style, or referencing or shows minor difficulties in effective communication, coherence, or clarity

50-53

A *minimum acceptable* performance or marginal pass:

- a basic grasp of the subject material, relevant issues, literature and techniques
- the work is complete, but very little new analysis, new interpretation, or creative solution is provided
- arguments are supported by some evidence and demonstrate minimally acceptable depth/scope relevant to course expectations and relevant literature
- basic ability to solve moderately difficult problems related to the subject material and/or to examine the material in a critical and analytical manner
- the work contains multiple errors in grammar, spelling, format, citation style, or referencing and/or there are difficulties in effective communication, coherence, or clarity

0-49

An *unacceptable or failing* performance:

- a weak grasp of the subject material, relevant issues, literature and techniques
- the work is incomplete, with no new analysis, new interpretation or creative solution
- arguments are not supported by evidence and/or demonstrate very limited depth/scope relevant to course expectations and relevant
- unsatisfactory ability to solve moderately difficult problems related to the subject material and/or to examine the material in a critical and analytical manner
- the work contains many errors in grammar, spelling, format, citation style, or referencing and lacks effective communication, coherence, or clarity

Academic Integrity

Student Academic Integrity Policy

1. **Intent**

   GUtech strives to graduate students who have a sense of honour and integrity, and who will contribute to their community. For that reason, student conduct is taken very seriously, and all members of GUtech are expected to fulfil the requirements for academic integrity.

   The Student Academic Integrity Policy sets out the standards of academic conduct expected of students. It holds individuals and groups responsible for the consequences of their actions. Failure to fulfil these responsibilities may result in the withdrawal of privileges or the imposition of sanctions. This policy provides also a regulatory framework to handle cases of violation of academic integrity.

2. **Scope**

   This policy applies to all Students in respect of all academic actions and activities relating to or impacting on GUtech or its Students or Employees. It also applies to academic conduct that occurs elsewhere if it is related to University sponsored programmes or activities, (such as students attending national and international competitions, field trips, excursions, etc.).

   Disciplinary action may be taken against any enrolled student who has violated the rules of University's Academic Conduct.

   Rules and regulations relating to *non-academic conduct* can be found in the Non-Academic Student Handbook.

3. **Academic Integrity**

   Students should observe high standards of honesty and integrity with regards to all class work, assignments, examinations, and research.

Students should not provide false information or withhold information with the intent to gain unfair academic advantage or improve academic standing.

Students should not engage in dishonest behaviour, including academic cheating, academic plagiarism (submission of the work of others for academic credit without indicating the source), or knowingly furnishing false information to University faculty or staff.

Prohibited academic conduct includes but is not limited to:

- Furnishing false information to the University (falsification of transcripts, official documents);
- Disrupting, obstructing, or interfering with the process of instruction of the University;
- Interfering with the academic work or study of other members of the University. This includes, but is not limited to, alteration, destruction, and denying access to learning materials;
- Failing to comply with specific requirements for academic conduct communicated by a faculty member to the class regarding assignments, tests, or/and exams;
- Intentionally lying or providing false information to a member of the University, for example about contributions to group projects, reasons for absence, etc.
- Buying, selling, or trading assignments;
- Submitting, without the permission of the faculty member, work previously used in another class;
- Collaborating with others in a work to be submitted, contrary to the stated rules of the course lecturer;
- Submitting the work of another as own;
- Stealing examinations or course materials;
- Possessing unauthorised examinations or course materials;
- Using or attempting to use any unauthorised materials, book, notes, electronic device or assistance from any person during a quiz or examination;
- Taking a quiz or exam in place of another student or having any person takes a quiz or exam in place of own;
- Any attempt to falsify assigned grades;
- Intentionally assisting another student in any of the above;
- Violating or aiding the violation of any published academic regulation, policy or procedure

4. Alleged Violations of Academic Integrity

Any staff or student of the University may file a disciplinary report against a Student for alleged violations of Academic Integrity.

- The disciplinary report must be submitted in writing, stating the name of the student involved, the nature of the violation, and the name of the person reporting the alleged violation. Relevant evidence is to be submitted with the report.
- The disciplinary report must be directed to the Associate Deputy Rector for Academic Affairs in cases of academic misconduct.
- No anonymous disciplinary report shall be entertained.
- The disciplinary report should be submitted as soon as possible after the event takes place or no later than five (5) working days following the observation of the incident.

5. Disciplinary Records

All disciplinary records (such as copies of written reports, notification letters, written warnings) will be maintained as the University's property until a student graduates from the University.

Disciplinary records and proceedings shall be treated as confidential and can only be accessed by the Academic HoD of the department of the student, RSA, and the Rectorate.

All academic disciplinary records are under the custody of the HoD Registry and Student Admissions Department.

6. Rights of Students

A student accused of violating Academic Integrity is granted the following rights:

- To seek information from a member of the Registry and Student Admissions Department regarding regulations and procedures applicable to the reported violation;
- To be informed of the violation reported and suspected academic misconduct upon which the case is based;
- To be informed of the information upon which the disciplinary report and the charge are based;
- To be afforded an opportunity to offer a relevant response;
- To be accompanied by a person of his/her choice;
- To request to appear in front of a Disciplinary Committee;
- To appeal the decision with the Deputy Rector for Academic Affairs.

7. Procedures for Handling Academic Misconduct

Any suspicion of academic misconduct by a student must be dealt with. If non-academic staff or other students suspect a student of academic misconduct, s/he needs to inform the Faculty Member teaching the course, who will then follow-up on the case.

Academic misconduct that can be handled by a Faculty Member:

Cases of academic misconduct that can be handled by a Faculty Member include:

- A Student receives unauthorised help in good faith because the instructions have been misunderstood;
- A Student copies a small amount of text from books or the internet without direct acknowledgement (the copied text does not make a significant contribution to the overall work);
- A Student does not reference work properly;
- A Student fails to acknowledge the source of a small section of an assignment;
- A Student infringes academic integrity when the assessed work does not contribute to the final grade.

The Faculty Member informs the Student of the alleged academic misconduct and invites the Student to a meeting. The Faculty Member may request a witness to be present for the meeting, preferably the academic adviser of the Student. The Student has the right to be accompanied by a person of his/her own choice.

The minutes of the meeting between Faculty Member and Student must be submitted to the Associate Deputy Rector for Academic Affairs, within ten working days of the date in which the disciplinary report has been filed. The minutes should include the outcome of the meeting and any measures recommended by the Faculty Member. These may include any or a combination of the following:

- Counselling on how to avoid a repetition of the misconduct;
- A verbal warning;
- The request to re-submit an assessment within a clearly defined timeframe.
- A reduction in the grade which reflects the amount of plagiarism but is still a passing grade in the assignment.
  Note: Faculty Members may not award a failing grade in an assignment solely for academic misconduct. If the severity of the academic misconduct could justify such a punishment, the case needs to be handled by the Academic Disciplinary Committee.

Important: The reporting of the case and any punishment to the Associate Deputy Rector for Academic Affairs is important in order to maintain a central register of offences and to identify repeat offenders.

Academic misconduct that must be presented to an Academic Disciplinary Committee:

Repeated cases of academic misconduct or cases of academic conduct that are not included above must be reported to the Associate Deputy Rector for Academic Affairs and be presented to an Academic Disciplinary Committee.

When a student is accused of academic misconduct, and the case is referred to the Academic Disciplinary Committee, a grade 'I' (Incomplete) is given in the relevant course until the case is closed.

The Academic Disciplinary Committee comprises of two Faculty Members from a different Department (but not the person who has reported the misconduct), the Head of Registry and Student Admissions (secretary) or his/her representative and the Associate Deputy Rector for Academic Affairs (chairperson).

The Head of Registry and Student Admissions notifies the Student in writing of the alleged academic misconduct and invites him/her to appear in front of the Academic Disciplinary Committee.

The purpose of this meeting of the Academic Disciplinary Committee is to:

- Request a statement from the person who filed the disciplinary report,
- Permit the accused Student to defend him/herself,
- Review the available evidence,
- Confer with witnesses if any,
- Reach a consensus within the committee on whether the Student is or is not found guilty,
- If the student is found guilty, determine a sanction.

Should the Student be found guilty of academic misconduct, the Academic Disciplinary Committee may impose one or more of the disciplinary sanctions listed below, in addition to the above-mentioned measures available to the Faculty Member):

- An informal verbal warning.
- A written warning.
- Resubmitting new course work in fulfilment of a course requirement and/or in respect of an examination;
- Re-sitting for a test and/or an examination;
- Reduction of grade for the course in question;
- A failing grade on the particular assignment, test and/or an examination;
- A lower grade in the course;
- A failing grade in the course;
- Suspension; or
- Termination of enrolment.

The Student will be informed in writing of the decision of the Academic Disciplinary Committee and the disciplinary sanction, if any. A copy of the notification is forwarded to the Department of Registry and Student Admissions, to be kept in the student's file.

The Minutes of the Academic Disciplinary Committee meeting should be filed by the Department of Registry and Student Admissions.

The disciplinary sanction shall come into effect upon receipt of notification by the student unless the student appeals the decision of the Academic Disciplinary Committee within five (5) working days of the receipt of notification.

8. **Appeals**

- Students may appeal the findings and the decision of the Academic Disciplinary Committee to the Deputy Rector for Academic Affairs within five (5) working days of the receipt of notification.
- Students must submit written statements or arguments along with the written request for a review.

- The Deputy Rector for Academic Affairs may review the decision of the Academic Disciplinary Committee within (10) working days from the date of receipt of the request for appeal.
- During the review, the Deputy Rector for Academic Affairs may consider additional evidence that was not introduced in the original meeting of the Academic Disciplinary Committee. The Deputy Rector may affirm, modify, or reverse the decision.

The decision of the Deputy Rector for Academic Affairs is final and cannot be appealed further within the University.

Student Attendance Policy

1. DEFINITIONS

Lecture: A class/lecture is a time-tabled period.

Missed Lecture: Missing more than 20 mins of class time.

Tardy: Missing up to 10 mins of class time. Missing 10-20 mins of class time counts as two Tardy. Three Tardy count as one missed lecture.

Excused Absence: Serious event that prevents the student from attending class. The event needs to be officially attested (e.g., a medical certificate in case of illness, or a policy report in case of accident) and approved by RSA. The evidence should be submitted on the day of the absence (where possible) and no later than 48 hours from the absence.

Warning Letter: A letter (typically sent by e-mail) from the institution to the student indicating the level of absence, the course, as well as the penalty.

RSA: Department of Registry and Student Admission

2. INTENT

The intent of this policy is to ensure student learning and ultimately student success while encouraging students to take responsibility for their studies.

3. SCOPE

This policy addresses all registered students in the following groups:
- Students in the Foundation Programme
- Students in a Bachelor Programme
- Students in a Master Programme

4. PRINCIPLES UNDERLYING THE POLICY

This policy considers the varying maturity levels of students. To help students in the transition from high school to university, students in the Foundation Programme are more closely monitored than students in the Bachelor or Master programmes. In the latter programmes, students are given more freedom so that they can take more responsibility for their studies and personal development.

5. CORE CLAUSES OF THE POLICY

1. Foundation Programme:
   1.1 Students in the Foundation Programme are required to regularly attend lectures.
   1.2 Instructors will take attendance in all their classes.
   1.3 GUtech will send warning letters to those students who reach certain levels of absences:

    1.3.1   After missing 10% of the lectures without accepted excuse, students will receive the first warning letter.

    1.3.2   After missing 15% of the lectures without accepted excuse, students will receive the second warning letter.

    1.3.3   After missing 20% of the lectures without accepted excuse, students will receive a disciplinary letter.

1.4 Any penalties related to attendance have to be specified in the course specifications.

1.5 Penalties also need to be included in the warning and the disciplinary letters. Possible penalties include (but are not limited to):

    1.5.1   The institution will not pay for any external exams, such as IC3, IELTS, …

    1.5.2   The student may not be allowed to participate in excursions or other curricular or extracurricular activities.

    1.5.3   The student may receive a FW grade for failure to meet the attendance requirement.

1.6 Excuses for absences have to be sent by email to attendance@gutech.edu.om. If the excuse is accepted by RSA, the absence does not count towards the percentage of overall absences. Nevertheless, the student is accountable to catch up with missed material. The evidence should be submitted on the day of the absence (where possible) and no later than 48 hours from the absence.

1.7 Absence from assessments:

    1.7.1   Absences for missed assessments are administered by RSA. The student will submit the Request for Excused Absence from an Assessment, with supporting evidence, by sending an e-mail to attendance@gutech.edu.om, and if accepted, the lecturer/professor will be informed in writing by RSA. If the excuse is not accepted, the student receives a 0 mark for the assessment.

    1.7.2   The evidence should be submitted on the day of the absence (where possible) and no later than 48 hours from the absence.

    1.7.3   In case of an accepted excuse, a decision will then be taken by the lecturer/professor whether to offer a make-up assessment or, if the assessment has a value of 15% or less and is not the only assessment of one of the learning outcomes, the decision might be to calculate the final grade without this value.

2.   Bachelor and Master Programmes:

2.1 Taking regular attendance is not compulsory for degree programme courses.

2.2 In some cases, if regular attendance is essential for pedagogical reasons, attendance may be required. This is typically the case for block courses, excursions, etc.

2.3 In some courses (mainly excursions or other practical activities), missing any (or a small number of) activities or days prevents learning outcomes from being met. With an excused absence, the student may receive an IP grade until the missed course component is offered again. Otherwise, a 0 mark is given for this assessment.

2.4 If attendance is required, instructors have to inform students in writing on the first day of classes as part of the course specification. Mandatory attendance cannot be introduced later in the semester.

2.5 Attendance requirements need to be specified in objectively measurable metrics.

2.6 If attendance is mandatory, instructors are required to send warning letters to those students who reach certain levels of absences:

    2.6.1   After missing 10% of the lectures without accepted excuse, students will receive the first warning letter.

    2.6.2   After missing 15% of the lectures without accepted excuse, students will receive the second warning letter.

    2.6.3   After missing 20% of the lectures without accepted excuse, students will receive a disciplinary letter.

2.7 Any penalties related to attendance have to be specified in the course specifications.

2.8 Penalties also need to be included in the warning and the disciplinary letters. Possible penalties include:

    2.8.1   The student may not be allowed to participate in excursions or other curricular or extracurricular activities.

    2.8.2   The student may not be eligible for the Dean's list or scholarships.

    2.8.3   The student may receive a FW grade for failure to meet the attendance requirement.

2.9 Excuses for absences have to be sent by email to attendance@gutech.edu.om. If the excuse is accepted by RSA, the absence does not count to the percentage of overall absences. Nevertheless, the student is accountable to catch up with missed material. The evidence should be submitted on the day of the absence (where possible) and no later than 48 hours from the absence.

2.10 Absence from assessments:

    2.10.1   Absences for missed assessments are administered by RSA. The student will submit the Request for Excused Absence from an Assessment, with supporting evidence, by sending an e-mail to attendance@gutech.edu.om, and if accepted, the lecturer/professor will be informed in writing by RSA. If the excuse is not accepted, the student receives a 0 mark for the assessment.

    2.10.2   The evidence should be submitted on the day of the absence (where possible) and no later than 48 hours from the absence.

    2.10.3   In case of an accepted excuse, a decision will then be taken by the lecturer/professor whether to offer a make-up assessment or, if the assessment has a value of 15% or less and is not the only assessment of one of the learning outcomes, the decision might be to calculate the final grade without this value.

6. APPEALS

If a student disagrees with the correctness of the attendance record, the decision or penalty, the student can appeal to the Associate Deputy Rector for Academic Affairs. The decision of the Associate Deputy Rector for Academic Affairs is final.

7. POLICY OWNER

The Deputy Rector for Academic Affairs (DRAA) is the owner of the attendance policy. The implementation of this policy is delegated to Academic HoDs and lecturers/professors.

Grade Appeal Policy

1. DEFINITIONS

The University:

The German University of Technology in Oman (GUtech).

Student:

The term "Student" refers to any Student enrolled in any programme of the University.

Faculty Member:

The term "Faculty Member" refers to any academic staff involved in teaching a course at the University. In the context of this policy, it also refers to any Drive-in or Fly-in who deliver a course on the basis of a short-term contract.

Grade:

The term "Grade" can refer to an evaluation result of an individual assignment or course component. It can also refer to the final overall assessment result (course grade) of a student for a course completed. Grades and their definition can be found in the Academic Catalogue.

2. **INTENT**

The intent of the Grade Appeal Policy is to provide a structure to students who wish to appeal grades.

3. **SCOPE**

The formal grade appeal procedure should be utilised only when the Student can demonstrate any of the following:

- The grade given was not based on agreed assessment criteria. The way in which the work was assessed was not the same as indicated in the course specifications.
- Standards utilised in the determination of the Student's grade are more demanding than those applied to other students in the course.
- Work handed in on time was not marked.
- A mistake has occurred while computing the final grade.

4. **GENERAL**

Any grades released to students are presumed to be accurate and final.

A Student who is uncertain about whether a grade should be appealed, or who needs additional information about the Grade Appeal Policy should contact the Registry and Student Admissions Department.

Students must adhere to the timelines defined in this policy or lose their right to appeal. All timelines refer to the first semester after the semester in which the grade was awarded.

5. **PROCEDURES**

Step 1: Informal resolution. Disputes can frequently be resolved without going to a formal appeal. A Student, who believes he/she has been assigned an inaccurate grade, should contact, and subsequently meet with the Faculty Member involved and discuss the concern, stating the reasons for questioning the grade. The informal resolution has to be initiated by e-mail to the Faculty Member within 5 working days of the release of the grade. Informal appeals will not be considered at a later point in time.

If the Faculty Member agrees to change the grade, s/he will inform the Chair of the Board of Examiners of the proposed change of grade. If the Chair confirms the grade change by Chair's action, the Chair will inform RSA so that minutes of the BoE and grades are updated. RSA will issue a new transcript. In the next BoE meeting, the Chair's actions are confirmed. If the Chair does not approve the change of grade, the student may initiate the formal resolution as described in Step 2.

Step 2: Formal resolution. If a student is not satisfied with the outcome of the informal resolution, a formal grade appeal to the Associate Deputy Rector for Academic Affairs can be launched.

The Student must submit a written statement to the Associate Deputy Rector for Academic Affairs, in which he/she:

- States precisely and specifically the reasons for the appeal (see the section on "Scope" above),
- Attests that he/she has informed the Faculty Member of his/her intention to file a grade appeal.

The Student may specify in the letter what he/she would consider a fair resolution to the appeal. This may include a re-marking of the final examination, if this happens to be a written examination.

The written statement and supporting documents should be submitted to the Associate Deputy Rector for Academic Affairs not later than five working days after their meeting with the concerned Faculty Member.

Upon receipt of the Appeal, the Associate Deputy Rector for Academic Affairs shall:

- Forward a copy of the Appeal to the Faculty Member involved, with copy to the Head of the student's home Department, with the request to submit, within five working days, a written statement in which the Faculty Member explains how the grade in question was determined.
- In case the student's home department is not the same as the Faculty Member's home department, the HoD of the Faculty Member is also copied. In case the instructor is not affiliated with an academic department (as is the case with some Life-Skills Courses), the Life-Skills Course Coordinator is copied.
- Consider the Student's Appeal, the Faculty Member's written statement, confer with both parties, if needed, call for a committee or consult with a qualified person, and reach a decision regarding the outcome of the appeal.
- Notify the Student, the Faculty Member, and the Head of the respective Department(s) in writing of the Associate Deputy Rector for Academic Affairs' decision, within 10 working days of the receipt of the Letter of Appeal.
- If a grade change is decided, inform RSA so that minutes of the BoE and grades are updated. RSA will issue a new transcript. In the next BoE meeting, the grade change is confirmed.

6. APPEALS PROCEDURE

Any Student who believes the decision of the Associate Deputy Rector for Academic Affairs has not followed proper process may appeal to the Deputy Rector for Academic Affairs. In this case, the Student must submit a Letter of Appeal outlining the grounds on which they are appealing, with supporting documents that indicate the violation of the procedure.

The Deputy Rector for Academic Affairs shall make a decision after consideration of the Student's Letter of Appeal, the Associate Deputy Rector for Academic Affairs written decision, and the Faculty Member's written statement. The Student, the Faculty Member, and the Head of the respective Department(s) shall be notified in writing of the Deputy Rector for Academic Affairs decision, within 10 working days of the receipt of the Letter of Appeal.

If a grade change is decided, the Deputy Rector for Academic Affairs will inform RSA so that minutes of the BoE and grades are updated. RSA will issue a new transcript. In the next BoE meeting, the grade change is confirmed.

The decision of the Deputy Rector for Academic Affairs is final and cannot be appealed further within the University.

7. CHANGE IN REGISTRATION FOLLOWING A GRADE APPEAL

The outcome of a grade may affect a student's registration in the next semester. Such changes should not exceed the add & drop deadline as published in the Academic Calendar of the University.

Credit Transfer Policy

1. **DEFINITIONS & ABBREVIATIONS**

   The University:
   The German University of Technology in Oman (GUtech).
   Applicant:
   The term "Applicant" refers to any person who applies for entry to GUtech.

   RSA:
   Registry and Student Admissions (RSA) is responsible for all admission- and registration-related issues.

   Credit Transfer (TC):
   Credit Transfer is the process whereby students can be exempt from some parts of their chosen programme of academic study by recognition of their prior learning at higher education institutions. It must be able to be mapped to particular learning outcomes in courses within the new programme. It must be an achievement of learning that has been formally assessed and certificated from previous study with a higher education institution.

2. **INTENT**

   The intent of the Credit Transfer Policy is to allow applicants with prior academic records to complete their degree at GUtech faster by giving Transfer Credit for courses that closely match GUtech's courses in their content and learning outcomes.

3. **SCOPE**

   3.1. The Credit Transfer Policy applies to all applicants to the University who have studied at another higher education institution approved by the Ministry of Higher Education and earned academic credit.
   3.2. The policy also applies to applicants who have taken GUtech Bachelor courses while being registered in the GUbridge Foundation Programme.

4. **FEES**
   4.1. A processing fee is required for all non-GUtech courses previously taken and now being considered for Transfer Credit.
   4.2. The processing fee per non-GUtech course is OMR 50.
   4.3. This fee is non-refundable regardless of the decision reached.
   4.4. To receive Transfer Credit for Bachelor courses taken while being registered in the GUbridge Foundation Programme, the regular fee per credit point is required for each course being accepted instead of the processing fee.

5. **PRINCIPLES**

   5.1. Credit Transfer for non-GUtech courses has to be requested during the application stage, normally after an offer of admission has been received, however, before studies commence.
   5.2. The maximum Credit Transfer that can be awarded for non-GUtech courses is 50% of the Credit Points in the programme.
   5.3. If the academic credit has been used toward a Bachelor or Master level award, it is considered to be spent, and may not be used against another Bachelor or Master award.
   5.4. Any Credit Transfer counts solely toward the Credit Points required to earn the award. The grade earned for such courses cannot be used to earn a grade other than Pass, and so will have no impact of the Cumulative Grade Point Average calculation.
   5.5. The final 50% of the programme must normally be taken and satisfactorily completed at GUtech.

5.6. The University does not award any Credit Transfer for uncertificated learning or learning through experience.

5.7. The University does not award any Credit Transfer for courses taken more than 5 years ago.

5.8. In order for a course to be considered for Transfer Credit, it needs to match a GUtech course by at least 75% of the course topics and/or learning outcomes.

5.9. In the case of Credit Transfer for German language courses, a Certificate showing the achievement in the Common European Framework of Reference for Languages (CFER) will be accepted.

5.10. The University will require original documents to be submitted at the time of the application for Credit Transfer.

5.11. The University reserves the right to reverse any Credit Transfer at any time if the application is found to include inaccurate, fraudulent or plagiarised material.

6. RESPONSIBILITY OF APPLICANTS

6.1. Applicants are expected to familiarise themselves with this Credit Transfer Policy.

6.2. It is the responsibility of the applicant to provide full, accurate and timely information related to the application for Credit Transfer. This includes the provision of the course specification of the course(s) taken at other institutions.

6.3. For courses taken at institutions outside Oman, the applicant needs to get the official transcript approved by the Ministry of Higher Education in Oman.

7. OFFER PROCESS

7.1. A formal Statement of Credit Transfer will be sent directly to the Applicant containing all courses for which Transfer Credit has been awarded, as well as the courses that were rejected.

8. WITHDRAWAL OF THE APPLICATION FOR CREDIT TRANSFER

8.1. An applicant may withdraw their Application for Credit Transfer at any time. However, the Credit Transfer processing fee will not be refunded if work on consideration of the application has already started.

9. APPEALS

9.1. Applicants can appeal the outcome of their application for Credit Transfer by e-mail to the Deputy Rector for Academic Affairs (DRAA): draa@gutech.edu.om

9.2. The decision of the DRAA is final.

10. PROCEDURE

10.1. After an offer of admission has been issued but before studies have started, an applicant may submit a request for Credit Transfer.

10.2. To initiate the application for Transfer Credit, the applicant has to submit the following to RSA:
- The Credit Transfer Application Form available at the RSA Office
- Receipt of payment issued by the Finance Department of the professing fee of OMR 50 for each non-GUtech course being assessed for transferability. In the case of applicants who want to get Credit Transfer for GUtech Bachelor courses taken while being registered in GUbridge, no fee payment is required. Instead, this will be charged as a normal course fee.
- Official Transcript of the issuing institution. If the transcript was issued outside Oman, it needs to be approved by the Ministry of Higher Education before an official decision can be taken. This attestation process is solely the responsibility of the applicant, and if approval is not given, no offer will be honoured.
- Detailed syllabus or course specification for all courses for which credit is being requested.

10.3. Once the application documentation is complete, RSA will forward it to the HoD in the

department offering similar courses.

10.4. Within five working days, the department will inform RSA of the outcome of the assessment.

10.5. Once all courses have been assessed, RSA will inform the applicant of the outcome of the Transfer Credit application.

10.6. In the case of Credit Transfer for GUtech Bachelor courses taken while being registered in GUbridge, the applicant has to submit the receipt for the payment of the full course fees to RSA in order to complete the Credit Transfer.

Student Grievance Policy

1. DEFINITIONS

Grievance:

A complaint based on a circumstance that causes distress and/or is perceived as hindering student learning.

The University:

The German University of Technology in Oman.

Student:

Any student enrolled in any programme of the University.

Lecturer:

Any academic staff involved in teaching a course. In the context of this policy, it also refers to any Drive-in or Fly-in who deliver a course on the basis of a short-term contract.

2. INTENT

The University is committed to maintaining an effective policy to allow all members of its community to make legitimate complaints and to make constructive suggestions.

3. SCOPE

The Student Grievance Policy applies to all Students of the University that are currently enrolled in any programme.

4. PRINCIPLES UNDERLYING THE STUDENT GRIEVANCE POLICY

Students are entitled to submit a grievance concerning any aspect of their experience at the University that can cause distress and/or is perceived as hindering their learning.

This may include but is not limited to:

- harassment, discrimination, or any unfair or improper treatment by a member of staff of the University;
- quality of teaching, quality of infrastructure relevant to teaching and learning, or quality of teaching and learning support services.

Grievances are about decisions and actions of people. They are not about the policies and procedures of the University, although they could be about the manner in which these policies and procedures are interpreted or implemented.

The procedure of the Student Grievance Policy includes (1) an informal stage of resolution, (2) a formal stage of resolution and (3) the possibility to appeal the decision taken after the completion of the formal stage.

Complaints that do not fall under the category of grievances are dealt with through different channels. For instance:

- Complaints about grades: Grade Appeal Policy;
- Complaints resulting from the behaviour of other students of the University: Student Disciplinary Policy;
- Complaints about policy and procedures of the University: Rectorate;
- Suggestions for improvement of campus facilities: Student Advisory Council or Rectorate

5. PROCEDURES

If a student wishes to submit a grievance, the steps are as follows.

Stage 1 - Informal resolution

Complaint to the person directly responsible:

If possible, the complaint should initially be addressed to the member of the University staff who is directly responsible for the circumstance resulting in the complaint. Therefore, if the student wishes to complain about their treatment by a specific individual, they should try to approach this member of staff in the first instance.

In order to ensure that the complaint is raised at a mutually convenient time, the student should try to arrange an appointment with the member of staff concerned.

The member of staff may request the presence of a colleague and the student may wish to bring another GUtech student or his/her mentor to the meeting. Staff should be happy to deal with complaints raised on an informal basis, but if the student feels unable to approach the individual directly concerned they may proceed directly to Stage 2.

Students are advised to involve their mentor for guidance purposes in all aspects of this informal resolution process. If the grievance is against a mentor, students are advised to request support from any other member of the academic staff in whom they can confide.

Students are advised to prepare and keep a written record at the end of this stage.

Stage 2 - Formal resolution

Complaint to the relevant Head of Department, (administrative or academic):

If the student feels unable to approach the member of staff who is directly responsible or considers that the matter has not been satisfactorily resolved, they should raise the complaint, at an appointed time or in writing, with the Head of Department or equivalent. If it is not clear who the person with management responsibility might be, the Registration and Student Admissions Department or the Student Affairs Department can advise.

The student may choose to have another GUtech student, his/her mentor or a family member to accompany him/her, and the Head of Department may also choose to have another member of staff present, not directly involved in the subject of the grievance.

Having heard the complaint, the Head of Department or equivalent will outline how he/she intends to deal with the situation and when this is expected to be completed.

Once the complaint has been considered in full, the Head of Department or equivalent will notify the student in writing of his or her conclusions and of any consequent action the University intends to take.

The investigation should be completed as swiftly as possible and certainly within 3 weeks of its initial hearing.

If the student is not satisfied with the action taken at department level, he/she may then choose to proceed to the next stage of this process.

If the grievance is submitted against a Head of Department, this stage will be omitted, and the student may proceed directly to the next stage.

Stage 3 - Appeal

Complaint to the Deputy Rector

If the student is not satisfied that the matter has been resolved at departmental level, a formal written complaint should be made. The formal complaint must be submitted, with any supporting documentation, to the appropriate Deputy Rector. If the grievance is related to academic matters, the complaint is to be directed to the Deputy Rector for Academic Affairs. If the grievance is related to non-academic matters, the complaint is to be directed to the Deputy Rector for Administration and Finance.

The Deputy Rector has the discretion to investigate the matter with relevant members of staff in the department concerned or to call an advisory committee to investigate the grievance. The committee may hold interviews with the complainant and any other appropriate students and members of staff. The committee should include a senior member of staff, who is not a member of the department associated with the grievance. If deemed beneficial, also a student representative may be included.

The relevant Head of Department will be involved in the investigation, unless he/she is the cause of the grievance.

The student may choose to have another GUtech student, his/her mentor or a family member to accompany him/her in any meeting with the Deputy Rector or any committee.

The student will receive a written notification of the outcome of this investigation, and any consequent action the University intends to take, within 3 weeks of submission of the complaint.

The decision of the Deputy Rector will be final and cannot be appealed further within the University. It will bring the University's investigation of the case to a close.

6. WITHDRAWAL OF THE GRIEVANCE

The student may withdraw the grievance at any time.

7. NO REPRISALS

No reprisals shall be taken by the management, administration or academic staff against any student or staff member because of participation in a grievance, unless that allegation is proved to have been raised maliciously. Otherwise, the University will take very seriously any allegations of reprisals. If the student or staff member feels they have been victimised, this should be reported to the Deputy Rector immediately.

A malicious allegation, that is deliberately raising false complaints with the intention of harming someone, will be regarded as misconduct. Students who make malicious allegations will be dealt with under the Student Disciplinary Procedure.

8. GRIEVANCE RECORDS

These shall be kept by the Rectorate.

Internship Policy

1. DEFINITIONS

Company refers to an establishment that hosts students in order to provide them with a practical learning experience related to their programme of study. The company can be located within Oman or overseas.

GUtech means the German University of Technology in Oman, a university which is a branch of Oman Educational Services LLC (OES LLC) and is managed in accordance with the Academic Affiliation Agreement with RWTH Aachen University.

Internship Coordinator means a dedicated person in an academic department that is given the task to handle internship-related issues.

Rectorate means the body consisting of the Rector, and Deputy Rectors.

Students refers to undergraduate or postgraduate students of the German University of Technology in Oman.

Internship or **Student Placement** refers to a practical experience of students in a workplace.

University means the German University of Technology (GUtech) in Oman.

2. INTENT

The intent of the Internship Policy is to provide a framework for the placement of students in a work environment so that they can gain valuable practical experience in a safe environment.

3. SCOPE

The Internship Policy applies to all students (undergraduate and postgraduate), who are taking an internship for credit. Voluntary internships or voluntary internships are not covered by this policy.

4. PRINCIPLES UNDERLYING INTERNSHIPS

Any Internship taken by a student of the University must adhere to the following principles:

- *Safety*: Although the Company is responsible for the safety of students during the internship, the University will make reasonable efforts to ensure students take internships at appropriate companies.
- *Legality:* The internship is carried out in accordance with relevant laws (including Health and Safety, Immigration, Labour laws);
- *Benefits:* The internship should be related to the student's area of study;
- *Autonomy*: Students are responsible for the finding and selection of placements. However, wherever possible, the University will assist.

5. DEPARTMENTAL RESPONSIBILITIES
- Each academic department appoints an Internship Coordinator. Ideally, this role should be assigned on a longer-term basis. All students eligible for internship need to be made aware of the internship coordinator.
- Departments distribute opportunities for internships as they become aware of them.
- Each academic department develops Internship Guidelines and keeps them updated.
- Departmental Internship Guidelines need to address at least the following:
  - o Timing and minimum duration for required internships
  - o Departmental procedures related to internships
  - o Forms of assessment. The use of rubrics is encouraged.

- o Forms of evaluation of the student by the employer as well as the employer by the student. A copy of these completed forms are to be submitted to QAP.
  - o Format of students' internship reports
  - o Template of the tri-party agreement
  - o Health and Safety aspects
- Departments inform companies in writing of the expected outcomes of the internship.
- Once per year, the departmental board reviews a compilation of the feedback received through evaluation forms (both from students and internship provider). Improvements are then made as required (this might e.g., mean that an employer is removed from the list of places offering internships).
- Departments will share best practices in the context of Academic Board Meetings.

6. INTERNSHIP COORDINATOR RESPONSIBILITIES

The Internship Coordinator of each department is tasked to

- handle departmental internship processes
- be the point of contact for students and companies for internship-related issues
- monitor internships for safety and appropriateness
- evaluate (or coordinate the evaluation) of internship reports

7. STUDENT RESPONSIBILITIES
- Students have to be proactive in finding suitable internship placements and to get them approved by the Internship Coordinator.
- Students are obligated to carefully follow the Health and Safety rules of the company where they do the internship.
- Students are to behave at all times in a professional manner.
- Students are to evaluate the employer in a timely manner.

8. COMPANY RESPONSIBILITIES
- Companies are responsible to maintain a safe working environment adhering to relevant Health and Safety legislation.
- Companies are to brief internship students of Health and Safety regulations.
- Companies are to evaluate students in a timely manner.

9. ACCESS

This policy is available and accessible online to all students and employees in QWIKI, the quality wikipedia of the university.

10. OWNER OF THE POLICY
The owner of the Internship Policy is the Deputy Rector for Academic Affairs.

GUbridge

GUbridge is the entry point for most students and provides English, mathematics, and IT courses for all students.

English is the language of instruction at the German University of Technology in Oman, so one of the main objectives of the Foundation Programme is to provide students with the opportunity of developing academic fluency in this language. The Foundation Programme is structured in a flexible way, allowing students to achieve the requirements needed for entry into the University's Bachelor programmes. It also aims at providing students with a solid grounding in other areas of knowledge relevant to their future undergraduate studies. The Foundation Programme was designed to facilitate the development of generic skills such as study, communication, critical and creative thinking, problem solving and life-long learning skills.

Before joining the programme, all students are required to take the Oxford Online Placement Test.

Students are streamed into one of 4 levels based on their performance in an English placement test.

List of Courses for Foundation Programme

Semester	Course Code	Course Name
1	FGE 0 001	General English 1
	FAE 0 002	Academic English 2
	FAE 0 004	Academic English 4
	FAE 0 006	Academic English 6
	FPM0 001	Math Vocabulary
	FPM0 002	Applied Mathematics Level 1
	FPM0 004	Pure Mathematics Level 1
	FIT0 001	IT 1
2	FAE 0 001	Academic English 1
	FAE 0 003	Academic English 3
	FAE 0 005	Academic English 5
	FAE 0 007	Academic English 7
	FPM0 002	Applied Mathematics Level 1
	FPM0 003	Applied Mathematics Level 2
	FPM0 004	Pure Mathematics Level 1
	FPM0 005	Pure Mathematics Level 2
	FIT0 002	IT 2

Completion Requirements

Successful completion of GUtech's Foundation Programme requires a pass in all programme specific courses. In addition, a student must achieve an IELTS Band 6.0 or above and pass in all three sections of IC3 which are prerequisites for entry into Bachelor degree programmes at GUtech.

Further information is available in the GUbridge Student Handbook.

Structure of the Bachelor Programmes

The Bachelor programmes are taught as full-time programmes and take eight semesters.

The Bachelor programmes were developed to be aligned with the programme structures introduced in Europe after the Bologna Reform. This programme structure has enabled the University to seek accreditation of the programme by a German accreditation agency, ACQUIN, thereby ensuring that international standards are upheld.

The Bachelor programmes encompass a workload equivalent to 240 credit points in the European Credit Transfer System (ECTS) distributed over eight semesters. One ECTS credit point corresponds to a student workl o a d of 25 hours.

Graduate Attributes and Skills

The attributes and skills that graduates are expected to develop during their undergraduate studies are divided into two categories: programme-specific attributes and generic graduate attributes and skills that that are independent of a specific programme and which every graduate is expected to have achieved at the time of graduation. They build on the core values of the University.

The generic graduate attributes and skills that build on the core values of the University are the same for all programmes of study. They are:

- *Ethics* – The graduates have developed awareness and holistic understanding of their role as responsible citizens in an increasingly globalised context;
- *Critical thinking and problem solving* – The graduates are able to engage real-world problems in a theoretically informed, rigorous, and questioning manner. They are able to devise solutions, select the most appropriate one, implement it, and reflect on its performance.
- *Creative thinking* – The graduates are able to think laterally and develop creative ideas.
- *Individual and teamwork* – The graduates have the capability to work effectively alone or in a team, to be self-directed, and to show independent judgment.
- *Communication* – The graduates are effective communicators, using oral, written, and electronic communication skills. They can interact confidently in a variety of settings, with a range of people from both genders, individually and in team situations, from peers to the wider community;
- *Life-long learning* – The graduates appreciate that learning is continuous and have the ability to continue learning throughout life. They have developed a variety of approaches to learning, including self-directed, collaborative, and self-reflective processes.
- *Sustainability* – The graduates have acquired knowledge and have been engaged in a range of practices that enables them to implement sustainability in line with the United Nations SDGs and Oman's Vision 2040.

The programme-specific graduate attributes and skills are described later for each programme.

Academic Recognition

Rector's Medal

The Rector's Medal is presented at each Graduation Ceremony to the most distinguished undergraduate student at the University based on academic achievement during the entire Bachelor study, measured by the cGPA.

The student will be presented with the Rector's Medal and a Certificate at the Graduation Ceremony.

Note:

- The medal and certificate can be awarded in absentia.
- System-internal accuracy will be used. In case of a tie, every student is awarded the Medal.

Dean's List

Selection criteria:

- minimum semester GPA of 3.5;
- top 10% of the students of same level of a programme;
- registered in the semester for a minimum of 25 credit points in percentage-graded courses; (This criterion is not considered if the study plan of a semester contains less than 25 credit points of percentage-graded courses.)
- no incomplete or failing grades in any course in the semester;
- no disciplinary written warning against him/her in the semester;
- achieved IELTS 6.0 or equivalent.

Notes:

- The Dean's list is determined every semester.
- A student has to meet all criteria in order to be placed on the Dean's list.

Life Skills

All Bachelor students take 24 credit points for broad subject courses, with 3 courses of German and 1 course for Entrepreneurship as mandatory.

Life Skills Courses

Course Code	Course Name	ECTS Credit Points	Weekly	
LS 1 001	German 1	4	4	mandatory
LS 1 002	English	4	2	
LS 1 003	German 2	4	4	mandatory
LS 1 009	Advanced English	4	4	
LS 1 012	IT Ethics	4	2	
LS 1 017	Creative Design	4	2	
LS 1 019	Digital Life	4	2	Except for CS, AI, and Cybersecurity students
LS 1 021	Islamic Civilisation	4	2	
LS 1 022	Oman History and Culture	4	2	
LS 1 026	Introduction to Photography	4	2	
LS 1 029	Cosmos Travel	4	2	
LS 1 033	Presentation Techniques & Scientific Report Writing	4	2	
LS 2 004	German 3	4	4	mandatory
LS 2 006	Adobe Photoshop	4	2	
LS 2 007	Advanced Microsoft Excel	4	2	Except for CS, AI, and Cybersecurity students
LS 2 008	Presentation Techniques & Research Methods	4	2	
LS 2 015	Work Smart	4	2	
LS 2 016	Preparing for Employment	4	2	
LS 2 023	Introduction to Artificial Intelligence	4	2	Except for AI students
LS 2 024	Digital Marketing	4	2	
LS 2 031	Introduction to Meteorology	4	2	
LS 2 032	Scientific Reading and Writing	4	2	
LS 3 005	Entrepreneurship: Creativity and Innovation	4	2	(Except for IBSM and Logistics students)
LS 3 010	German 4	4	4	
LS 3 011	Customer Relationship Management	4	2	
LS 3 014	Design Thinking	4	2	
LS 3 015	German 5	4	4	
LS 3 018	Academic Reading and Writing	4	2	
LS 3 027	Leadership	4	2	(Except for IBSM and Logistics students)
LS 3 028	Introduction to Agile and Scrum Framework	4	2	
LS 3 030	Explore Geology	4	2	(Except for AGEO students
LS 3 920	Management in a Global Environment	4	2	
LS 3 921	Climate Change Response	4	2	

Note: Not every course is offered every semester.

Faculty of Business and Economics

Dean and Head of Department - Assoc. Prof. Dr. Osman Barghouth

Bachelor of Science in International Business and Service Management

The Bachelor of Science in International Business & Service Management at GUtech is tailored to the requirements of the Sultanate of Oman and the region; hence it is focused on one of the two most strategic service sectors in Oman namely business and tourism. The programme draws on state-of-art expertise accumulated at RWTH Aachen University in Business, Economics and Applied Geography and it also utilises existing expertise at GUtech in the fields of tourism, culture, and development studies especially in the Arab World. The programme recognises the position of Germany as a world leader in the tourism industry (currently second only to China in generating international tourism) as well as the strategic direction of the Sultanate of Oman that highlights tourism as one of the leading sectors for its economic vision 2040.

The tourism industry is currently one of the largest service industries in the world, employing approximately 10% of the global labour force and contributing to about 6% of world exports. Tourism shares the characteristics of many international service industries; for the Omani economy, however, it is unique as it offers the basis for a viable economic diversification and employment creation on the one side, and it is highly competitive due to Oman's unique tourism product on the other. The programme will therefore equip students with business knowledge and skills focusing on this vital service sector. The programme will also consider tourism via the prism of sustainability; providing the skills and the knowledge that can ensure that growth of this sector will not be at the expense of the society or the environment but rather enriching to them.

Programme-specific graduate attributes and skills:

Graduates from the BSc in International Business & Service Management will also have developed the following attributes and skills:

- *Interdisciplinary thinking*: The nature of the study programme requires the students to develop interdisciplinary skills which allow them to see issues from different perspectives and understand the influence of one discipline on another. These skills enable the students to effectively solve complex issues using creative solutions from different disciplinary approaches.
- *Theoretical knowledge*: Comprehension of the theoretical concepts underpinning the study of international business and service management. The program also allows the students to relate such theories to wider national and international economic and social issues.
- *Methodological diversity*: Skills for applying a diverse range of methods of analysis, evaluation, and promotion, including quantitative (e.g., econometrics), qualitative (e.g., empirical social research), IT- based (e.g. GIS techniques), and communication-driven approaches (e.g. expert interview, or discussion moderation). Students are encouraged to carry out fieldwork and investigate real life situations.
- *Communication skills*: Expertise in incorporating views and interests of various stakeholders from business, tourism, regional and central government, private companies, and representatives of local communities into strategic concepts.
- *Innovation and entrepreneurial skills*: Application of innovative approaches in acquiring and presenting knowledge and dealing with business cases and projects. A focus is set on developing entrepreneurial skills matching national priorities.
- *Analytical and reflective thinking*: Understanding the complexity of managing and promoting tourism as a successful international service business. The programme also enables the students to critically assess and carefully consider the cultural, environmental, and economic impact of global business activities such as tourism. Participants should be able to use critical and analytical thinking in selecting appropriate development models and rejecting others depending on the profile of the region and communities they are dealing with.

BSc in International Business and Service Management

Semester	Course Code	Course Name	ECTS Credit Points	Weekly Contact Hours
1	IBSM 1 101	General Mathematics	6	6
	IBSM 1 102	Tourism Geography of Oman	5	4
	IBSM 1 103	The Business Environment	5	3
	IBSM 1 104	Microeconomics	5	4
	IBSM 1 105	Financial Accounting	5	4
	LS 1 xxx	Life Skills Course	4	4
2	IBSM 1 121	Marketing	5	4
	IBSM 1 106	International Travel Operations	5	3
	IBSM 1 107	International Hospitality Management	5	3
	IBSM 1 110	Decision Theory	5	4
	IBSM 1 146	Statistics	6	5
	LS 1 xxx	Life Skills Course	4	4
3	IBSM 2 111	Port and Cruise Management	5	4
	IBSM 2 112	Tourism Planning and Development 1	5	3
	IBSM 2 123	Strategic Management	6	4
	IBSM 2 120	Human Resource Management	5	4
	LS 2 xxx	Life Skills Course	4	4
	LS 2 xxx	Life Skills Course	4	4
4	IBSM 2 115	Airport and Aviation Management	5	3
	IBSM 2 117	Tourism and Technology	5	4
	IBSM 2 118	International Destinations Management	5	4
	IBSM 2 116	Management Accounting	5	4
	IBSM 2 113	Business Law	4	4
	IBSM 2 122	International Business Strategy	5	3
	LS 2 xxx	Life Skills Course	4	4
5	IBSM 3 132	Tourism Planning and Development 2	5	3
	IBSM 3 124	Tourism Marketing and Communication	5	3
	IBSM 3 125	Project Management	4	3
	IBSM 3 126	Entrepreneurship and Innovation	4	4
	IBSM 2 114	GIS and Statistical Analysis Tools	4	4
	LS 3 xxx	Life Skills Course	4	4
6	IBSM 4 135	Applied Economics	5	4
	IBSM 4 136	Leadership	5	4
	IBSM 3 119	Macroeconomics	5	4
	IBSM 3 129	Finance and Investment	5	4
		General Elective	4	4
		Elective 1	5	4
Summer	IBSM 3 127	Internship	15	
7	IBSM 4 131	Research Methods for the Service Sector	5	4
	IBSM 4 133	Revenue Management	6	4
	IBSM 4 134	Tourism Project Appraisal	5	4
	IBSM 4 128	Tourism and Consumer Behaviour	5	3
	IBSM 4 130	Culture and Heritage Tourism	4	4
		Elective 2	5	4
		Elective 3	5	4
8	IBSM 4 137	Bachelor Thesis	12	
	IBSM 4 138	Colloquium	3	

Notes: The order in which courses are offered is subject to change. Not every course is offered every semester.

Electives 1-4: to be chosen from the following courses:

IBSM 3 239	ITHAS – International Tourism and Hospitality Academy at Sea	5	4
IBSM 3 240	Event Management	5	4
IBSM 3 241	Contemporary Issues in Tourism	5	4
IBSM 3 242	Promoting the Knowledge Economy	5	4
IBSM 3 243	Foreign Direct Investments	5	4
IBSM 4 245	International Excursion	5	4
IBSM 4 246	Global Economy	5	4
IBSM 3 249	Managerial Economics	5	4
IBSM 4 250	Basics of Healthcare Economics	5	3
IBSM 4 247	International Trade	5	3
IBSM 4 248	Service Management	5	4
IBSM 3 251	Healthcare Service Management	5	4
IBSM 4 253	Oman Sailing, Adventure and Tourism	5	4
IBSM 4 252	Total Quality Management	5	4

Note: Not every course is offered every semester.

Bachelor of Science in Logistics

The Bachelor of Science in Logistics combines an education in business and general management with an introduction to the fields of logistics and supply chain management. It provides a solid and in-depth knowledge of logistics, supply chain management, and transportation management. The programme is tailored to the requirements of the Sultanate of Oman and the region yet draws on state-of-art expertise accumulated at RWTH Aachen University. A strong emphasis is placed on the employability of GUtech's graduates. Many elements of the programme are therefore accomplished in cooperation with local and international industry partners. Also, generic skills such as critical thinking, creative thinking, life-long learning, intercultural communication, and teamwork are seen as essential and are integrated throughout the curriculum.

Courses are taught by faculty staff based in Muscat together with visiting professors from RWTH Aachen University or other renowned universities. The language of the degree programme is English, including written and oral tests, seminar papers and the bachelor's thesis.

The main focus of the first four semesters is to introduce students to the field of logistics and to convey the fundamentals of the study programme in mathematics, statistics, computer sciences and core business subjects. In the last four semesters, the study programme covers all other basic fields in business administration, economics, management, and the most relevant concepts, methods, and applications of logistics. Students of the Bachelor of Science in Logistics receive an interdisciplinary education, focusing on the knowledge of fundamental theoretical concepts as well as the development of applied competencies required for the design and management of logistics networks, for supplier management, production and transportation logistics, intra-logistics, for example. This well-rounded education allows graduates to work as logistics managers, distribution managers, or supply chain managers in a multitude of areas in industry or government. Other employment fields are sales, customer service, procurement, or industry analysis. Potential employers can be found among transportation and logistics service providers, airlines, rail operators, retailers, wholesalers, and producers in the manufacturing industry. The current major infrastructure projects in the region will further raise the demand for highly qualified specialists in the field of logistics.

Programme-specific graduate attributes and skills:

Graduates from the Bachelor of Science in Logistics will also have developed the following attributes and skills:

- *Knowledge about business methods and theories* – Graduates have gained a sound knowledge of the most important business and management theories. They understand and evaluate central functions of a business and are also able to relate individual business questions to a wider economic and social context.
- *Understanding of logistics* – Graduates have developed an understanding of the various aspects of logistics, and they have acquired knowledge of methods and analytical tools to conceptualize, to communicate, to manage, and to solve logistics problems such as optimization tasks that are characteristic in this field.
- *Quantitative orientation* – Graduates are able to apply diverse optimisation and simulation techniques and they have also learned to analyse quantitative data. They have a basic understanding of formal modelling approaches as they are used in the logistics scientific literature, and they possess the necessary computer skills to solve quantitative problems using logistics and supply chain management software.
- *Thinking in logistics contexts* – Graduates can utilise their knowledge to analyse practical problems. They can extract the main issues underlying a particular logistics problem, structure these for a deeper analysis, and know which solution methods are suitable. They also know how to use relevant sources of information and how to search in the literature. They critically reflect available solutions and are aware of the limits of their own analysis.
- *Management and entrepreneurial skills* – Graduates have developed the knowledge and skills to work in a responsible position of an established corporate structure as well as in a start-up or emerging business, in particular in the field of logistics service providers.

BSc in Logistics

Semester	Course Code	Course Name	ECTS Credit Points	Weekly Contact Hours
1	LOG 1 101	Maths 1: Calculus	6	6
	LOG 1 102	Logistics Management	7	4
	LOG 1 103	The Business Environment	5	3
	LOG 1 104	Microeconomics	5	4
	LOG 1 144	Financial Accounting	5	4
	LS 1 xxx	Life Skills Course	4	4
2	LOG 1 106	Maths 2: Linear Algebra	6	6
	LOG 1 115	Production Logistics, and Transportation Management.	5	4
		Marketing	5	3
	LOG 1 121	Statistics	6	4
	LOG 1 146	Decision Theory	5	4
	LOG 1 110	Life Skills Course	4	4
	LS 1 xxx			
3	LOG 2 108	Operations Research and Management	5	4
	LOG 2 120	Human Resource Management	5	3
	LOG 2 118	IT Systems in Logistics	5	3
	LOG 2 107	Modelling Language	2	2
	LOG 2 123	Strategic Management	6	3
	LS 2 xxx	Life Skills Course	4	4
	LS 2 xxx	Life Skills Course	4	4
4	LOG 2 117	Supply Chain Management	5	4
	LOG 2 114	Distribution Networks	5	4
	LOG 2 116	Management Accounting	5	4
	LOG 2 113	Business Law	4	3
	LOG 2 112	Procurement	6	3
	LS 2 xxx	Life Skills Course	4	4
5	LOG 3 122	Industrial Projects in Logistics	8	4
	LOG 3 128	Production Logistics	5	4
	LOG 3 124	Transportation and Traffic	4	3
	LOG 3 125	Project Management	4	3
	LOG 3 126	Entrepreneurship and Innovation	4	2
	LS 3 xxx	Life Skills Course	4	4
6	LOG 4 132	Material Flows and Intra-Logistics	6	4
	LOG 4 135	Applied Economics	5	4
	LOG 4 136	Leadership	5	2
	LOG 3 119	Macroeconomics	5	4
	LOG 3 129	Finance and Investment	5	4
		Elective 1	5	4
Summer	LOG 4 127	Internship	15	
7	LOG 4 145	Warehouse and Inventory Management	5	3
	LOG 4 131	Research Methods	2	3
	LOG 4 134	Factory Planning	5	4
	LOG 4 133	Revenue Management	6	4
		Elective 2	5	4
		Elective 3	5	4
8	LOG 4 137	Bachelor Thesis	12	-
	LOG 4 138	Colloquium	3	-

Notes: The order in which courses are offered is subject to change. Not every course is offered every semester.

Electives 1-3: to be chosen from the following courses:

LOG 4 230	Automotive Logistics	5	4
LOG 4 239	Railway Logistics	5	4
LOG 4 240	Airport Logistics	5	4
LOG 4 241	Container Terminals	5	4
LOG 4 242	Advanced Operations & Research Management	5	4
LOG 4 243	Inventory Management	5	4
LOG 4 244	Shipping Commercial Practice	5	4
LOG 4 245	International Excursion	5	4
LOG 4 246	Ocean Shipping and Maritime Logistics	5	4
LOG 4 248	Optimisation Applications in Logistics	5	4
LOG 4 252	Total Quality Management	5	4

Note: Not every course is offered every semester.

Master of Business Administration (MBA)

The MBA is a double degree which is jointly offered by GUtech and the Executive Academy of Vienna University for Economics and Business (WU). It is an international double degree that brings together the outstanding international status of the Executive Academy, with 23,000 students and accreditations from AACSB, EQUIS, and AMBA, and GUtech with its full understanding of the Omani economics landscape.

The MBA is designed for professionals with work experience and offers courses in leadership, organisation, strategy, and finance. Student may also specialise in Entrepreneurship, or International Tourism Management, or Logistics, Operations and Supply Chain Management.

The programme lasts for 24 months and is delivered in blocks of 4 days per month from Thursday to Sunday. These four days are supported by pre-module and post-module work. The programme has a modular blended learning approach including case studies, business simulations, presentations, and interactive class work

Course Code	Course Name	ECTS Credit Points
MBA 5 001	Managing People and Organisations	5
MBA 5 002	Financial Management	5
MBA 5 003	Advanced Financial Management	5
MBA 5 004	Competitive Analysis and Strategy	5
MBA 5 005	Strategic Marketing Management	5
MBA 5 006	Managerial Economics	5
MBA 5 007	Operations Management	5
MBA 5 008	Entrepreneurship and Innovation	5
MBA 5 010	Business and Society	5
MBA 5 013	International Business	5
MBA 5 014	Logistics and Supply Chain Management	5
MBA 5 015	Business Laws and Regulations in Oman	5
MBA 5 016	Business Intelligence and Analytics	5
MBA 5 018	Master Thesis	15

Faculty of Engineering and Computer Science

Dean - Assoc. Prof. Dr. Nafaa Jabeur

Department of Computer Science – Head of Department - Assoc. Prof. Dr. Nafaa Jabeur

Bachelor of Science in Computer Science

The Bachelor of Science in Computer Science programme focuses on integrating theoretical and applied aspects of computing, an emphasis on the interaction with engineering, culture, and communication, as well as a solid understanding of the business context in which this technology is developed and applied. Many elements of the programme are accomplished in cooperation with local and international industry partners. Also, generic skills such as critical thinking, creative thinking, life- long learning, intercultural communication, and teamwork are seen as essential and are integrated throughout the curriculum.

The Bachelor of Science in Computer Science programme includes management courses from the first year on. Students are also offered a wide range of elective courses that enable them to specialise according to their own interests. In particular, interdisciplinary specialisations with other study programmes at GUtech are encouraged.

An important aspect of the degree programme is its balance between theoretical foundations of computer science and practical applications. Most courses include practical exercises (which are often programming laboratories) and/or case studies. The programme also includes two seminar courses intended to train the analysis and presentation skills of students, a programming project in the web design area, and two in-depth laboratory courses in which students learn teamwork and management skills as well as interdisciplinary cooperation with application partners. In the thesis project, which takes place during the last year of the programme, students apply their acquired knowledge and skills to a specific problem taken from research, business, or industry. Interaction with research and industry is integrated into the normal coursework, especially laboratory courses taught by guest lecturers and project tasks.

Programme-specific graduate attributes and skills:

Graduates from the Bachelor of Science in Computer Science will also have developed the following attributes and skills that will allow them to work successfully in the IT industry or proceed with postgraduate education within the Sultanate of Oman and abroad.

- *Knowledge and understanding of computer science* – Graduates have gained a broad and sound knowledge in mathematics, computer science and business, enabling them to understand the phenomena characteristic to computer science and its applications in the information technology and business world. In particular, the graduates have gained the ability to look at computer science challenges from both the technical and the business perspectives, and they can adapt quickly to the continuous changes in the computer science field.
- *Computer science analysis and modelling* – Graduates are able to identify, formulate and solve problems particular to computer science with full knowledge of the limitations of computation. In particular, they have the capacity to select from alternative solutions to problems. Graduates are also able to analyse products, processes and methods used in their discipline based on scientific facts. They know how to select suitable methods of analysing, modelling, simulating and optimising and apply them with a high degree of competence.
- *Software Design* - Graduates have developed the ability to design computer programs or processes according to specified requirements. They have developed a practically oriented understanding of software design methods and the ability to apply them in a competent manner; in particular, they have knowledge of and practical experience with several computer programming languages and they can plan and carry out software projects.

- *Investigations and assessment* – Graduates are able to carry out literature research and know how to use scientific databases and other sources of information for their work; in particular, they have developed the skills to identify and employ suitable software tools for their work and pursue in-depth work in a self-elected application domain.
- *Computer science practice* – Graduates have developed the ability to deal with the different kinds of challenges that may appear in the design, development, and implementation of computer science applications, including software design and development, data and communication technology, usability a n d security engineering, and management challenges of large software systems. Graduates are able to plan, control and monitor IT applications and to develop and operate computer systems and equipment; they are also able to independently consolidate the knowledge gained and are aware of the non-technical (e.g., ethical) effects of IT activities.

BSc in Computer Science

Semester	Course Code	Course Name	ECTS Credit Points	Weekly Contact Hours
1	CS 1 101	Programming Fundamentals	8	6
	CS 1 102	Computer Architecture	7	5
	CS 1 145	Maths 1: Calculus	6	6
	CS 1 103	Introduction to Business Management	3	2
	LS 1 xxx	Life Skills Course	4	2
2	CS 1 107	Data Structures	8	6
	CS 1 146	Maths 2: Linear Algebra	6	6
	CS 1 113	Computer Applications in Business	3	2
	CS 1 118	Logic	4	4
	CS 1 119	Discrete Structures	4	4
	LS 1 xxx	Life Skills Course	4	2
3	CS 2 158	Probability and Statistics	6	5
	CS 2 109	Efficient Algorithms	4	3
	CS 2 114	Database Systems	7	6
	CS 2 145	Accounting and Controlling	5	3
		Business Elective(s)	5	4
	LS 2 xxx	Life Skills Course	4	2
4	CS 2 152	Software Engineering	8	6
	CS 2 134	Introduction to Information Security	7	5
	CS 2 120	Numerical Computation	6	4
	CS 2 106	Proseminar	3	0.5
		General Elective(s)	4	4
	LS 2 xxx	Life Skills Course	4	2
5	CS 3 117	Operating Systems	7	5
	CS 2 111	Theory of Computing	7	5
	CS 2 110	Web Design and Development	7	5
		Business Elective(s)	5	4
	LS 3 xxx	Life Skills Course (Entrepreneurship)	4	2
6	CS 3 160	Mobile Applications	6	4
	CS 3 155	Computer Networks	7	5
	CS 4 130	Research Methods	5	4
	LS 3 xxx	Computing Elective(s)	7	5
	CS 2 123	Decision Theory	5	4

Summer	CS 4 133	Internship	9	
7	CS 4 125	Interactive Systems & Computer Graphics	7	5
	CS x xxx	Theory Elective(s)	7	5
	CS 3 129	Seminar	4	0.5
	CS x xxx	Computing Elective(s)	7	5
	LS x xxx	LS course	4	2
8	CS 4 131	Bachelor Thesis	12	2
	CS 4 132	Bachelor Thesis Colloquium	3	2
	CS x xxx	Computing Elective(s)	7	6

Notes: The order in which courses are offered is subject to change. Not every course is offered every semester.

List of courses counting as Computing Electives

Course Code	Course Name	ECTS Credit Points	Weekly Contact Hours
CS 4 240	Advanced Game Design and Development	7	6
CS 4 256	Advanced Mobile Computing	7	6
CS 4 250	Analytical Information Systems	7	6
CS 4 236	Data Mining Algorithms	7	6
CS 3 253	Distributed Applications and Middleware	7	6
CS 4 237	Embedded Systems	7	5
CS 4 238	Implementation of Databases	7	6
CS 3 265	Information Theory & Data Compression	5	3
CS 3 266	Introduction to Artificial Intelligence	7	5
CS 3 226	Introduction to Game Design and Development	7	6
CS 3 234	Introduction to Information Security	7	5
CS 3 264	Introduction to Parallel Computing	7	4
CS 3 258	Introduction to Web Content Management Systems	7	6
CS 4 239	Object-Oriented Software Design Patterns	7	6
CS 3 259	Programming Languages	7	6
CS 3 262	Wireless Sensor Networks	7	6
CS 3 241	Introduction to GIS for CS	7	6
CS 3 267	Essentials of Cyber Security	7	6
CS 3 271	Advanced Mobile Applications	7	6
CS 3 272	Data Analytics and Visualisation	7	6
CS 3 273	Introduction to Cloud Computing	7	6
CS x xxx	Topics in Applied Computer Science	7	6
CS x xxx	Topics in Software Engineering	7	6
CS x xxx	Topics in AI	7	5
CS x xxx	Topics in Cyber Security	7	5
CS x xxx	Advanced IT courses from other GUtech programmes (e.g., GIS from Applied Geosciences)		
CS 3 242	Internet of Things	7	5
CS 4 275	Extended Reality	7	5

List of courses counting as Theory Electives

Course Code	Course Name	ECTS Credit Points	Weekly Contact Hours
CS 3 257	Analysis and Design of Information Systems	7	5
CS 3 261	Advanced Algorithms	7	6
CS 4 447	Applied Automata Theory	7	6
CS 4 448	Combinatorial Optimisation	7	6
CS 4 449	Computational Geometry	7	6
CS 3 469	Cryptography and Blockchain	7	6
CS x xxx	Topics in Theoretical Computer Science	7	6

List of courses counting as Business Electives

Course Code	Course Name	ECTS Credit Points	Weekly Contact Hours
CS 3 324	Investment and Finance	5	4
CS 3 312	Logistics	5	4
CS 3 344	Marketing	5	4
CS 3 322	Organisation and Human Resources	5	4
CS 3 346	Strategic Business Planning	5	4
CS 3 367	AI for Business	4	4
CS 3 370	Introduction to Business Intelligence	5	4
CS x xxx	Topics in Business	5	4

Note: Not every course is offered every semester

Bachelor of Science in Artificial Intelligence

The Bachelor of Science in Artificial Intelligence programme provides students with a sound theoretical and practical foundation in the relevant fields of computer science. Throughout the programme, students will gain experience with all aspects of computers, from chips to software, networks, and communications. In addition, students will focus on AI and related topics, which will be their main field of expertise, and which will differentiate them from thousands of their peers in the local and regional labour market. Students will also have skills and attributes to research, design, and develop computing components within real business opportunities and to support such ventures through entrepreneurial private, government and civil society initiatives. The programme also offers a set of courses in management and business, which may help graduates to better assume positions of leadership and responsibility in their organisations. The graduates of the programme will be ready to enrol in postgraduate studies in the field of AI in particular or computer science in general, in any local and international university. To meet this end, the programme was developed in cooperation with RWTH Aachen University. Furthermore, the academic standards of the programme will be regularly reviewed by academic staff from GUtech, RWTH Aachen as well as by panels of experts, e.g., from international accreditation agencies. A strong emphasis is placed on the employability of graduates of the programme. Therefore, many elements of the programme will be accomplished in cooperation with local and international industry partners. Also, generic competencies, such as critical thinking, creative thinking, life-long learning, intercultural communication, and teamwork are seen as essential and are integrated throughout the curriculum.

The graduate attributes and skills that the graduates are expected to develop during their postgraduate studies are divided into attributes and skills that build on the core values of the University and attributes and skills that are specific to the study programme. A focus is set on developing entrepreneurial skills matching national priorities for a profitable and sustainable growth. The generic attributes and skills that build on the core values of the University are the same for all study programmes at GUtech.

In addition, graduates from the Bachelor of Science in Artificial Intelligence (BSc AI) programme will also have developed the following attributes and skills:

- *Knowledge and understanding of computer science* – Graduates have gained a broad and sound knowledge in mathematics, computer science and business, enabling them to understand the phenomena characteristic to computer science and its applications in the information technology and business world. In particular, the graduates have gained the ability to look at computer science challenges from both the technical and the business perspectives, and they can adapt quickly to the continuous changes in the computer science field.

- *Computer science analysis and modelling* – Graduates are able to identify, formulate and solve problems particular to computer science with full knowledge of the limitations of computation. In particular, they have the capacity to select from alternative solutions to problems; graduates are also able to analyse products, processes and methods used in their discipline based on scientific facts; they know how to select suitable methods of analysing, modelling, simulating, and optimising and apply them with a high degree of competence.

- *Software design* – Graduates have developed the ability to design computer programs or processes according to specified requirements. They have developed a practically oriented understanding of software design methods and the ability to apply them in a competent manner. In particular, they have knowledge of and practical experience with several computer programming languages and they can plan and carry out software projects.

- *Investigations and assessment* – Graduates are able to carry out literature research and know how to use scientific databases and other sources of information for their work; in particular, they have developed the skills to identify and employ suitable software tools for their work and pursue in-depth work in a self-elected application domain.

- *Computer science practice* – Graduates have developed the ability to deal with the different kinds of challenges that may appear in the design, development, and implementation of computer science applications, including software design and development, data and communication technology, usability and security engineering, and management challenges of large software systems. Graduates are able to plan, control and monitor IT applications and to develop and operate computer systems and equipment. They are also able to independently consolidate the knowledge gained and are aware of the non-technical (e.g., ethical) effects of IT activities.

- *Knowledge and understanding of AI* - Graduates have demonstrated an understanding of all the main areas of Machine Learning and AI and have also demonstrated the ability to exercise critical judgement in the evaluation of Machine Learning and AI applications.

- *AI practice* - Graduates are able to apply a critical understanding of essential concepts, principles and practices of Machine Learning and AI, and critically evaluate the results to justify the selection and use of tools and techniques.

BSc in Artificial Intelligence

Semester	Course Code	Course Name	ECTS Credit Points	Weekly Contact Hours
1	CS 1 101	Programming Fundamentals	8	6
	CS 1 102	Computer Architecture	7	5
	CS 1 145	Maths 1: Calculus	6	6
	CS 1 103	Introduction to Business Management	3	2
	LS 1 xxx	Life Skills Course	4	2
2	CS 1 107	Data Structures	8	6
	CS 1 146	Maths 2: Linear Algebra	6	6
	CS 1 113	Computer Applications in Business	3	2
	CS 1 118	Logic	4	4
	CS 1 119	Discrete Structures	4	4
	LS 1 xxx	Life Skills Course	4	2
3	CS 2 158	Probability and Statistics	6	5
	CS 2 109	Efficient Algorithms	4	3
	CS 2 114	Database Systems	7	6
	CS 2 145	Accounting and Controlling	5	3
		Business Elective(s)	5	4
	LS 2 xxx	Life Skills Course	4	2
4	CS 2 152	Software Engineering	8	6
	CS 2 134	Introduction to Information Security	7	5
	CS 2 120	Numerical Computation	6	4
	CS 2 106	Proseminar	3	0.5
		General Elective(s)	4	4
	LS 2 xxx	Life Skills Course	4	2
5	CS 3 117	Operating Systems	7	5
	CS 2 111	Theory of Computing	7	5
	CS 2 110	Web Design and Development	7	5
		Business Elective(s)	5	4
	LS 3 xxx	Life Skills Course (Entrepreneurship)	4	2
6	CS 3 160	Mobile Applications	6	4
	CS 3 155	Computer Networks	7	5
	CS 4 130	Research Methods	5	4
	LS 3 xxx	Computing Elective(s)	7	5
	CS 2 123	Decision Theory	5	4
Summer	CS 4 133	Internship	9	
7	AI 4 106	Decision Making for Autonomous Systems	7	5
	AI 4 108	Cognitive Computing	5	4
	AI 4 105	AI Seminar	4	4
	AI 4 xxx	AI Elective 2	7	5
	LS x xxx	LS course	4	2
8	CS 4 131	Bachelor Thesis	12	2
	CS 4 132	Bachelor Thesis Colloquium	3	2
	AI 4 107	Special Topic in AI	5	4

Notes: The order in which courses are offered is subject to change. Not every course is offered every semester.

List of courses counting as Artificial Intelligence Electives

Course Code	Course Name	ECTS Credit Points	Weekly Contact Hours	Comments
AI 4 569	Introduction to Natural Language Processing	7	5	Level 3-4 Advanced Studies
AI 4 570	Computer Vision	7	5	
AI 4 571	Knowledge Engineering in AI	7	5	
AI 4 568	Big Data Analytics	7	5	
CS 3 242	Internet of Things	7	5	
CS 3 469	Cryptography and Blockchain	7	5	
CS 4 275	Extended Reality	7	5	

Note: Not every course is offered every semester.

Bachelor of Science in Cyber Security

The programme of Cyber Security provides students with a sound theoretical and practical foundation in the relevant fields of computer science. Throughout the programme, students will gain experience with all aspects of computers, from chips to software, networks, and communications. In addition, students will focus on Cyber Security and related topics, which will be their main field of expertise, and which will differentiate them from thousands of their peers in the local and regional labour market.

Students will also have skills and attributes to research, design, and develop computing components within real business opportunities and to support such ventures through entrepreneurial private, government and civil society initiatives. The programme also offers a set of courses in management and business, which may help graduates to better assume positions of leadership and responsibility in their organisations.

The graduates of the programme will be ready to enrol in postgraduate studies in the field of Cyber Security in particular or computer science in general, in any local and international university. To meet this end, the programme was developed in cooperation with RWTH Aachen University. Furthermore, the academic standards of the programme will be regularly reviewed by academic staff from GUtech, RWTH Aachen as well as by panels of experts, e.g., from international accreditation agencies.

A strong emphasis is placed on the employability of graduates of the programme. Therefore, many elements of the programme will be accomplished in cooperation with local and international industry partners. Also, generic competencies, such as critical thinking, creative thinking, life-long learning, intercultural communication, and teamwork are seen as essential and are integrated throughout the curriculum.

The graduate attributes and skills that the graduates are expected to develop during their postgraduate studies are divided into attributes and skills that build on the core values of the University and attributes and skills that are specific to the study programme. A focus is set on developing entrepreneurial skills matching national priorities for a profitable and sustainable growth.

The generic attributes and skills that build on the core values of the University are the same for all study programmes at GUtech. In addition, graduates from the Bachelor of Science in Cyber Security (BSc CYS) programme will also have developed the following attributes and skills:

- *Knowledge and understanding of computer science* – Graduates have gained a broad and sound knowledge in mathematics, computer science and business, enabling them to understand the phenomena characteristic to computer science and its applications in the information technology and business world. In particular, the graduates have gained the ability to look at computer science challenges from both the technical and the business perspectives, and they can adapt quickly to the continuous changes in the computer science field.
- *Computer science analysis and modelling* – Graduates are able to identify, formulate and solve problems particular to computer science with full knowledge of the limitations of computation; in particular, they have the capacity to select from alternative solutions to problems. Graduates are also able to analyse products, processes and methods used in their discipline based on scientific

facts, and they know how to select suitable methods of analysing, modelling, simulating and optimising and apply them with a high degree of competence.

- *Software design* – Graduates have developed the ability to design computer programs or processes according to specified requirements. They have developed a practically oriented understanding of software design methods and the ability to apply them in a competent manner. In particular, they have knowledge of and practical experience with several computer programming languages and they can plan and carry out software projects.

- *Investigations and assessment* – Graduates are able to carry out literature research and know how to use scientific databases and other sources of information for their work. In particular, they have developed the skills to identify and employ suitable software tools for their work and pursue in-depth work in a self-elected application domain.

- *Computer science practice* – Graduates have developed the ability to deal with the different kinds of challenges that may appear in the design, development and implementation of computer science applications, including software design and development, data and communication technology, usability and security engineering, and management challenges of large software systems. Graduates are able to plan, control and monitor IT applications and to develop and operate computer systems and equipment; they are also able to independently consolidate the knowledge gained and are aware of the non-technical (e.g., ethical) effects of IT activities.

- *Knowledge and understanding of Cyber Security* - Graduates have demonstrated an understanding of the main principles of Cyber Security and have also demonstrated the ability to evaluate the security needs of an organisation and assess its cyber security risks.

- *Cyber Security practice* - Graduates are able to apply a critical understanding of essential concepts, principles and practices of cyber security, and critically evaluate the results to justify the selection and use of tools and techniques to protect the organisation from cyber risks and attacks.

BSc in Cyber Security

Semester	Course Code	Course Name	ECTS Credit Points	Weekly Contact Hours
1	CS 1 101	Programming Fundamentals	8	6
	CS 1 102	Computer Architecture	7	5
	CS 1 145	Maths 1: Calculus	6	6
	CS 1 103	Introduction to Business Management	3	2
	LS 1 xxx	Life Skills Course	4	4
2	CS 1 107	Data Structures	8	6
	CS 1 146	Maths 2: Linear Algebra	6	6
	CS 1 118	Logic	4	4
	CS 1 119	Discrete Structures	4	4
	CS 1 113	Computer Applications in Business	3	2
	LS 1 xxx	Life Skills Course	4	4
3	CS 2 158	Probability and Statistics	6	5
	CS 2 109	Efficient Algorithms	4	3
	CS 2 114	Database Systems	7	5
	CS 2 145	Accounting and Controlling	5	3
	CS x xxx	Business Elective(s)	5	3
	LS 2 xxx	Life Skills Course	4	4
4	CS 2 152	Software Engineering	8	6
	CS 2 134	Introduction to Information Security	7	5
	CS 2 120	Numerical Computation	6	5
	CS 2 106	Proseminar	3	0.5
	Xx x xxx	General Elective(s)	4	4
	LS x xxx	Life Skills Course	4	2
5	CS 3 117	Operating Systems	7	5
	CYS 3 101	Web and Mobile app security	7	5
	CYS 3 102	Cyber Crime Investigations and Forensics	7	5
	CYS 3 103	Ethical Hacking	7	5
	LS 3 xxx	Life Skills Course (Entrepreneurship)	4	2
6	CYS 3 104	Applied Cryptography	7	5
	CS 3 155	Computer Networks	7	5
	CS 4 130	Research Methods	5	4
	CYS 3 105	Cyber Security Risk Management	6	4
	LS 3 xxx	Life Skills Course	4	2
Summer	CS 4 133	Internship	9	
7	CYS 3 106	Network Security: VPN and Firewalls	7	5
	CYS 4 110	Data Storage Privacy and Security	5	4
	CYS 4 107	Cyber Security Seminar	4	2
	CYS 4 xxx	Cyber Security Elective(s)	7	5
	CYS 4 108	Disaster Recovery and Business Continuity	7	5
8	CS 4 131	Bachelor Thesis	12	2
	CS 4 132	Thesis Colloquium	3	2
	CYS 4 109	Special Topic in Cyber Security	5	4

Notes: The order in which courses are offered is subject to change. Not every course is offered every semester.

List of courses counting as Cyber Security Electives

Course Code	Course Name	ECTS Credit Points	Weekly Contact Hours	Comments
CYS 4 672	IT Security and System Auditing	7	5	Level 3-4 Advanced Studies
CS 3 242	Internet of Things	7	5	
CS 3 469	Cryptography and Blockchain	7	5	
CS 4 275	Extended Reality	7	5	

Note: Not every course is offered every semester.

Master of Science in Computer Science

The vision of the Master of Science in Computer Science (MSc CS) degree programme is to prepare students for leadership roles in the computer science field with a focus on applied technology innovation. The programme will provide students with a concrete foundation in the science, innovation, application, and management of computer science applications to solve problems across a range of disciplines.

The Master of Science in Computer Science is tailored to the requirements of the Sultanate of Oman and the region. It focuses on two strategic sectors in Oman, namely innovation in technology and management and data science. The programme utilises existing expertise at GUtech in these fields. The Master programme takes advantage of the strategic direction of the Sultanate of Oman towards industrialisation and entrepreneurship in the field of information technology.

The Master of Science in Computer Science focuses on theoretical and applied knowledge in technology management and the development of emerging IT technologies, in data intelligence and network and data security. There is a strong emphasis on innovation, sustainability, and business development. Theoretical knowledge is complemented by practical knowledge obtained in internships in Oman and abroad.

A strong emphasis is placed on the employability of graduates of the programme. Therefore, many elements of the programme will be accomplished in cooperation with local and international industry partners. Also, generic competencies, such as critical thinking, creative thinking, life-long learning, intercultural communication, and teamwork are essential and are integrated throughout the curriculum.

Students will take most their courses in the Sultanate of Oman. Courses will be taught by faculty based in Muscat as well as visiting professors from RWTH Aachen University and other renowned universities. The language of tuition is English.

The Master of Science in Computer Science (MSc CS) encompasses a workload equivalent to 120 credit points in the European Credit Transfer System (ECTS), or equivalently 300 credit points in the Oman Qualification Framework (OQF), distributed over four semesters of full-time study. Part-time students can take the same courses over a period of four years, instead. One ECTS credit point is equivalent to 2.5 OQF credit points, and one ECTS credit point corresponds to an average student workload of 25 hours.

In the first three semesters of full-time study, students will in each semester earn 24 ECTS credit points from course work and internships and 6 ECTS credits points from a research and thesis preparation course. In the fourth semester, the students will earn 30 ECTS credit points from a Master's thesis and its defence in a Thesis Colloquium. Internships will usually be scheduled outside of the regular teaching period.

To accommodate part-time students, courses may be scheduled in several compact blocks of classroom lectures with plenty of self-study time in between for assignments and projects, e.g., students may spend approximately one week per month at GUtech to attend lectures. Typically, each course will earn 6 ECTS credit points and will run for eight weeks (i.e., half a semester), with two courses running in parallel. This will result in a semester course load of four courses with a total of 24 ECTS credit points. The remaining 6 ECTS credits come from the research and thesis preparation course which runs every semester. Part-time students may choose to take fewer classes.

The courses are divided into five knowledge areas: Management; Network Security; Emerging Technologies; Development; and Research. Two courses from each area are designated as core course mandatory for all students. The remaining courses are electives, and the students can choose them freely per their specialisation. The Technology Management (MSc CSTM) specialisation requires students to take at least 8 courses from the areas Management and Emerging Technologies, while the Data Science (MSc CSDS) specialisation requires students to take at least 8 courses from the areas Network Security and Development.

The Master of Science in Computer Science (MSc CS) programme combines comprehensive academic and theoretical knowledge in the development and management of large computer science systems with practical knowledge from industries that are using these new technologies with a special focus on business development and entrepreneurship. Students graduating from the MSc CS programme will have acquired the aptitude to:

1. **Innovation**: Evaluate, select, and use new processes and emerging technologies to innovate new computer science products that can help attain the enterprise business and operational goals

2. **Research**: Develop leadership in new computer science related products, applications, and services and solve real world challenges through research and innovation.

3. **Development**: Plan, analyse, design, and deliver enterprise level computer science systems, data, and applications using the latest best practices.

4. **Management**: Articulate, manage and communicate strategic and tactical plans for the computing and information systems of the business enterprise to attain the goals and objectives of the organisation. Further develop the art of teamwork: Function effectively and succeed within diverse teams and professionalism with the highest ethical standards

This is a career-oriented programme and students will be equipped with important generic skills such as ethical, critical and creative thinking, problem solving, design, communication and team working in addition to skills and knowledge special for this programme, i.e. applied and practical knowledge, focus on innovation, feasibility analysis, cost evaluation and entrepreneurial skills, as well as analytical and reflective thinking. Graduates of the programme will be able to take over responsible technical and management positions in industries employing large computer systems.

Graduates from the Master in Computer Science will also have developed the following specific attributes and skills:

- *Specialised knowledge* - Graduates can use appropriate methods and tools to construct and evaluate IT solutions for a given business problem by means of research and innovation. They can design, develop and evaluate advanced technical products and architectures of IT systems and software and generate all required technical documents.

- *Data Science* - Graduates are familiar with networks, network management and security, and technologies for storing and analysing large data sets, which are essential for understanding cyber-physical systems and the Internet of Things.

- *Entrepreneurship* - Graduates can formulate and evaluate IT strategic plans to achieve stated operational and strategic business goals.

- *Management* - Graduates can apply and assess key management methods of IT software and security infrastructure given operational and strategic business goals. They have a clear methodology for managing projects by understanding the issues of risk management, on-time project delivery, cost analysis and, fundamental for a good manager, the capabilities for understanding and managing people.

- *Innovation* - Graduates can explain the theory and science of new IT technologies and standards and develop new IT applications and processes for various business scenarios.

- *Analytical and reflective thinking* - Graduates understand the complexity of managing large IT infrastructure. The graduates can critically assess and carefully consider the cultural, economic, sociological, and ethical impact of global IT business activities.

- *CS ethics* - Graduates understand and apply the Code of Ethics and Professional Practice of the IT profession.

Study Plan for MSc Computer Science (CS)

Code	Name	Credit Points
CS 5 101	Advanced Analysis and Design of Information Systems	6
CS 5 102	Ethics and Policies	6
CS 5 103	Machine Learning	6
CS 5 104	Research and Thesis Preparation 1	6
CS x xxx	Elective 1	6
CS 5 105	Advanced Database Systems	6
CS 5 106	Advanced Topics in Networks	6
CS 5 107	Research and Thesis Preparation 2	6
CS x xxx	Elective 2	6
CS x xxx	Elective 3	6
CS 5 108	Technology Strategic Management	6
CS 5 109	Research and Thesis Preparation 3	6
CS x xxx	Elective 4	6
CS x xxx	Elective 5	6
CS x xxx	Elective 6	6
CS 5 110	Colloquium	30
CS 5 111	Thesis	
		120

Study Plan for MSc Computer Science – Data Science

Code	Name	Credit Points
CS 5 101	Advanced Analysis and Design of Information Systems	6
CS 5 102	Ethics and Policies	6
CS 5 103	Machine Learning	6
CS 5 104	Research and Thesis Preparation 1	6
CS x xxx	Elective 1	6
CS 5 105	Advanced Database Systems	6
CS 5 106	Advanced Topics in Networks	6
CS 5 107	Research and Thesis Preparation 2	6
CS x xxx	Elective 2 - Recommend CS 5 201 Big Data Analytics	6
CS x xxx	Elective 3	6
CS 5 109	Research and Thesis Preparation 3	6
CS 5 108	Technology Strategic Management	6
CS x xxx	Elective 4 - Recommend CS 5 202 Data Modelling and Presentation	6
CS x xxx	Elective 5 - Recommend CS 5 205 Data Visualisation for Data Scientists	6
CS x xxx	Elective 6 - Recommend CS 5 206 Statistics for Data Science and Business Analysis	6
CS 5 110	Colloquium	30
CS 5 111	Thesis	
		120

Study Plan for MSc Computer Science – Technology Management

Code	Name	Credit Points
CS 5 101	Advanced Analysis and Design of Information Systems	6
CS 5 102	Ethics and Policies	6
CS 5 103	Machine Learning	6
CS 5 104	Research and Thesis Preparation 1	6
CS x xxx	Elective 1 - Recommend CS 5 301 Project and Risk Management	6
CS 5 105	Advanced Database Systems	6
CS 5 106	Advanced Topics in Networks	6
CS 5 107	Research and Thesis Preparation 2	6
CS x xxx	Elective 2 - Recommend CS 5 302 Introduction to e-Government	6
CS x xxx	Elective 3	6
CS 5 109	Research and Thesis Preparation 3	6
CS 5 108	Technology Strategic Management	6
CS x xxx	Elective 4 - Recommend CS 5 304 Cloud Computing	6
CS x xxx	Elective 5 - Recommend CS 5 303 Cyber Physical Systems	6
CS x xxx	Elective 6	6
CS 5 110	Colloquium	30
CS 5 111	Thesis	

120

Electives

Code	Name	Credit Points
CS 5 201	Big Data Analytics	6
CS 5 202	Data Modelling and Presentation	6
CS 5 203	Network Forensics	6
CS 5 204	Network Security	6
CS 5 205	Data Visualisation for Data Scientists	6
CS 5 206	Statistics for Data Science and Business Analysis	6
CS 5 207	Advanced Software Engineering	6
CS 5 208	Advanced Algorithm Design	6
CS 5 209	Web System Integration	6
CS 5 301	Project and Risk Management	6
CS 5 302	Introduction to e-Government	6
CS 5 303	Cyber Physical Systems	6
CS 5 304	Cloud Computing	6
CS 5 312	Internship	6
CS 5 313	Connected Healthcare	6

Note: A required course in one specialisation can be taken as an elective in another programme.

Department of Engineering

Head of Department - Asst. Prof. Dr. Hind Barghash

Bachelor of Engineering in Environmental Engineering

Water scarcity is a serious threat to the Sultanate of Oman and the region. Drinking water supplies depend on extensive desalination. Currently, the Sultanate of Oman is also struggling with high levels of CO_2 emissions, soil and water salinity on the coastal plains, periodic droughts, and loss of wildlife, waste disposal problems, overgrazing and desertification. Therefore, the BEng programme in Environmental Engineering was introduced by GUtech, in close collaboration with RWTH Aachen University, the partner University of GUtech. The programme prepares graduates to face both local and international environmental challenges. In addition to their technical knowledge, the graduates develop all the skills and know-how to become entrepreneurs able to create jobs.

Programme-specific graduate attributes and skills:

Graduates from the Bachelor of Engineering in Environmental Engineering will also have developed the following attributes and skills that will allow them to carry out successfully the duties of an Environmental Engineer:

- *Knowledge and understanding of Engineering* – Graduates have gained a broad and sound knowledge in mathematics, science, and engineering, enabling them to understand the phenomena characteristic to Environmental Engineering. The graduates have also gained an understanding for the broader multi-disciplinary context of engineering sciences.
- *Environmental Impacts and Mitigation* – Graduates are able to identify, formulate and solve problems particular to surrounding environment based on the application of established scientific methods; Graduates are also able to analyse environmental impacts of products, processes and methods based on scientific facts; They know how to select suitable methods of analysing, modelling, simulating and optimising and apply them with a high degree of competence to mitigate negative impacts.
- *Green Innovation and Entrepreneurship* - Graduates have developed the ability to develop innovative ideas and transfer them to green business based on scientific facts; They have developed a practically oriented understanding of green businesses and the ability to apply them in a competent manner.
- *Investigations and assessment* – Graduates are able to carry out literature research and know how to use Geographic Information System (GIS) and other sources of information for their work; they have developed the skills to plan and carry out suitable experiments, interpret the data and draw suitable conclusions.
- *Engineering practice* – Graduates have developed the competencies to transfer new findings in engineering and natural sciences to sustainable development actions for Oman and the whole region, including sustainable water management, green buildings, renewable energy, waste management, and controlling air pollution; They are also able to independently consolidate the knowledge gained and are aware of the environmental related impacts of engineering activities and mitigation measures.

BEng in Environmental Engineering

Semester	Course Code	Course Name	ECTS Credit Points	Contact Hrs/week
1	ENG 1 145	Mathematics 1: Calculus	6	6
	ENG 1 102	Physics 1	5	5
	ENG 1 103	Chemistry 1	5	5
	ENG 1 143	Programming for Engineering	3	3
	ENG 1 146	Mathematics 2: Linear Algebra	6	6
	ENG 1 140	Project Work 1	3	3
	LS 1 xxx	Life Skills course	4	4
2	ENG 1 147	Mathematics 3: Advanced Calculus	6	6
	ENG 1 108	Physics 2	5	5
	ENG 1 109	Chemistry 2	5	5
	ENG 1 139	Engineering Drawing	3	3
	ENG 1 141	Engineering Principles and Calculation	4	4
	ENG 1 112	Project Work 2	4	3
	LS 1 xxx	Life Skills course	4	4
3	ENG 2 148	Mathematics 4: Numerical Mathematics	6	5
	ENG 1 114	Mechanics 1	5	5
	ENG 2 115	Electrical and Electronic Engineering	5	5
	ENG 2 116	Environmental Engineering	5	4
	ENG 2 120	Thermodynamics 1	5	5
	LS 2 xxx	Life Skills course	4	4
4	ENG 3 123	Material Science 1	6	5
	ENG 3 126	Fluid Dynamics	7	5
	ENG 2 119	Mechanics 2	5	5
	ENV 4 111	Environmental Law	2	3
	ENG 3 125	Thermodynamics Laboratory	4	3
	LS 2 xxx	Life Skills course	4	4
5	ENV 3 104	Global Changes & Sustainable Development	5	4
	ENV 3 108	Sea Water Desalination	6	5
	ENV 3 102	Hydrology and Water Resources	6	5
	ENV 3 103	Renewable Energy & Energy Efficiency	5	5
	ENV 3 105	Air Pollution Control	5	4
	LS 3 xxx	Life Skills course	4	4
6	ENG 2 117	Project Work 3	4	3
	ENV 3 106	Integrated Water Resources Management	6	5
	ENV 3 107	Solid Waste Management	6	5
	ENV 3 138	Introduction to GIS	3	1
	ENG 3 128	Measurement Techniques (laboratory)	4	3
	ENG 3 129	Business Engineering	3	3
	LS 3 xxx	Life Skills course	4	4
Summer	ENG 4 141	Internship	15	0
7	ENG 4 130	Research Methods	2	1
	ENG 2 121	Project Work 4	4	3
	ENX x xxx	Simulation Techniques	6	5
	ENV 3 109	Light and Noise Pollution	5	4
	ENV 4 xxx	Environmental Impact Assessment	5	4
	ENV 3 110	Green Buildings	6	5

8	ENG 4 133	Bachelor Thesis	12	2
	ENG 4 134	Colloquium	3	2
	ENV 3 101	Environmental Engineering Laboratory Methods	5	3

Notes: The order in which courses are offered is subject to change. Not every course is offered every semester.

Bachelor of Engineering in Mechanical Engineering

The Bachelor of Engineering in Mechanical Engineering at GUtech is tailored to the requirements of the Sultanate of Oman and the wider region, yet draws on state-of-the-art expertise accumulated at RWTH Aachen University, Germany, the partner University of GUtech. A strong emphasis of the programme is placed on the employability of GUtech's graduates. Many elements of the programme are accomplished in cooperation with local and international industry partners. Also, generic skills such as critical thinking, creative thinking, life-long learning, intercultural communication, and teamwork are seen as essential and therefore integrated throughout the curriculum.

Programme-specific graduate attributes and skills:

Graduates from the Bachelor of Engineering in Mechanical Engineering will also have developed the following attributes and skills that will allow them to carry out successfully the duties of a Mechanical Engineer:

- *Knowledge and understanding of Engineering* – Graduates have gained a broad and sound knowledge in mathematics, science, and engineering, enabling them to understand the phenomena characteristic to mechanical engineering. The graduates have also gained an understanding for the broader multi-disciplinary context of engineering sciences.
- *Engineering analysis* – Graduates are able to identify, formulate and solve problems particular to mechanical engineering based on the application of established scientific methods; Graduates are also able to analyse products, processes and methods used in their discipline based on scientific facts; They know how to select suitable methods of analysing, modelling, simulating and optimising and apply them with a high degree of competence.
- *Engineering design* – Graduates have developed the ability to design machinery, devices, programs or processes according to specified requirements; They have developed a practically oriented understanding of design methods and the ability to apply them in a competent manner.
- *Investigations and assessment* – Graduates are able to carry out literature research and know how to use data bases and other sources of information for their work; they have developed the skills to plan and carry out suitable experiments, interpret the data and draw suitable conclusions.
- *Engineering practice* – Graduates have developed the competencies to transfer new findings in engineering and natural sciences to industrial and commercial production under consideration of economic, ecologic and safety requirements; Graduates are able to plan, control and monitor processes and to develop and operate systems and equipment; They are also able to independently consolidate the knowledge gained and are aware of the non-technical effects of engineering activities.

BEng in Mechanical Engineering

Semester	Course Code	Course Name	ECTS Credit Points	Contact Hrs/week
1	ENG 1 145	Mathematics 1: Calculus	6	6
	ENG 1 146	Mathematics 2: Linear Algebra	6	6
	ENG 1 102	Physics 1	5	5
	ENG 1 103	Chemistry 1	5	5
	ENG 1 143	Programming for Engineering	3	3
	ENG 1 140	Project Work 1	3	3
	LS 1 xxx	Life Skills Course	4	4
2	ENG 1 147	Mathematics 3: Advanced Calculus	6	6
	ENG 1 108	Physics 2	5	5
	ENG 1 109	Chemistry 2	5	5
	ENG 1 139	Engineering Drawing	3	3
	ENG 1 141	Engineering Principles and Calculation	4	4
	ENG 1 112	Project Work 2	4	3
	LS 1 xxx	Life Skills Course	4	4
3	ENG 2 148	Mathematics 4: Numerical Mathematics	6	6
	ENG 2 114	Mechanics 1	5	5
	ENG 2 115	Electrical and Electronic Engineering	5	5
	ENG 2 116	Environmental Engineering	5	4
	ENG 2 120	Thermodynamics 1	5	5
	LS 2 xxx	Life Skills Course	4	4
4	ENG 1 104	Introduction to CAD	3	3
	MECH 2 101	Introduction to Mechanical Engineering	5	3
	ENG 2 119	Mechanics 2	5	5
	ENG 3 123	Material Science I	6	5
	ENG 3 126	Fluid Dynamics	7	5
	ENG 2 144	Thermodynamics 2	4	4
	LS 2 xxx	Life Skills Course	4	4
5	ENG 3 149	Mechanics 3	5	4
	MECH 3 103	Material Science 2	5	4
	MECH 3 102	Machine Design 1	5	4
	ENG 4 131	Heat & Mass Transfer	7	4
	ENG 3 125	Thermodynamics Laboratory	4	2
	LS 3 xxx	Life Skills Course	4	3
6	MECH 3 104	Machine Design 2	5	4
	ENG 4 132	Control & Automation	7	5
	ENG 3 128	Measurement Techniques (laboratory)	4	2
	ENG 3 129	Business Engineering	3	3
	ENG 2 117	Project Work 3	4	3
	LS 3 xxx	Life Skills Course	4	4
Summer	ENG 4 135	Internship	15	0
7	ENG 3 127	Simulation Techniques	6	5
	MECH 4 105	Production Technology	5	4
	ENG 4 130	Research Methods	2	1
	MECH 4 106	Machine Tools	5	4
	ENG 2 121	Project Work 4	4	3
8	ENG 4 133	Bachelor Thesis	12	2
	ENG 4 134	Colloquium	3	2
	MECH 4 107	Control and Automation Laboratory	4	2

Notes: The order in which courses are offered is subject to change. Not every course is offered every semester.

Bachelor of Engineering in Process Engineering

The Bachelor of Engineering in Process Engineering at GUtech is tailored to the requirements of the Sultanate of Oman and the region yet draws on state-of-the-art expertise accumulated at RWTH Aachen University. A strong emphasis of the programme is placed on the employability of GUtech's graduates. Many elements of the programme are accomplished in cooperation with local and international industry partners. Students take the majority of their courses in the Sultanate of Oman. Courses are taught by faculty based in Muscat together with visiting professors from RWTH Aachen University or other renowned universities. For courses requiring highly specialised equipment, students may travel to Germany to complete the courses at RWTH Aachen University.

Programme-specific graduate attributes and skills:

Graduates from the Bachelor of Engineering in Process Engineering will also have developed the following attributes and skills that will allow them to carry out successfully the duties of a Process Engineer:

- *Knowledge and understanding of Engineering* – Graduates have gained a broad and sound knowledge in mathematics, science, and engineering, enabling them to understand the phenomena characteristic to Process Engineering. The graduates have also gained an understanding for the broader multi-disciplinary context of engineering sciences.
- *Engineering analysis* – Graduates are able to identify, formulate and solve problems particular to Process Engineering based on the application of established scientific methods; Graduates are also able to analyse products, processes and methods used in their discipline based on scientific facts; They know how to select suitable methods of analysing, modelling, simulating and optimising and apply them with a high degree of competence.
- *Engineering design* – Graduates have developed the ability to design machinery, devices, programs or processes according to specified requirements; They have developed a practically oriented understanding of design methods and the ability to apply them in a competent manner.
- *Investigations and assessment* – Graduates are able to carry out literature research and know how to use data bases and other sources of information for their work; they have developed the skills to plan and carry out suitable experiments, interpret the data and draw suitable conclusions.
- *Engineering practice* – Graduates have developed the competencies to transfer new findings in engineering and natural sciences to industrial and commercial production under consideration of economic, ecologic and safety requirements; Graduates are able to plan, control and monitor processes and to develop and operate systems and equipment; They are also able to independently consolidate the knowledge gained and are aware of the non-technical effects of engineering activities.

BEng in Process Engineering

Semester	Course Code	Course Name	ECTS Credit Points	Contact Hrs/week
1	ENG 1 145	Mathematics 1: Calculus	6	6
	ENG 1 146	Mathematics 2: Linear Algebra	6	6
	ENG 1 102	Physics 1	5	5
	ENG 1 103	Chemistry 1	5	5
	ENG 1 143	Programming for Engineering	3	3
	ENG 1 140	Project Work 1	3	3
	LS 1 xxx	Life Skills Course	4	4
2	ENG 1 147	Mathematics 3: Advanced Calculus	6	6
	ENG 1 108	Physics 2	5	5
	ENG 1 109	Chemistry 2	5	5
	ENG 1 139	Engineering Drawing	3	3
	ENG 1 141	Engineering Principles and Calculation	4	4
	ENG 1 112	Project Work 2	4	3
	LS 1 xxx	Life Skills Course	4	4
3	ENG 2 148	Mathematics 4: Numerical Mathematics	6	6
	ENG 2 114	Mechanics 1	5	5
	ENG 2 115	Electrical and Electronic Engineering	5	5
	ENG 2 116	Environmental Engineering	5	4
	ENG 2 120	Thermodynamics 1	5	5
	LS 2 xxx	Life Skills Course	4	4
4	ENG 1 104	Introduction to CAD	3	3
	ENG 2 119	Mechanics 2	5	5
	ENG 3 123	Material Science I	6	5
	ENG 3 126	Fluid Dynamics	7	5
	ENG 2 144	Thermodynamics 2	4	4
	ENG 3 125	Thermodynamics Laboratory	4	2
	LS 2 xxx	Life Skills Course	4	4
5	ENG 3 149	Mechanics 3	5	4
	PROC 3 110	Introduction to Process Engineering	4	3
	ENG 4 131	Heat & Mass Transfer	7	6
	PROC 4 105	Multi-phase Flow	4	3
	LS 3 xxx	Life Skills Course	4	4
6	PROC 3 102	Chemical Process Engineering	5	4
	PROC 4 109	Mechanical Process Engineering	4	4
	PROC 3 104	Thermal Separation Processes	5	4
	ENG 4 132	Control & Automation	7	5
	ENG 3 128	Measurement Techniques (laboratory)	4	2
	ENG 3 129	Business Engineering	3	3
	ENG 2 117	Project Work 3	4	3
	LS 3 xxx	Life Skills Course	4	4
Summer	ENG 4 135	Internship	15	0
7	ENG 3 127	Simulation Techniques	6	5
	PROC 3 103	Petroleum & Petrochemical Processing	5	5
	ENG 4 130	Research Methods	2	1
	PROC 4 111	Plant Design 1	3	3
	ENG 2 121	Project Work 4	4	3

	ENG 4 133	Bachelor Thesis	12	2
8	ENG 4 134	Colloquium	3	2
	PROC 4 112	Plant Design 2	2	2
	PROC 4 108	Process Laboratory	2	2

Notes: The order in which courses are offered is subject to change. Not every course is offered every semester.

Master of Engineering in Industrial Production and Manufacturing

The Master of Engineering in Industrial Production & Manufacturing aims at providing students with a solid and in-depth knowledge in the field of extraction, production, testing and control of ferrous, non-ferrous and polymeric materials, and in the use of innovative production technologies able to face the challenges of our society in terms of environmentally friendly production and recycling processes, of development and use of new advanced materials for component production, and of quality management and plant logistics with a special focus on business development and entrepreneurship. The programme combines a comprehensive academic and theoretical knowledge in material sciences, production technologies and management subjects with the specialised knowledge, methodological and operational skills on product and process innovation, safety, sustainability, and life cycle assessment of products applied to most advanced and competitive industrial sectors. This is a career-oriented programme and students will be equipped with necessary generic skills required such as ethical, critical and creative thinking, problem solving, design, communication and team working in addition to skills and knowledge special for this programme, i.e., applied and practical knowledge, focus on innovation, material selection, feasibility analysis, cost evaluation and entrepreneurial skills, as well as analytical and reflective thinking. Graduates of the programme will be able to take over responsible technical or management positions in materials, parts or goods production industries or SME, small business management, and design and manufacturing consultancy companies.

The Master in Industrial Production & Manufacturing is tailored to the requirements of the Sultanate of Oman and the region, hence it is focused on two strategic sectors in Oman namely material extraction and processing, and innovative, high automation and sustainable manufacturing. The programme utilises existing expertise at GUtech on material extraction and the knowledge gained by the Department of Mechanical and Industrial Engineering at Brescia University in Industrial Production & Management.

The Master in Industrial Production & Manufacturing focuses theoretical and applied knowledge on materials (behaviour, extraction, processing, characterisation and use), traditional and innovative production processes (of components and goods), plant and quality management and control. A particular emphasis on the issues of innovation, sustainability, environment, and business development characterises this, Master. Furthermore, the theoretical knowledge is strengthened by the practical one through the use of Labs and internships abroad and inside Oman.

A strong emphasis is placed on the employability of graduates of the programme; hence many elements of the programme will be accomplished in cooperation with local and international industry partners. Also, generic competences, such as critical thinking, creative thinking, life-long learning, intercultural communication, and teamwork are seen as essential and are integrated throughout the curriculum. Students will take the majority of their courses in the Sultanate of Oman. Courses will be taught by faculty staff based in Muscat together with visiting professors from University of Brescia or other renowned universities. The language of tuition is English.

The MEng in Industrial Production & Manufacturing encompasses a work-load equivalent to 120 credit points in the European Credit Transfer System (ECTS) or 300 credit points in the Oman Qualification Framework (OQF), distributed over four semesters of full-time study. One ECTS credit point is equivalent to 2.5 OQF credit points, and one ECTS credit point corresponds to a student workload of approximately 25 hours.

Graduates from the Master in Industrial Production & Manufacturing will also have developed the following attributes and skills:

- *Specialised knowledge: Appropriate methods, tools, awareness in innovation and problem-solving techniques finalised to material science and production technologies are fundamental characteristics for the Master and furnish the students the capabilities of understanding the different topics, their interconnections, and limits.*
- *Applied knowledge:* Theory is important for learning but how to apply technical and professional knowledge becomes fundamental for a master engineer. The graduates are able to develop and test new solutions and control methods during practical activities and in the Labs.
- *Information and Communication Technology:* ICT is a science that stresses the role of information, communications, computer hardware and software, audio-visual systems in accessing, transmitting, and manipulating the information. This skill is applied to simulate actual processes and to create a virtual model of actual production systems. It provides the possibility to test different plant and process parameter configurations and to identify the optimal productive solution in a virtual and low-cost environment.
- *Management skills:* The Master is giving a clear methodology for managing projects by understanding the issues of risk management, on-time project delivery, cost analysis and, fundamental for a good manager, the capabilities for understanding and managing people.
- *Interdisciplinary thinking:* The nature of the study programme requires the students to develop interdisciplinary skills which allow them to see issues from different perspectives and understand the influence of one discipline on another. These skills enable the students to effectively solve complex issues using creative solutions from different disciplinary approaches.
- *Theoretical knowledge:* Comprehension of the theoretical concepts underpinning the study of materials, production processes, plant logistics and management, and applied economics. The programme also allows the students to relate such theories to wider national and international industrial sectors.
- *Methodological diversity:* Skills for applying a diverse range of methods of analysis, evaluation, and promotion, including quantitative (e.g., econometrics), qualitative (e.g. empirical social research), IT-based (e.g. GIS techniques), and communication-driven approaches (e.g. expert interview, or discussion moderation). Students are encouraged to carry out fieldwork and investigate customer requirements and needs.
- *Communication skills:* Expertise in incorporating views and interests of various stakeholders from customers, business, regional and central government, and private companies.
  Innovation skills: Identification and application of innovative materials and technologies to production processes so to identify smart solutions characterised by higher sustainability, recyclability, safety, and eco-friendliness.
- *Entrepreneurial skills:* A focus is set on developing entrepreneurial skills matching national priorities for a profitable and sustainable growth. The Master covers the fundamentals of applied economics, business management, start up and business incubators with a focus on the Oman resources and business possibilities such as the capabilities of developing a viral attitude toward entrepreneurship.
- *Analytical and reflective thinking:* Understanding the complexity of managing and promoting production business. The programme also enables the students to critically assess and carefully consider the cultural, environmental, and economic impact of global business activities such as production of materials and goods. Participants should be able to use critical and analytical thinking in selecting appropriate development models and rejecting others depending on the profile of the region and communities they are dealing with.
- *Leadership and people management skills:* A good engineer involved in production and management business must develop capabilities to attract, retain, motivate, and coach the members of his working team, understanding and optimising individual and team performances keeping in mind a fundamental issue: cooperation to get things done.

Semester	Course Code	Course Name	ECTS Credit Points	Contact Hrs/week
1	IPM 5 101	Production of Materials	7	6
	IPM 5 102	Advanced Production Processes and Technologies	7	6
	IPM 5 103	Modern Aspect of Testing and Control Production Processes	5	4
	IPM 5 104	Quality Management and Design Review	5	4
	IPM 5 105	Principles of Economy and Entrepreneurship	6	5
2	IPM 5 106	Material Mechanics	5	4
	IPM 5 107	Material Selection and Engineering	7	6
	IPM 5 109	Computer-integrated Manufacturing and Manufacturing Systems	5	4
	IPM 5 110	Plant Management and Logistics	8	7
Summer	IPM 5 121	Internship	7	
3	IPM 5 111	Recycling and Life Cycle Assessment	5	4
	IPM 5 108	Non-traditional and Additive Manufacturing Processes	5	4
	IPM 5 112	Advanced Surface Technology and Engineering	5	4
	IPM 5 113	Virtual Manufacturing and Process Simulation	6	5
		Elective 1	5	4
4	IPM 5 115	Environmental Aspects and Sustainability of Industrial Processes	4	5
		Elective 2	5	4
	IPM 5 119	Colloquium	3	-
	IPM 5 120	Master Thesis	20	-

Electives

	Course Code	Course Name	ECTS Credit Points	Contact Hrs/week
Elective 1	IPM 5 214	Micro- and Nano-Scale Manufacturing	5	4
	IPM 5 216	Specific Processing Techniques applied to local Ores	5	4
Elective 2	IPM 5 317	Project Management	5	4
	IPM 5 318	Business Laws and Regulations in Oman	5	4

Faculty of Science

Dean – Prof. Dr. Wilfried Bauer

Department of Applied Geosciences – Head of Department - Prof. Dr. Wilfried Bauer

Bachelor of Science in Applied Geosciences

The Bachelor programme focuses on three areas which are of key importance to the region's present and future: energy, water, and mineral geosciences. A strong emphasis is placed on the employability of GUtech's graduates, and many elements of the programme will be accomplished in cooperation with local and international industry partners. Critical thinking and life-long learning are essential, and soft skills such as communication, teamwork and presentation skills are integrated throughout the curriculum.

The majority of the courses are taught by GUtech faculty staff based in Oman supported by visiting professors from RWTH Aachen University and from other renowned Universities in Europe. The BSc in Applied Geosciences at GUtech is tailored to the requirements of Oman and the region and implemented by the local GUtech staff with the state-of-art expertise accumulated at RWTH Aachen University.

Programme-specific graduate attributes and skills:

Graduates from the Bachelor of Science in Applied Geosciences will also have developed the following attributes that will allow them to participate effectively in the geoscience professions:

- *Interdisciplinary thinking*: the ability to think across a wide range of knowledge;
- *Ability to understand self-similar, complex systems:* that exist across a wide range of scales in length as well as time;
- *Accessing, evaluating, and synthesising information*: the ability to decide what information is important, where to find it, make valid judgments and synthesise information from a range of sources;
- *Method and problem-solving orientation*: the ability to solve problems through exercises in basic and professional orientated disciplines;
- *Practical experience:* the ability to use state-of-the-art, complex equipment and software for geoscientific investigations, especially in petroleum and hydrogeological fields;
- *Research experience*: experience in basic geoscientific research and industrial projects.

BSc in Applied Geosciences

Semester	Course Code	Course Name	ECTS Credit Points	Weekly Contact Hours
1	AGEO 1 145	Mathematics 1: Calculus	6	6
	AGEO 1 107	Chemistry for Earth Scientists	5	4
	AGEO 1 164	Planet Earth	5	4
	AGEO 1 102	Rocks and Minerals	5	4
	AGEO 1 165	Geological Field Work	3	2
	AGEO 1 163	Geosciences Seminar	2	2
	LS 1 xxx	Life Skills Course	4	4
2	AGEO 1 113	Earth History	4	4
	AGEO 1 114	Physics for Earth Scientists	5	4
	AGEO 1 169	Geological Mapping	4	2
	AGEO 1 146	Mathematics 2: Linear Algebra	6	6
	AGEO 1 116	Microscopy	4	4
	AGEO 1 118	Laboratory Methods	3	3
	LS 1 xxx	Life Skills Course	4	4
3	AGEO 2 174	Probability and Statistics	6	6
	AGEO 2 115	Structural Geology	4	3
	AGEO 2 117	Sedimentology	4	3
	AGEO 2 170	Water Cycle	3	2
	AGEO 2 171	Surface Processes	4	3
	AGEO 2 109	Geological Field Methods	3	2
	AGEO 2 121	Excursion 1	3	3
	LS 2 xxx	Life Skills Course	4	4
4	AGEO 2 126	Geochemistry	3	3
	AGEO 2 122	Geophysics	3	3
	AGEO 2 127	Geodynamics and Tectonics	3	3
	AGEO 2 140	Applied Structural Geology	4	3
	AGEO 2 112	Introduction to Petroleum Geology	4	4
	AGEO 2 159	Hydrogeology 1	4	3
	AGEO 2 161	Mineralogy	3	3
	LS 2 xxx	Life Skills Course	4	4
5	AGEO 3 119	Palaeontology	3	3
	AGEO 3 138	Geology of Oman	3	3
	AGEO 3 130	Geohazards	2	2
	AGEO 3 166	Petrology	4	3
	AGEO 3 133	Remote Sensing and Image Analysis	3	2
	AGEO 3 134	Quantitative Field Methods	3	2
	AGEO 3 173	Hydrogeological Field Methods	3	3
	AGEO 3 137	Excursions 2	3	3
	LS 3 xxx	Life Skills Course	4	4
6	AGEO 3 131	Introduction to GIS	2	2
	AGEO 3 139	Petrophysics	4	3
	AGEO 3 125	Introduction to Mineral Resources	4	4
	AGEO 3 141	Applied Sedimentology	4	3
	AGEO 3 142	Hydraulic Test	4	3
	AGEO 3 160	Hydrogeology 2	4	3
	AGEO 3 144	Hydro-geochemistry	4	3
	AGEO 3 146	Project Management	3	2
	LS 3 xxx	Life Skills Course	4	4
Summer	AGEO 4 155	Internship	15	--

	AGEO 4 147	Mineral Exploration	4	3
	AGEO 4 167	Applied Geophysics	4	3
	AGEO 4 149	Petroleum Exploration	4	3
7	AGEO 4 172	Geological Visualisation	3	2
	AGEO 4 168	Geoengineering	4	3
	AGEO 4 152	Groundwater Modelling	3	2
	AGEO 4 153	Team project	4	2
	AGEO 4 154	Excursions 3	4	3
8	AGEO 4 156	Colloquium	3	-
	AGEO 4 157	Bachelor's Thesis	12	-

Notes: The order in which courses are offered is subject to change. Not every course is offered every semester.

Master of Science in Applied Geosciences

The MSc programme in Applied Geosciences at GUtech is tailored to the requirements of Oman and the region, building on state-of-the-art expertise in Applied Geosciences education at RWTH Aachen University and on the ongoing, internationally accredited Bachelor of Science Applied Geoscience programme at GUtech. It is planned to be organised as a part-time Executive MSc course, open for candidates with internationally accredited Bachelor of Science degrees in relevant fields of study and some industry experience. Students with non-accredited degrees may be admitted after passing an entrance examination. This will enable a majority of GUtech's students to complete this course part-time, while working in the petroleum, water resources, and mining sectors.

The programme in Oman focuses on areas which are of key importance to the region's present and future: energy, water, and mineral resources. A strong emphasis is placed on the employability of GUtech's graduates in industry. Many elements of the programme will be accomplished in cooperation with local and international partners from universities and companies.

Students will take the majority of their courses in Oman, including field-based training with outdoor activities in Oman's world class outcrops. Courses will be taught by faculty staff based in Muscat together with visiting professors from abroad. For these courses, support after the formal teaching period will make use of blended e-learning techniques such as tele-tutoring and video-conferencing. Experienced industry staff will be invited to contribute to the programme to maximise synergies. For modules requiring state-of-the-art analytical equipment, students will be able to elect to travel to Germany or elsewhere.

Also, generic competencies, such as critical thinking, creative thinking, life-long learning, intercultural communication, and teamwork are seen as essential and are integrated throughout the curriculum.

The Master of Science in Applied Geosciences is planned to be taught as a part-time programme. The duration of the MSc programme at GUtech is six semesters.

The programme encompasses a workload equivalent to 120 credit points in the European Credit Transfer System (ECTS) or 300 credit points in the Oman Qualification Framework (OQF), distributed over six semesters. One ECTS credit point corresponds to a student workload of 25 hours, while one OQF credit point corresponds to a student workload of 10 hours. This means that one ECTS credit point is equivalent to 2.5 OQF credit points.

The first part of the programme (semesters 1 to 3) focuses on the fundamental skills needed for applied geosciences in general and gives an overview of the 3 electives. The second part (semesters 4 and 5) integrates the material presented earlier by focusing on advanced applications of these skills in the specialisation PGEO, HGEO, and MGEO. It is during this stage that students have to complete 2 project modules, including a practical project and the MSc project, either nationally or internationally.

The degree programme will be taught in English, including written and oral tests, seminar papers and the Master thesis. The programme may offer the opportunity to travel to Europe to complete coursework at RWTH Aachen or any other University in Germany.

Graduates from the MSc in Applied Geosciences will also have developed the following attributes and skills:

- *Interdisciplinary thinking*: The nature of the study programme requires the students to develop interdisciplinary skills which allow them to see issues from different perspectives and understand the influence of one discipline on another. These skills enable the students to effectively solve complex issues using creative solutions from different disciplinary approaches.

- *Theoretical knowledge*: Comprehension of the theoretical concepts underpinning the study of applied geosciences with focus on the petroleum and mining industry. The programme also allows the students to relate such theories to wider national and international economic and environmental issues.

- *Methodological diversity*: Skills for applying a diverse range of methods of analysis, evaluation, and promotion, including quantitative and qualitative (e.g. empirical social research), IT-based (e.g. GIS applications, petroleum basin modelling, hydrogeological modelling), and communication-driven approaches (e.g. expert interview or discussion moderation).

- *Communication skills*: Expertise in incorporating views and interests of various stakeholders from business, regional and central government, private companies, and representatives of local communities into strategic concepts.

- *Innovation and entrepreneurial skills*: Application of innovative approaches in acquiring and presenting knowledge and dealing with business cases and projects. A focus is set on developing entrepreneurial skills matching national priorities.

- *Analytical and reflective thinking*: Understanding the complexity of natural resources environments for sustainable management in exploration and production. The programme also enables the students to critically assess and carefully consider the cultural, environmental, and economic impact of global business activities on natural resources. Participants should be able to use critical and analytical thinking in selecting appropriate development models and rejecting others depending on the profile of the region and communities they are dealing with.

The degree programme addresses ethical issues in applied geosciences in particular in the environmental sector related to petroleum exploration, mining, and water resources at several levels during the study with focus on sustainability.

The Master degree programme addresses ethical issues in geoscientific research and all fields of professional activities, following the guidelines of the American Geological Institute. Besides the strict compliance with national and international laws and regulations considering health and safety as well as import and export of geological and paleontological specimens, ethics means that geoscientists should strive to advance the integrity, honour, and dignity of their profession by undertaking the following:

- Use their knowledge and skill to enhance understanding of earth for the well-being of society and the environment;
- Exhibit honesty in professional actions at all times;
- Work to enhance the prestige of the geoscience profession; and
- Support the profession and technical societies of the profession

All the subjects of the Master degree consider the above mentioned issues. Geoscientists should in particular strive to protect our natural environment. They should understand and anticipate the environmental consequences of their work and should disclose the consequences of recommended actions. They should acknowledge that resource extraction and use are necessary to the existence of the Omani society and that such should be undertaken in an environmentally and economically responsible manner. After their University education, geoscientists should continue professional development to remain current in their field. They should maintain honesty and integrity in all conduct and publications, fully acknowledge the contributions of others, and accept responsibility for their own errors. They should

provide scientific service only in areas of competency. Economic consequences and implications of geological work should be acknowledged. Conflicts of interest should be acknowledged and avoided, when appropriate. Scientific misconduct, including falsification or fabrication of data and plagiarism, is unacceptable in the geoscience profession.

- Courses in Semester 1-3 are the same for all students, courses in Semester 4 and 5 are depending
- on the chosen subject for specialisation and Semester 6 is reserved for the thesis.
- The three potential subjects for specialisation are Petroleum Geoscience, Hydrogeology, and Mineral Resources.

Courses in General Applied Geosciences

Course Code	Course Name	ECTS Credit Point	Semester Contact Hours
AGEO 5 104	Principles of Natural Resource Studies	5	40
AGEO 5 105	Applied Sedimentology and Stratigraphy	5	40
AGEO 5 106	Tectonics and Structural Geology	5	40
AGEO 5 107	Mathematics for Geoscientists	5	40
AGEO 5 102	Water Resources	5	40
AGEO 5 103	Mineral Resources	5	40
AGEO 5 101	Petroleum Resources	5	40
AGEO 5 108	Scientific Programming	5	40
AGEO 5 109	Applied Geophysics	5	40
AGEO 5 110	Geology Field Course	5	40
AGEO 5 111	Applied Geostatistics	5	40
AGEO 5 112	Scientific Writing & Research Methods	5	40
AGEO 5 121	Master's Project plus Colloquium	20	50

Specialisation: **Petroleum Geology (PGEO)**			
Course Code	**Name of Course**	**ECTS**	**Semester Contact Hours**
AGEO 5 213	Seismic Interpretation	5	40
AGEO 5 214	Production Geology & Reservoir Engineering	5	40
AGEO 5 215	Advanced Geophysics	5	40
AGEO 5 216	Practical Project	5	40
AGEO 5 217	Petroleum Systems Analysis/Modelling	5	40
AGEO 5 218	Petrophysics and Well Log Analysis	5	40
AGEO 5 219	Prospect Analysis	5	40
AGEO 5 220	Assigned Project	5	40
AGEO 5 221	Master's Project plus Colloquium	20	50
Specialisation: **Hydrogeology (HGEO)**			
AGEO 5 314	Hydrogeochemistry	5	40
AGEO 5 313	Fundamentals of Hydro Engineering	5	40
AGEO 5 315	Hydrogeological Modelling	5	40
AGEO 5 316	Practical Project	5	40
AGEO 5 318	Geothermics	5	40
AGEO 5 319	Hydrogeological Field Methods	5	40
AGEO 5 317	Hydraulic Testing and Inverse Modelling	5	40
AGEO 5 320	Assigned Project	5	40
AGEO 5 321	Master's Project plus Colloquium	20	50
Specialisation: **Mineral Resources Geology (MGEO)**			
AGEO 5 413	Exploration Geochemistry	5	40
AGEO 5 414	Ore Deposits	5	40
AGEO 5 415	Exploration Geophysics	5	40
AGEO 5 416	Practical Project	5	40
AGEO 5 417	Fundamentals of Mining Engineering	5	40
AGEO 5 418	Ore Mineralogy	5	40
AGEO 5 419	Modelling and Evaluation of Orebodies	5	40
AGEO 5 420	Assigned Project	5	40
AGEO 5 421	Master's Project plus Colloquium	20	50

Faculty of Urban Planning and Architecture

Dean and Head of Department – Assoc. Prof. Ercan Ağırbaş

Bachelor of Science in Urban Planning and Architectural Design

The Bachelor of Science in Urban Planning and Architectural Design aims to graduate future urban planners and architects to meet the demands of the profession in the Sultanate of Oman and the region.

Its key emphasis lies on the specific aspects of urban development, sustainable growth, and architectural design. Countries of the Gulf region face serious challenges due to rapid urbanization, population growth and lack of economic diversity.

The programme is designed for a young generation of students that is overwhelmed by an urban development which is detached from social, environmental, and traditional coherence.

Throughout the programme, students will be trained to assess and evaluate the attributes of the built environment in an array of complex situations.

Moreover, students will learn how to develop strategies to revert the negative consequences of the prevailing development patterns steering the country towards a more resilient future.

Programme-specific graduate attributes and skills:

Graduates from the BSc in in Urban Planning and Architectural Design will also be expected to have the following subject-related competencies:

- *Scientific-theoretical and analytical skills*. Graduates have developed scientific and analytical skills especially through the modules of history and theory, sociology, economy, law, planning and construction. The students need to acquire these skills in order to analyse specific situations
- *Method-based and problem-solving approach*. Design exercises within the modules enable graduates to take a targeted approach to problem solving in their work. Depending on the exercise the students learn different methodologies that can be applied to various design tasks.
- *Interdisciplinary and integral thinking*. Graduates have learned to think in an interdisciplinary way in order to tackle diverse problem solving. The approach of integral thinking is taught especially in project-based courses where many topics and influences come together.
- *Creative experience.* Graduates have gained creative experience throughout the entire programme particularly in project-based assignments. This safeguards their own creative development in various contexts.
- *Practical experience*. Graduates are expected to gain practical experience by completing their internship during their time of study. This experience helps the students to understand a real-world application of their acquired skills.
- *Communication skills*. Graduates have developed communication skills during their work with other students and teachers as well as during the oral presentations of their project based courses.
- *Computer literacy*. Graduates have experience using computers as well as a good understanding of essential software used in urban design and urban planning (AutoCAD, GIS, Adobe CS, etc.)

BSc in Urban Planning and Architectural Design

Semester	Course Code	Course Name	ECTS Credit Points	Semester Contact Hours
1	UPAD 1 105	Introduction to Project Design	6	70
	UPAD 1 174	Architecture 1	4	56
	UPAD 1 106	Perceptions of Space and Shapes	4	56
	UPAD 1 103	History of Urban Development 1	3	28
	UPAD 1 102	Creative Techniques 1	3	42
	UPAD 1 175	Technical Drawing	5	56
	LS xxx	Life Skills Course	4	56
2	UPAD 1 109	Integrated Project 1	6	70
	UPAD 1 176	Architecture 2	4	56
	UPAD 1 111	Urban Design 1	4	56
	UPAD 1 113	History of Urban Development 2	3	28
	UPAD 1 115	Creative Techniques 2	3	42
	UPAD 1 117	Computer Aided Design 1	5	42
	LS xxx	Life Skills Course	4	56
3	UPAD 2 123	Integrated Project 2	6	70
	UPAD 2 120	Urban Design 2	5	56
	UPAD 2 177	Architecture 3	5	56
	UPAD 2 116	Urban Planning History 1	2	28
	UPAD 2 190	Building Construction 1	3	42
	UPAD 2 192	Building Construction 2	4	42
	UPAD 2 114	Computer Aided Design 2	4	56
	LS xxx	Life Skills Course	4	56
4	UPAD 2 131	Integrated Project 3	6	70
	UPAD 2 178	Architecture 4	4	56
	UPAD 2 135	Urban Design 3	5	56
	UPAD 2 127	Urban Planning History 2	2	28
	UPAD 2 179	Building Construction 3	3	42
	UPAD 2 180	Building Construction 4	3	42
	UPAD 2 181	Computer Aided Design 3	4	56
	LS xxx	Life Skills Course	4	56
5	UPAD 3 140	Integrated Project 4	9	84
	UPAD 3 138	Urban Preservation and Renewal	5	56
	UPAD 3 137	Economics 1	3	28
	UPAD 3 141	Planning Law 1	3	28
	UPAD 3 194	Building Construction 5	4	42
	UPAD 3 195	Urban Infrastructure and Technologies	4	42
	LS xxx	Life Skills Course	4	56
6	UPAD 3 143	Integrated Project 5	9	84
	UPAD 3 146	International Urban Design	5	56
	UPAD 3 145	Economics 2	3	28
	UPAD 3 147	Planning Law 2	3	28
	UPAD 3 189	Urban Planning Theory	4	42
	LS x xxx	Life Skills Course	4	56
	UPAD x xxx	General Elective	4	42
Summer	UPAD 4 153	Internship	7	-
7	UPAD 4 152	Integrated Project 6	9	84
	UPAD 4 151	Excursion	5	84
	UPAD x xxx	Elective 1	4	42
	UPAD x xxx	Elective 2	4	42

8	UPAD 4 156	Bachelor Thesis	12	84
	UPAD 4 155	Colloquium	3	28
	UPAD 4 371	Thesis Preparation	3	28
	UPAD 4 158	Brief Design	7	70

Notes: The order in which courses are offered is subject to change. Not every course is offered every semester.

Elective Courses

Course Code	Course name	ECTS Credit Points	Semester Contact Hours
General Electives			
UPAD 3 365	Advanced Computer Aided Design	4	42
UPAD 3 266	Documenting Omani Heritage	4	42
UPAD 3 267	Intro to GIS for Architects and Urban Planners	4	42
UPAD 4 373	Urban Analysis and Design	4	42
UPAD 4 372	Visualisation Techniques	4	42
UPAD 3 257	Design Project Documentation	4	42
UPAD 4 225	Mapping	4	42
UPAD 3 396	Field Trip	4	42
UPAD 4 367	Introduction to GIS Mapping	4	42
Architecture Electives			
UPAD 4 232	Arabic Building Typologies	4	42
UPAD 4 258	Housing Typologies	4	42
UPAD 3 369	Model 101	4	42
UPAD 4 233	Daylight Simulation	4	42
UPAD 4 234	Practical Building Workshop	4	42
UPAD 3 364	Tradition Innovation	4	42
UPAD 3 388	BIM Systems	4	42
UPAD 4 282	Advanced Architectural Design Analysis	4	42
UPAD 4 283	Architectural Design Sprint	4	42
Urban Planning Electives			
UPAD 4 224	Arabic Urban Design	4	42
UPAD 4 250	Decision Making Theory and Techniques	4	42
UPAD 3 228	Landscape Architecture	4	42
UPAD 4 219	Sociological Basics	4	42
UPAD 4 249	Theory and Models of Spatial Development	4	42
UPAD 4 370	Site and Master planning	4	42
UPAD 4 284	Ethnographic Planning	4	42
UPAD 4 285	Advanced Urban Design Analysis	4	42
UPAD 4 286	Urban Design Sprint	4	42

Note: Not every course is offered every semester.

Master of Science in Architecture and Urban Planning

The MSc programme in Architecture and Urban Planning at GUtech is tailored to the requirements of Oman and the region, building on state-of-the-art expertise in Architectural Design and Urban Planning education at RWTH Aachen University and on the ongoing, internationally accredited Bachelor of Science Urban Planning and Architectural Design programme at GUtech. The programme in Oman focuses on an area which is of key importance to the region's present and future: a built environment with a focus on a sustainable development. A strong emphasis is put on the employability of GUtech's graduates in the industry.

The MSc programme is planned to be open for candidates with internationally accredited Bachelor of Science, Bachelor of Arts and Bachelor of Engineering degrees in relevant fields of study and some industry experience. Students with non-accredited degrees may be admitted after passing an entrance examination. Courses will be taught by faculty staff based in Muscat along with visiting professors from abroad. Selected students will be able to travel to Germany and participate in excursions and academic workshops. Generic competencies, such as critical and creative thinking, life-long learning, intercultural communication, and teamwork are seen as essential and are integrated throughout the curriculum.

Architecture and Urban Planning are two sides of one discipline. The Urban Planning and Architectural Design BSc programme currently offered at GUtech comprises both areas providing a width of knowledge and skills as well as, most importantly, an understanding of their interdependencies. During the final year of the study programme, particularly during the bachelor thesis, students focus on one of the two fields of specialization.

The postgraduate MSc programme in Architecture and Urban Planning will cover each of these two areas on advanced levels and in thorough depth. Students will select a focus on either Architecture or Urban Planning right from the beginning of the MSc programme. Since the two specialised streams address equal societal, environmental, economic, and cultural questions but react to them on different scales, a number of courses will be offered as a link between these two. Furthermore, also courses regarding methodological questions like research methods, design thinking, or project management will be taught for both streams together. The overall structure of the BSc UPAD and MSc AUP programmes therefore represents a Y-model: both streams of the postgraduate programme root in the same undergraduate programme.

The Master of Science in Architecture and Urban Planning is planned to have a duration of four semesters. The programme encompasses a workload equivalent to 120 credit points in the European Credit Transfer System (ECTS) or 300 credit points in the Oman Qualification Framework (OQF), distributed over the four semesters. One ECTS credit point corresponds to a student workload of 25 hours, while one OQF credit point corresponds to a student workload of 10 hours. This means that one ECTS credit point is equivalent to 2.5 OQF credit points. GUtech adapts the teaching and learning context to current requirements and given resources. The level of complexity increases during the course of the study programmes. The credit points that are stated for each course outline the quantitative workload of the students.

The overall structure of the undergraduate and postgraduate curricula of Architecture and Urban Planning at GUtech is designed to function as a Y-model in educating planners of the built environment. The undergraduate studies (BSc UPAD program) follow a holistic approach covering both related areas during the first three years enabling students to finally specialise in either the architectural or urban field during the bachelor thesis project. During the MSc AUP program - being open to qualified students from various backgrounds - the field of specialisation in either Architecture or Urban Planning is defined by the student from the first semester. The programme offers separate contents for students of each specialisation. As several courses cover relevant contents to both fields of specialisation, they still are delivered to all AUP students together as bridging subjects.

The Master of Science in Architecture and Urban Planning has been designed with the following aims:

- To equip students with solid and in-depth knowledge within the fields of architecture and urban planning;
- To enable students to find appropriate and sustainable solutions for the built environment;
- To educate students with all required methodological and technical skills within the fields of architecture and urban planning;

- To provide a career-oriented programme in which students gain necessary generic skills, such as ethical, critical and creative thinking, problem solving, communication and team working;
- To enhance the students' capability of interdisciplinary thinking and collaboration;
- To provide students with the skills needed for innovative research and planning which are critical for future national and global development;
- To enable graduates to take on responsible positions in industry and government which require a high degree of expertise in the fields of architecture and urban planning;
- To support the Omani employment market with highly qualified graduates with a Master's degree in the fields of architecture and urban planning.

OVERVIEW OF COURSES (Program Matrix)

Comments:

- Two specialisations are offered: Architecture or Urban Planning
- Several subjects (e.g., electives) are offered to all students

Common Courses

Course Code	Name of Course	ECTS	Semester Contact Hours
AUP 5 101	Sustainability	3	42
AUP 5 102	Research Methods	3	42
AUP 5 103	Culture	3	42
AUP 5 104	Design Thinking	3	42
AUP 5 105	Economics	3	42
AUP 5 106	Project Management	3	42
AUP 5 xxx	Elective 1	3	42
AUP 5 xxx	Elective 2	3	42
AUP 5 107	Thesis Preparation	3	42
AUP 5 108	Thesis Colloquium	3	42

Courses in Architecture

AUP 5 210	Studio Architecture Design Project 1	12	120
AUP 5 211	Technical Systems for Architecture	3	42
AUP 5 212	Analysis Architecture	3	42
AUP 5 213	Simulation for Architecture	3	42
AUP 5 214	Studio Architecture Design Project 2	12	120
AUP 5 215	Advanced Structural Design	3	42
AUP 5 216	Advanced Building Construction 1	3	42
AUP 5 217	History of Architecture	3	42
AUP 5 218	Digital Information Systems for Architecture	3	42
AUP 5 219	Studio Architecture Design Project 3	12	120

AUP 5 220	Advanced Building Construction 2	3	42
AUP 5 221	Theory of Architecture	3	42
AUP 5 222	Visualisation for Architecture	3	42
AUP 5 223	Master Thesis Architecture	24	120

Courses in Urban Planning

AUP 5 310	Studio Urban Planning Design Project 1	12	120
AUP 5 311	Technical Systems for Urban Planning	3	42
AUP 5 312	Urban Planning Analysis	3	42
AUP 5 313	Simulation for Urban Planning	3	42
AUP 5 314	Studio Urban Planning Design Project 2	12	120
AUP 5 315	Traffic Planning	3	42
AUP 5 316	Landscape Design	3	42
AUP 5 317	History of the City	3	42
AUP 5 318	Digital Information (GIS)	3	42
AUP 5 319	Studio Urban Planning Design Project 3	12	120
AUP 5 320	Governance	3	42
AUP 5 321	Theory of the City	3	42
AUP 5 322	Visualisation for Urban Planning	3	42
AUP 5 323	Master Thesis Urban Planning	24	120

Elective Courses

AUP 5 401	Architectural Climate Concept	3	42
AUP 5 402	Colours	3	42
AUP 5 403	Digital Modelling and Fabrication	3	42
AUP 5 404	Intelligent Facades	3	42
AUP 5 405	Architecture, Ethics and Philosophy	3	42
AUP 5 406	Architectural Rendering and Visualisation	3	42
AUP 5 407	Complex Building Typologies	3	42
AUP 5 408	Architectural Sketching Field Trip	3	42
AUP 5 409	Advanced BIM	3	42
AUP 5 410	Structural Textile Shading System	3	42
AUP 5 411	Concept of Historic Preservation	3	42
AUP 5 412	Parametric Design	3	42

List of Courses

Foundation courses

Course Code	FAE 0 001
Course Title	Foundation Academic English 1
Credit Points	NA
Catalogue Description	Revises elementary language structures. Introduces pre-intermediate language structures and academic wordlist and reinforces their use through productive skills (speaking and writing). Familiarizes students with the Academic IELTS test format, and analyses and provides practice opportunities for different IELTS task types. Includes reading academic texts, writing factual reports based on graphical presented data and discursive essays in response to a prompt and giving presentations. Includes reading academic texts, writing factual reports based on graphical presented data and complex texts in response to a prompt, report writing and practicing different IELTS task types.
Prerequisite(s)	FGE 0 001 Foundation General English

Course Code	FAE 0 002
Course Title	Foundation Academic English 2
Credit Points	NA
Catalogue Description	Introduces intermediate language structures and academic wordlist and reinforces their use through productive skills (speaking and writing). Focuses on research and study skills and provides practice through practical application. Includes reading academic texts, paraphrasing graphically presented data and writing simple to complex texts in response to a prompt, giving presentations. Familiarizes students with the Academic IELTS test format, and analyses and provides practice opportunities for different IELTS task types.

Course Code	FAE 0 003
Course Title	Foundation Academic English 3
Credit Points	NA
Catalogue Description	Revises intermediate language structures. Introduces upper-intermediate language structures and academic wordlist and reinforces their use through productive skills (speaking and writing). Familiarizes students with the Academic IELTS test format, and analyses and provides practice opportunities for different IELTS task types. Includes reading academic texts, paraphrasing graphically presented data and writing complex texts in response to a prompt, report writing and practicing different IELTS task types.
Prerequisite(s)	FAE 0 002 Foundation Academic English 2

Course Code	FAE 0 004
Course Title	Foundation Academic English 4
Credit Points	NA
Catalogue Description	Introduces upper-intermediate language structures and academic wordlist and reinforces their use through productive skills (speaking and writing). Focuses on research and study skills and provides practice through practical application. Familiarizes students with the Academic IELTS test format, and analyses and provides practice opportunities for different IELTS task types. Includes reading academic texts, paraphrasing graphically presented data and complex texts in response to a prompt, giving presentations and practicing different IELTS task types.

Course Code	FAE 0 005
Course Title	Foundation Academic English 5
Credit Points	NA
Catalogue Description	Reinforces research and study skills. Supports students understanding of primary research through its practical application – research report. Develops the skills and strategies required to analyse and evaluate written and spoken academic texts. Explains how to produce clear, detailed explanations and texts on complex subjects, showing controlled use of organisational patterns, connectors, and cohesive devices. Provides intensive and continued practice opportunities for different IELTS task types. Includes report writing, applying research skills and intensive IELTS practice.
Prerequisite(s)	FAE 0 004 Foundation Academic English 4

Course Code	FAE 0 006
Course Title	Foundation Academic English 6
Credit Points	NA
Catalogue Description	Focuses on advanced research and study skills. Develops the skills and strategies required to analyse and evaluate written and spoken academic texts, and to consider the relevance or validity of information from different writers. Aims to create awareness of academic culture by teaching how to quote, summarise or paraphrase information. Teaches how to demonstrate the ability to select and organize information in a logical order, and design appropriate visual aids to illustrate concepts in presentations. Equips students with adopting effective presentation tools such as signposting, delivery (pace, volume, emphasis) and body language (posture, position, movement, eye contact).
Prerequisite(s)	IELTS 6 or equivalent

Course Code	FAE 0 007
Course Title	Foundation Academic English 7
Credit Points	NA
Catalogue Description	Supports students' understanding of primary research through its practical application. Develops the skills and strategies required to write academic reports. Explains how to determine research questions and hypotheses, compare and contrast views-, and evaluate the strengths and weaknesses of different writers. Equips students with the skills necessary to justify the use of a particular research method over another. Allows them to judge the importance of their findings and argue using evidence. Provides students with guidelines on how to use effective academic style in report writing. Creates awareness of academic integrity by teaching how to cite sources and write reference lists.
Prerequisite(s)	FAE 0 006 / IELTS 6 or equivalent

Course Code	FGE 0 001
Course Title	Foundation General English 1
Credit Points	NA
Catalogue Description	Introduces elementary language structures and general vocabulary and reinforces their use through productive skills (speaking and writing). Further develops research and study skills and provides practice through practical application. Includes reading non-academic texts and simple academic texts, writing simple texts in response to a given prompt, giving presentations, doing research and holding a conversation on familiar topics.

Course Code	FIT0 001
Course Title	IT 1
Credit Points	0
Catalogue Description	The course develops typing skill of a student on the English keyboard. It provides an opportunity for a student to master the skills of typing alphabetic, numeric, and symbolic information using the touch-typing method.
	The course also introduces the basic to intermediate skills to process, communicate, and source the information. It focuses on creating good quality documents using Microsoft Word, creating good quality spreadsheets, and understanding of data processing tasks using Microsoft Excel, designing professional presentations, and presenting information in an effective manner using Microsoft PowerPoint, and designing databases to manage large amount of information using Microsoft Access.

Course Code	FIT0 002
Course Title	IT 2
Credit Points	0
Catalogue Description	The course introduces basic computer literacy through learning the components of a computer system in terms of hardware and software. The course helps the students to be familiarized with the Windows operating system to manage the computer and files on a regular basis. The course covers the network and mobile devices and the use of cloud-based applications. The course also introduces the students to fundamentals of Internet, communication systems, composing an email and proper usage of Microsoft Outlook, finding information on the Internet, intellectual property, and how to protect yourself while online.
Prerequisite(s)	FIT0 001 IT 1

Course Code	FPM0 001
Course Title	Math vocabulary
Credit Points	0
Catalogue Description	Inculcate students with mathematical terms in English. The course provides a list of key words commonly used in mathematics and re-enforces the vocabulary with practice in arithmetic and basic algebra both individually and as a team, without the use of calculators. Introduces words in English and internationally used symbols and expressions for fundamental operations in mathematics, basic numeracy, and algebra.

Course Code	FPM0 002
Course Title	Applied Mathematics 1
Credit Points	0
Catalogue Description	Builds student's abilities in arithmetic, basic algebra, and problem solving both individually and as a team, without the use of calculators (until mid-semester exam) that they will need to progress to the next level of topics. Covers fundamentals of mathematics, basic numeracy, simple algebraic expressions, techniques for solving simple word problems, solution of equations and inequalities, studies polynomial and rational expressions, coordinate geometry and trigonometry. Includes graphing of equations, evaluation of slope of lines, calculation of distance between two points in a plane, measurement of angles and solution of triangles.

Course Code	FPM0 003
Course Title	Applied Mathematics 2
Credit Points	0
Catalogue Description	Builds the core competences in mathematics that students need to be successful in undergraduate studies at the German University of Technology in Oman. Covers solution of systems of linear equations and inequalities, Functions and graphs, operations on functions, graphing of quadratic functions. Applies these concepts in solving word problems by modelling them with quadratic functions. Learns about polynomial, rational, exponential and logarithmic functions, their graphs and properties. It also includes introductory statistics and probability. Students learn to organize data into a table, represent data using charts and compute measures of central tendency and dispersion. Introduces basic concepts of probability and statistics and applies combination and permutation formula to solve simple problems.
Prerequisite(s)	FPM0 002 Applied Mathematics 1

Course Code	FPM0 004
Course Title	Pure Mathematics 1
Credit Points	0
Catalogue Description	Improves the student's abilities with arithmetic, basic algebra, and problem solving both individually and as a team, without the use of calculators (until mid-semester exam) that they will need to progress to the next level of topics. Covers fundamentals of mathematics, and basic algebra. Applies the concepts in solving simple word problems. Covers quadratic equations, coordinate geometry and pre-calculus algebra. Studies graphing of equations in cartesian coordinate system, learns to calculate distance between two points in a plane, introduces the concept of functions, and operations on them. The module Includes properties of exponential and logarithmic functions, their graphs, and applications in problem solving.

Course Code	FPM0 005
Course Title	Pure Mathematics 2
Credit Points	0
Catalogue Description	Covers solution of systems of linear equations, pre-calculus trigonometry, and basic concepts in statistics. Builds on concepts learned in the previous module to study trigonometric functions and their properties. Applies to solution of triangles and application problems. Introduces concepts in probability and statistics. Applies permutation and combination formula in problem solving. Builds the core competences in mathematics that students need to be successful in undergraduate studies at the German University of Technology in Oman. Covers introductory calculus, and vector algebra.
Prerequisite(s)	FPM0 004 Pure Mathematics 1

Bachelor courses

Course Code	AGEO 1 102
Course Title	Rocks and Minerals
Credit Points	5
Catalogue Description	Introduces to the materials in the Earth, the genesis of minerals and rocks, their properties and economics. Studies the main minerals as well as the structure. Includes physical investigation of minerals, mineral-forming processes, structures/properties of rocks and classification of the three different main rock types. Forms the foundation to recognise different minerals and rock in the field as well as under the microscope.

Course Code	AGEO 1 107
Course Title	Chemistry for Earth Scientists
Credit Points	5
Catalogue Description	Provides the fresh students introduction to the basic chemistry with strong emphasis on geosciences, built around real-life geosciences topics. Presents a course divided into two parts. Studies basic concepts in chemistry such as atomic and molecular structures, chemical bonding and reactions, states of matter, phase transitions, and radioactivity in the first part. Focuses on the chemistry relating to the geosphere, hydrosphere, and atmosphere including the chemical aspects of soil, water, and air pollution, respectively in the second part.

Course Code	AGEO 1 113
Course Title	Earth History
Credit Points	4
Catalogue Description	Introduces processes and systems that operated over the full history of the Earth, from its origin to the present. Investigates evolution of tectonic plates, changes in atmosphere and oceans, climatic variations, and the record of life forms.
Prerequisite(s)	AGEO 1 102 Rocks and Minerals AGEO 1 164 Planet Earth

Course Code	AGEO 1 114
Course Title	Physics for Earth Scientists
Credit Points	5
Catalogue Description	Provides the basic principles of physics in application to scientific problems. Introduces the study of measurement of physical quantities, uncertainty measurements, forces and application of forces and mechanical properties of materials. Focuses on the oscillations as well as waves phenomenon to understand the introduction to the seismology. Covers the basic understanding of the radioactivity to apply for the estimation of age of rocks. Includes laboratory classes to develop experimental skills and analytical skills on acquired data.

Course Code	AGEO 1 116
Course Title	Microscopy
Credit Points	4
Catalogue Description	Introduces the polarising microscope, crystal-optics, and petrography of sedimentary, igneous and metamorphic rocks. Includes different optical properties of minerals as well as mineral identification in a transmitted polarising light microscope. Builds fundamental skills about petrographic description and classification of igneous, metamorphic, and at least sedimentary rocks in thin sections., which are essential for other for geological analysis.
Prerequisite(s)	AGEO 1 102 Rocks and Minerals; AGEO 1 164 Planet Earth

Course Code	AGEO 1 118
Course Title	Laboratory Methods
Credit Points	3
Catalogue Description	Introduces geoscientific physical-chemical laboratory and characterization of geological materials. Includes basic methods of processing unconsolidated and solid rocks as well as the fabrication of petrographic thin sections. Provides a general overview of safe procedures in a science lab.
Prerequisite(s)	AGEO 1 164 Planet Earth; AGEO 1 102 Rocks and Minerals

Course Code	AGEO 1 145
Course Title	Mathematics 1: Calculus
Credit Points	6
Catalogue Description	Introduces the students to the basic knowledge of analysis for all further studies. Includes an elementary introduction, sequences, continuity, differentiation, integration, series and power series, and curve discussion.

Course Code	AGEO 1 146
Course Title	Mathematics 2: Linear Algebra
Credit Points	6
Catalogue Description	Introduces the students to the understanding algebraic structures as matrices and vector spaces and their applications. Explains the Gauss Algorithm and the link to matrices. Studies linear maps between vector space. Applies fundamental concept of eigenvalues and eigenvectors. Introduces Multi-Linear maps and their applications.

Course Code	AGEO 1 163
Course Title	Geosciences Seminar
Credit Points	2
Catalogue Description	Provides the students an insight into geoscience, the techniques of scientific work, basics in scientific/academic work presentation are introduced, e.g. abstract and report writing, illustrating and poster preparation. Includes literature research, internet research, academic conduct, types/structures of written texts, referencing and Illustrations of texts. Covers the preparation of scientific texts and posters.

Course Code	AGEO 1 164
Course Title	Planet Earth
Credit Points	5
Catalogue Description	Gives an overview of the structure/ composition of the Earth, and the main internal and external geological processes developed in subsequence advanced courses. Covers essential geological topics including the solar system, earth system, plate tectonics and earth materials. Studies necessary sedimentary processes, metamorphic processes and includes the generation of geo hazards.

Course Code	AGEO 1 165
Course Title	Geological Field Work
Credit Points	3
Catalogue Description	Introduces geological field work in different geological settings on the Arabian Peninsula and especially in Oman. Studies the major rocks in the field, geological structures and measuring of geological data. Includes field safety, geological mapping, processing of field data, creation of litho-stratigraphic columns, creation of legends for maps and explanation of the produced map.

Course Code	AGEO 1 169
Course Title	Geological Mapping
Credit Points	4
Catalogue Description	Introduces the reading and interpretation of geological maps at different scale. Studies the identification and orientation of geological structures in geological maps. Includes the interpretation of advanced geological maps, reconstitution of stratigraphic columns, calculation of thicknesses of the different layers and the development of a 2D geological cross-section, based on a developed map.
Prerequisite(s)	AGEO 1 102 Rocks and Minerals; AGEO 1 165 Geological Field Work; AGEO 1 164 Planet Earth; AGEO 1 145 Mathematics 1: Calculus

Course Code	AGEO 2 109
Course Title	Geological Field Methods
Credit Points	3
Catalogue Description	Provides the main methods in geosciences to collect the field geological data and contains methods for their interpretation.
Prerequisite(s)	AGEO 1 113 Earth History; AGEO 1 169 Geological Mapping

Course Code	AGEO 2 112
Course Title	Introduction to Petroleum Geology
Credit Points	5
Catalogue Description	Introduction to the formation of and exploration and production of the energy resources oil and gas.
Prerequisite(s)	AGEO 2 117 Sedimentology

Course Code	AGEO 2 115
Course Title	Structural Geology
Credit Points	4
Catalogue Description	Builds on the courses Rocks & Mineral and Planet Earth. Provides a first introduction to structural geology, stress and strain, brittle and ductile rock deformation and structural style. Studies deformation structures using data in profiles, map and stereographic projections (Schmid net). Includes faults/faulting, fractures, shear zones as well as fold/folding.
Prerequisite(s)	AGEO 1 102 Rocks & Minerals; AGEO 1 164 Planet Earth

Course Code	AGEO 2 117
Course Title	Sedimentology
Credit Points	4
Catalogue Description	Provides a basic knowledge of how sediments are produced, transported, and deposited. Emphasis will be placed on the fundamentals of sediment transport, physical properties of sediments, formation of sedimentary structures and the environments in which sedimentary rocks form.
Prerequisite(s)	AGEO 1 164 Planet Earth; AGEO 1 102 Rocks and Minerals.

Course Code	AGEO 2 118
Course Title	Surface Processes
Credit Points	3
Catalogue Description	Introduces the major surface processes and to the main soil types with special focus on semi-arid and arid regions. Includes basic concepts of geomorphology, landscape dynamics, weathering processes as well as geo-ecology. Studies fundamental glacial, fluvial and eolian processes, which are essential for the understanding of evolution of landscapes on the surface.
Prerequisite(s)	AGEO 1 164 Planet Earth; AGEO 1 102 Rocks and Minerals.

Course Code	AGEO 2 121
Course Title	Excursions 1
Credit Points	3
Catalogue Description	Provides a series of one-day and longer excursions, where the students learn the major geologic units and features of Oman. Includes general methods to describe the major geological units, structures and common rocks in Oman. Studies the geological history of Oman during the field trip. Provides localisation and safety techniques which are essential for field geology.
Prerequisite(s)	AGEO 1 169 Geological Mapping; AGEO 1 113 Earth History

Course Code	AGEO 2 122
Course Title	Geophysics
Credit Points	3
Catalogue Description	Provides an overview of geophysical methods and their application.
Prerequisite(s)	AGEO 1 114 Physics for Earth Scientists

Course Code	AGEO 2 126
Course Title	Geochemistry
Credit Points	3
Catalogue Description	Covers the Chemistry basics and introduces the student to the theory and main methods of geochemistry in Geoscience. Includes an introduction to the Solar System, structure of the Earth`s crust, chemical composition of rocks, kinetics especially the rate of reactions, reactions at the Earth´s surface, stability of minerals, and basic thermodynamics.
Prerequisite(s)	AGEO 1 102 Rocks and Minerals; AGEO 1 107 Chemistry for Earth Scientist; AGEO 1 164 Planet Earth

Course Code	AGEO 2 127
Course Title	Geodynamics and Tectonics
Credit Points	3
Catalogue Description	Provides students a general introduction to Geodynamics and Plate tectonics, gives an overview of the tectonic evolution of the main types of continental margins and their general driving forces. Studies also the geodynamic processes of mantle convection, continental drift, sea floor spreading, mountain building and evolution of sedimentary basin.
Prerequisite(s)	AGEO 2 115 Structural Geology

Course Code	AGEO 2 140
Course Title	Applied Structural Geology
Credit Points	4
Catalogue Description	Analysis of geological maps: preparation of 3D block diagrams, interpretation of multiple deformation histories. Structural style in salt tectonics. Analysis of fault geometry: throw variation, segmentation, slip directions. Statistical analysis of fault populations. Fault Plane Diagrams and juxtaposition. Strain analysis. Analysis of polyphase folded structures.
Prerequisite(s)	AGEO 2 109 Geological Field Methods

Course Code	AGEO 2 159
Course Title	Hydrogeology 1
Credit Points	4
Catalogue Description	Introduces concepts related to the occurrence and movement of groundwater, as well as evaluation of groundwater resources. Major topics of the course include examination of governing equations, analyses of aquifer properties, regional groundwater flow, and groundwater quality.
Prerequisite(s)	AGEO 2 170 Water Cycle

Course Code	AGEO 2 161
Course Title	Mineralogy
Credit Points	3
Catalogue Description	Provides the fundamental knowledge on crystal structures and mineral chemical variability, which are the foundations to understand how minerals respond to a changing geological environment. Consolidates and extends pre-acquired knowledge (crystallography) and techniques (hand sample observation), developing basic skills on analytical techniques for chemical and structural characterisation of common rock-forming minerals.
Prerequisite(s)	AGEO 1 116 Microscopy

Course Code	AGEO 2 170
Course Title	Water Cycle
Credit Points	3
Catalogue Description	Builds on Chemistry for Earth Scientists. Gives an overview of the earth water cycle with special focus on semi-arid and arid regions. Includes basic hydrologic concepts, water properties, global climate, precipitation, evaporation, surface, and infiltration. Forms the foundation for the understanding of the water cycle as well as influence of climate to the water supply adapted to situation in Oman.
Prerequisite(s)	AGEO 1 107 Chemistry for Earth Scientist

Course Code	AGEO 2 174
Course Title	Probability and Statistics
Credit Points	6
Catalogue Description	Introduces the students to critical evaluation of data and to the basic principles of probability theory and statistics (including discrete distributions and combinatorial and stochastic methods). Covers basic concepts and methods of descriptive and inductive statistics as well as testing hypotheses.

Course Code	AGEO 3 119
Course Title	Palaeontology
Credit Points	3
Catalogue Description	Explores ancient life on earth using methods and concepts of paleobiology, invertebrate palaeontology, paleoecology, and evolution. Basic systematics and morphology of the main fossil invertebrate groups will be covered in the laboratory sessions, when fossil specimens will be studied.
Prerequisite(s)	AGEO 1 113 Earth History; AGEO 2 117 Sedimentology

Course Code	AGEO 3 125
Course Title	Introduction to Mineral Resources
Credit Points	4
Catalogue Description	Provides the basic tools for the study of the main mineral deposits and an overview of the genesis of metallic mineral deposits in relation with plate- tectonics as well as the types and applications of industrial minerals, while discussing the relationship of mineral resources with society and the environment. Builds knowledge to identify the major characteristics of the main types of resources in Oman.
Prerequisite(s)	AGEO 2 126 Geochemistry; AGEO 2 161 Mineralogy

Course Code	AGEO 3 130
Course Title	Geohazards
Credit Points	2
Catalogue Description	Introduces fundamental Geohazards with special emphasis to the Arabian region and Oman. Studies the geological processes and evaluates the interaction with human beings. Includes geological hazards like earthquakes, volcanic eruptions, geological mass movements, climate hazards and flooding events. Covers quantitative methods of risks analysis and evaluation of geological processes regarding to natural hazards.
Prerequisite(s)	AGEO 2 115 Structural Geology; AGEO 2 117 Sedimentology

Course Code	AGEO 3 131
Course Title	Introduction to GIS
Credit Points	2
Catalogue Description	Gives and introduction to the use of a Geographic Information Systems for the management of large amount of geological and geographical data. Covers the process of large amounts of data, creating of a map showing different attributes, application of GIS, which are important to solve geological problems and to perform application of statistics in Geoscience.

Course Code	AGEO 3 133
Course Title	Remote Sensing and Image Analysis
Credit Points	3
Catalogue Description	Introduces to the basic methods of remote sensing and the geological interpretation of remote sensing data with the use of different image analysis tools. Includes the explanation of the basic methods of remote sensing as well as the interpretation and visualisation of certain geological features from satellite images or other aerial photographs.

Course Code	AGEO 3 134
Course Title	Quantitative Field Methods
Credit Points	3
Catalogue Description	Builds the foundation for the course geological visualization. Provides an overview of the major stratigraphic and structural geological methods to collect, represent and analyse the field data. Includes the collecting of quantitative geological data during a practical field session as well as the analysis of the data with fundamental methods.
Prerequisite(s)	AGEO 2 117 Sedimentology; AGEO 2 115 Structural Geology; AGEO 2 109 Geological Field Methods

Course Code	AGEO 3 137
Course Title	Excursion 2
Credit Points	3
Catalogue Description	Includes a series of one-day or longer excursions, where the students learn the major geological units, structures and features. Studies the description of geological outcrops and learning points. Covers the preparation of field guides, including the description and interpretation of geological aspects from the visited areas and points of interest.
Prerequisite(s)	AGEO 2 121 Excursions 1

Course Code	AGEO 3 138
Course Title	Geology of Oman
Credit Points	3
Catalogue Description	Introduces the Geologic evolution and geological structures of Oman. Studies the different geological units in Oman from different time slices. Covers the complete geological earth history, which is present in Oman, starting with Precambrian and ending with the recent Wahiba Sands. Includes geological Formations which are important for the industry and the evolution of the Oman Mountains.
Prerequisite(s)	AGEO 2 117 Sedimentology; AGEO 2 127 Geodynamics and Tectonics

Course Code	AGEO 3 139
Course Title	Petrophysics
Credit Points	4
Catalogue Description	Introduces petrophysical methods and their practical application; coring and log analysis techniques.
Prerequisite(s)	AGEO 2 122 Geophysics; AGEO 2 123 Introduction to Petroleum Geology

Course Code	AGEO 3 141
Course Title	Applied Sedimentology
Credit Points	4
Catalogue Description	Provides a principle understanding of the role of applied sedimentology in understanding of sedimentary rocks and their properties for industrial applications as mineral resources and reservoirs. Provides insights into methods of mineral resources and reservoir analysis with focus to the mining and hydrocarbon industry and for the evaluation of aquifers.
Prerequisite(s)	AGEO 2 117 Sedimentology

Course Code	AGEO 3 142
Course Title	Hydraulic Test
Credit Points	4
Catalogue Description	Teaches special hydrogeological testing methods and application of these under different conditions in industrial applications. Includes Sandbox model, different types pumping tests, knowledge about unconfined or bounded aquifers, large diameter wells, hydraulic borehole tests, hydraulic tests in different aquifers and inverse modelling. Builds knowledge in analysing and evaluation of pumping tests.
Prerequisite(s)	AGEO 2 159 Hydrogeology I

Course Code	AGEO 3 144
Course Title	Hydrogeochemistry
Credit Points	4
Catalogue Description	Builds on Chemistry for Earth Scientists, Water Cycle; Hydrogeochemistry with special focus on semi-arid and arid regions. Includes basic hydrogeochemical concepts, chemical reactions in aqueous environment, water-rock interaction, water quality and water types, isotope application. Forms the understanding of hydrochemistry in all Earth compartments as well as influence of geological conditions to the water supply adapted to situation in Oman.
Prerequisite(s)	AGEO 1 107 Chemistry for Earth Scientists. AGEO 2 116 Water Cycle

Course Code	AGEO 3 146
Course Title	Project Management
Credit Points	3
Catalogue Description	Introduces to the topic project management in Geoscience environment. Includes the definition, planning, execution, control and closure of a project with a geological focus. Covers time management, personal management, Gantt charts and rolls as well as skills of a project manager. Builds the foundation to plan, execute and manage a simple geoscientific project.

Course Code	AGEO 3 160
Course Title	Hydrogeology 2
Credit Points	4
Catalogue Description	Builds on the course Hydrogeology I. Gives an overview about flow and transport processes in groundwater. Covers general Information like the extended Darcy's Laws, flow nets, partial differential equations of ground- water flow & transport, basic flow, refraction of groundwater flow and mass transport. Includes also topics like devection, diffusion & hydrodynamic dispersion, decay and degradation, retardation as well as heat transport. Builds knowledge about groundwater flow and transport.
Prerequisite(s)	AGEO 2 159 Hydrogeology 1

Course Code	AGEO 3 166
Course Title	Petrology
Credit Points	4
Catalogue Description	Introduces to processes and principals involved in the generation of igneous and metamorphic rocks and the techniques employed in their study. Includes basic geochemical tools for the study of igneous rocks (trace elements, discriminant/ phase diagrams), generation of magma, crust/ mantle interactions and metamorphism. Studies essential processes to understand the relationship between magmatogenesis and metamorphism, which are quite relevant in ore-forming processes.
Prerequisite(s)	AGEO 2 126 Geochemistry; AGEO 2 161 Mineralogy

Course Code	AGEO 3 173
Course Title	Hydrogeological Field Methods
Credit Points	3
Catalogue Description	Builds on the course Hydrogeology. Introduces the fundamentals of hydrogeological field methods, adopted to the geological situation in Oman. Includes hydrogeological mapping, head measurements, pumping and slug tests, groundwater sampling, wadi and falaj discharge measurements, on-site measurements.
Prerequisite(s)	AGEO 2 159 Hydrogeology 1

Course Code	AGEO 4 147
Course Title	Mineral Exploration
Credit Points	4
Catalogue Description	Provides an overview of aspects of mineral exploration, with examples from Oman. Studies the mineralogy of economic deposits adapted to the special situation in Oman, which are important for industrial application in mining companies. Includes diverse exploration methods like remote sensing, geophysics, geochemistry, evaluation techniques and project evaluation.
Prerequisite(s)	AGEO 3 125 Introduction to Mineral Resources

Course Code	AGEO 4 149
Course Title	Petroleum Exploration
Credit Points	4
Catalogue Description	Introduces Petroleum geoscience including exploration of oil and gas adapted to the special situation on the Arabian Peninsula. Studies Petroleum Systems of the Arabian Peninsula, source rocks, siliciclastic and carbonate reservoirs, hydrocarbon seals/traps, core handling and sampling. Includes principal methods like core description and basin analysis, which are essential to understand the case studies of the Arabian Peninsula.
Prerequisite(s)	AGEO 3 141 Applied Sedimentology; AGEO 2 240 Applied Structural Geology; AGEO 2 112 Introduction to Petroleum Geology; AGEO 3 139 Petrophysics

Course Code	AGEO 4 152
Course Title	Groundwater Modelling
Credit Points	3
Catalogue Description	Covers modelling of groundwater and introduces a software, which is useful for hydrogeological analysis and interpretation; choice of modelling region, initial and boundary conditions; meshing; includes heat and solute transport modelling in porous media.
Prerequisite(s)	AGEO 2 159 Hydrogeology II AGEO 2 122 Geophysics

Course Code	AGEO 4 153
Course Title	Team Project
Credit Points	4
Catalogue Description	Includes solving a problem in teamwork using geo scientific data. Contains for example a project about using a set of seismic, outcrop and well data from Oman for Hydrocarbon prospect. Also solves problems from other disciplines in geoscience like practically oriented tasks in Hydrogeology as well as Mineral exploration. Includes a final presentation in front of a panel of professionals.
Prerequisite(s)	AGEO 3 146 Project Management

Course Code	AGEO 4 154
Course Title	Excursion 3
Credit Points	4
Catalogue Description	Provides students with a better experience of geological field work and realisation of small field-related projects. Includes advanced methods to describe the geological units, structures, and rocks in the field. Provides field methods for rock recognition, geological structure interpretation and regional geology description. Offered together with Excursion 2 as a package either overseas or within Oman
Prerequisite(s)	AGEO 2 121 Excursion 1
Co-requisite(s) *	AGEO 3 137 Excursion 2

Course Code	AGEO 4 155
Course Title	Internship
Credit Points	15
Catalogue Description	Provides the students an Internship in or outside Oman, in a company or academic institution, which is related to the focus of the subject geoscience. Builds the knowledge to become familiar with geoscientific work in industrial companies or other professional institutions/organisations and deepens the skills, which are important for the working life.
Prerequisite(s)	Semester 6 completed

Course Code	AGEO 4 156
Course Title	Colloquium
Credit Points	3
Catalogue Description	Provides a platform where students can present the intermediary and final results of their Bachelor Thesis.
Prerequisite(s)	Min. IELTS 6.0 or equivalent
Co-requisite(s) *	AGEO 4 157 Bachelor Thesis

Course Code	AGEO 4 157
Course Title	Bachelor Thesis
Credit Points	12
Catalogue Description	Covers the preparation of a thesis, including the work on an academic topic related to geoscience. Introduces the fundamentals of academic research, using specific literature, especially academic publications, and geological methods to prepare academic thesis. Includes a critical evaluation of the working title with the used geological and scientific methods.
Prerequisite(s)	Min. IELTS 6.0 or equivalent
Co-requisite(s) *	AGEO 4 156 Colloquium

Course Code	AGEO 4 167
Course Title	Applied Geophysics
Credit Points	4
Catalogue Description	Introduces the principles methods in applied geophysics to the students and requires basic geophysical and mathematic skills. Covers the most important geophysical methods like gravity, magnetics, EM and different types of seismic. Studies basic applied geophysical problems which occur during industrial applications and exploration. Aims at the understanding of the principles applied geophysical methods.
Prerequisite(s)	AGEO 2 122 Geophysics

Course Code	AGEO 4 168
Course Title	Geoengineering
Credit Points	4
Catalogue Description	Provides an introduction to the interdisciplinary application of geoengineering, to solve a wide range of geo-environmental problems, in engineering geology, hydro- and environmental engineering. Studies the different types of rock/soil types and their behaviour, hydrogeological basics, basics in geo- mechanics, groundwater hydraulics, fundamentals in hydro-biogeochemistry, pollution monitoring and containment of water trough waste.
Prerequisite(s)	AGEO 2 240 Applied Structural Geology. AGEO 3 160 Hydrogeology 2

Course Code	AGEO 4 172
Course Title	Geological Visualisation
Credit Points	3
Catalogue Description	Introduces the fundamentals of geographic Information system (GIS) and different quantitative Field Methods. Studies types of visualisations of geological structures and processes. Covers 1D (Histograms, frequency distributions, time series), 2D (contouring, Look-up tables, choice of colours and limits), 3D visualisation (geochemical assays), using of modelling software and 4D visualisation of geological processes.
Prerequisite(s)	AGEO 3 131 Introduction to GIS; AGEO 3 134 Quantitative Field Methods

Course Code	AI 1 101
Course Title	Concepts in AI
Credit Points	7
Catalogue Description	Exposes students to the bigpicture of AI. In particular, it provides them with a comprehensive introduction to AI through the coverage of its fundamental concepts and algorithms and how they can be used to solve interesting problems. Students will be exposed to AI history and future, as well to the different sub-areas of AI. They will also take part in practical exercises to learn some basic AI techniques.

Course Code	AI 2 102
Course Title	AI: Representation and Problem Solving
Credit Points	7
Catalogue Description	Introduces computer techniques to represent task-relevant information and make smart decisions to reaching goals. It focuses on some specific questions about AI systems such as knowledge representation, generating appropriate sequences of actions, searching for alternatives to find optimal or near-optimal solutions, learning from experience and dealing with uncertainty.
Prerequisite(s)	AI 1 101 Concepts in AI

Course Code	AI 2 103
Course Title	Introduction to Machine Learning
Credit Points	7
Catalogue Description	Is an introduction to the fundamental topics, methods and algorithms of machine learning including supervised and unsupervised learning. Concepts behind several machine learning algorithms will be presented without going deeply into the mathematics and students will gain practical experience applying them.
Prerequisite(s)	CS 1 101 Programming Fundamentals. CS 1 146 Maths 2: Linear Algebra

Course Code	AI 3 104
Course Title	Advanced Machine Learning
Credit Points	7
Catalogue Description	Covers advanced topics in machine learning. It will focus on the mathematical foundations of machine learning techniques, so students can better understand how they work. It also invites students to select and test algorithms using some development tools.
Prerequisite(s)	AI 2 103 Introduction to Machine Learning

Course Code	AI 4 105
Course Title	AI Seminar
Credit Points	4
Catalogue Description	Offers the student the entry to self-directed scientific work. It requires from the student to choose an AI-related topic, do the literature review, and present his/her work in a written report and in class.
Prerequisite(s)	CS 2 106 Proseminar

Course Code	AI 4 106
Course Title	Decision Making for Autonomous Systems
Credit Points	7
Catalogue Description	Cover the principles and application of decision making for autonomous agents and robotics. It will cover topics such as: rationality, decision theory, and Markov decision processes. Students will be invited to implement agent systems using frameworks (e.g., Jade, MaSMT)
Prerequisite(s)	AI 1 101 Concepts in AI

Course Code	AI 4 107
Course Title	Special Topic in AI
Credit Points	5
Catalogue Description	Goes in depth on selected subjects and approaches within the fields of artificial intelligence, machine learning and their applications.
Prerequisite(s)	AI 1 101 Concepts in AI

Course Code	AI 4 108
Course Title	Cognitive Computing
Credit Points	5
Catalogue Description	Introduces cognitive computing that covers several disciplines, including machine learning, natural language processing, vision, and human-computer interaction, and uses knowledge from cognitive science to design systems that mimics human thought processes. It also invites students to use development frameworks to test the concepts.
Prerequisite(s)	AI 1 101 Concepts in AI; AI 2 103 Introduction to Machine Learning

Course Code	AI 4 568
Course Title	Big Data Analytics
Credit Points	7
Catalogue Description	Introduces big data analytics that covers the main methodologies and techniques of big data management and analysis. The course will first provide an overview of big data and its applications in different fields. This course will explore the technologies behind big data analytics focusing on Hadoop technology. Furthermore, this course will cover an introduction to Big Data analytics technology stack and layers and the foundational technologies. Moreover, this course will introduce big data analysis technologies and visualisations
Pre-requisite(s)	CS 2 114 Database Systems, CS 3 117 Operating Systems

Course Code	AI 4 569
Course Title	Introduction to Natural Language Processing
Credit Points	7
Catalogue Description	Provides a theoretical and methodological introduction to the techniques, methods and toolkits used for natural language processing, with a major focus on those available in the Python programming language
Prerequisite(s)	CS 1 101 Programming Fundamentals; AI 1 101 Concepts in AI; AI 2 103 Introduction to Machine Learning

Course Code	AI 4 570
Course Title	Computer Vision
Credit Points	7
Catalogue Description	Focuses on the basic computer vision topics including image processing, detection and recognition, and video analysis. It also introduces students to these main concepts of computer vision through practical works and real-life experiments. In particular, they will use a framework to experiment and test the main concepts.
Prerequisite(s)	CS 1 101 Programming Fundamentals; AI 1 101 Concepts in AI; AI 2 103 Introduction to Machine Learning

Course Code	AI 4 571
Course Title	Knowledge Engineering in AI
Credit Points	7
Catalogue Description	Introduces the existing knowledge extraction and representation techniques along with knowledge engineering.
Prerequisite(s)	CS 1 101 Programming Fundamentals; AI 1 101 Concepts in AI; AI 2 103 Introduction to Machine Learning

Course Code	CS 1 101
Course Title	Programming Fundamentals
Credit Points	8
Catalogue Description	Introduces students to the fundamentals of object-oriented software programming using a selected high level programming language. Provides students with an introduction to data syntax, data types, control and condition statements, looping, structures, objects classes, methods, inheritance., Applies the concepts learned through a series of course works and assignments.

Course Code	CS 1 102
Course Title	Computer Architecture
Credit Points	7
Catalogue Description	Teaches the underlying structures of modern digital computers. Covers the theory needed for the realization of digital circuits and the building blocks of computer hardware. Troubleshoot a computer system.

Course Code	CS 1 103
Course Title	Introduction to Business Management
Credit Points	3
Catalogue Description	Introduces the field of business administration and management. Explores related literature, information, and data revealing management task and corporate structures. Explores a variety of topics, including planning, organising, staffing, directing, and controlling with emphasis on practical business applications. Highlights business management practices in the local and regional context.

Course Code	CS 1 107
Course Title	Data Structures
Credit Points	8
Catalogue Description	Introduces students to solid foundations of data structures. Examines several types of data structures, including stacks, queues, lists, and trees. Teaches how to select and design data structures that are appropriate for problems that they might encounter. Offers a mixture of theoretical knowledge and practical experience.
Prerequisite(s)	CS 1 101 Programming Fundamentals

Course Code	CS 1 113
Course Title	Computer Applications in Business
Credit Points	3
Catalogue Description	Gives an integrated view of different perspectives on business information systems (technology, strategy, organisation, management), using some case studies for illustration. Introduces students to the main computer applications in the different business sectors.

Course Code	CS 1 118
Course Title	Logic
Credit Points	4
Catalogue Description	Provides the student with logical foundations of mathematical proof techniques. Introduces the symbolic logic: propositional logic and relational logic. Enables students to express sentences in propositional logic and prove them using different proof systems. Enables them also to express sentences in relational logic and prove them using resolution.

Course Code	CS 1 119
Course Title	Discrete Structures
Credit Points	4
Catalogue Description	Covers basic mathematical concepts related to computer science. Provides the student, in particular with proof techniques, elementary number theory, graph theory, and combinatorics.

Course Code	CS 1 145
Course Title	Mathematics 1: Calculus
Credit Points	6
Catalogue Description	Introduces the students to the basic knowledge of analysis for all further studies. Includes an elementary introduction, sequences, continuity, differentiation, integration, series and power series, and curve discussion.

Course Code	CS 1 146
Course Title	Mathematics 2: Linear Algebra
Credit Points	6
Catalogue Description	Introduces the students to the understanding algebraic structures as matrices and vector spaces and their applications. Explains the Gauss Algorithm and the link to matrices. Studies linear maps between vector space. Applies fundamental concept of eigenvalues and eigenvectors. Introduces Multi-Linear maps and their applications.

Course Code	CS 2 106
Course Title	Proseminar
Credit Points	3
Catalogue Description	Introduces the students to the first steps in research and self-directed scientific work. Focuses on reviewing the literature concerning a selected topic and writing a report according to scientific writing guidelines.

Course Code	CS 2 109
Course Title	Efficient Algorithms
Credit Points	4
Catalogue Description	Introduces different techniques and data structures used to design efficient algorithms. Introduces methods of analyses of algorithms. Discusses which algorithmic technique or data structure is useful to solve a given problem. Covers graph algorithms as well as the basics of combinatorial optimization. Applies the concepts learned via programming exercises.
Prerequisite(s)	CS 1 107 Data Structures

Course Code	CS 2 110
Course Title	Web Design and Development
Credit Points	7
Catalogue Description	Introduces the main concept of web design and programming (including HTML, CSS, and Script languages such as JavaScript). Focuses on the development of the knowledge, skills, and abilities to innovate, design, and engineer web-based software applications using the latest web technologies and best practices.
Prerequisite(s)	CS 1 101 Programming Fundamentals

Course Code	CS 2 111
Course Title	Theory of Computing
Credit Points	7
Catalogue Description	Introduces the theory of formal systems (languages) and automata. Focuses primary on the two methods of defining languages: using generators (e.g., grammars) and using recognizers (e.g., finite automata) and describes the relation between them. Introduces Turing machines and explores the limitations of computing. Introduces the complexity classes P and NP as well as the concept of NP-completeness.

Course Code	CS 2 114
Course Title	Database Systems
Credit Points	7
Catalogue Description	Presents the fundamental concepts of database design and use. Provides a study of the relational data model, data description languages, and query facilities including relational algebra and SQL, and data normalization. Looks at the other alternative database models such as object-oriented database, XML database, and NoSQL databases

Course Code	CS 2 120
Course Title	Numerical Computation
Credit Points	6
Catalogue Description	Introduces students to numerical analysis, linear algebra, and geometry in applications in computer science.
Prerequisite(s)	CS 1 145 Math 1: Calculus; CS 1 146 Maths 2: Linear Algebra

Course Code	CS 2 123
Course Title	Decision Theory
Credit Points	5
Catalogue Description	Introduces students to different types and metaphors of decision making. Considers theories for individual and group decision making under different circumstances. Explores how decisions could be made and evaluated in risky situations.

Course Code	CS 2 134
Course Title	Introduction to Information Security
Credit Points	7
Catalogue Description	Provides students with a solid background and understanding of the underlying principles and concepts of information security. Covers a variety of topics, including information security management to application security, network security, and physical security. Exposes students to ethical, legal, compliance, and regulatory issues related to information security. Explores the topics of developing security policies and developing disaster recovery plans.

Course Code	CS 2 145
Course Title	Accounting and Controlling
Credit Points	5
Catalogue Description	Covers the concepts of management, cost, and financial accounting. Includes individual and group practical works providing opportunities to practice the methods and techniques discussed in the course.

Course Code	CS 2 152
Course Title	Software Engineering
Credit Points	8
Catalogue Description	Introduces the students to the field of software engineering that aims to create practical, cost-effective solutions to computing and information processing problems by following specific methodologies. Covers all the stages of software engineering process, including understanding system requirements, methods of design, coding, testing, and software evolution.

Course Code	CS 2 158
Course Title	Probability and Statistics
Credit Points	6
Catalogue Description	This course is about probability. It includes discrete distributions and combinatorial and stochastic methods. Also, basic statistics and testing hypotheses

Course Code	CS 3 117
Course Title	Operating Systems
Credit Points	7
Catalogue Description	Introduces the core concepts of operating systems, including processes and threads, synchronization, memory management, file systems, input and output device management. Includes the study of a real operating system.
Prerequisite(s)	CS 1 102 Computer Architecture

Course Code	CS 3 129
Course Title	Seminar
Credit Points	4
Catalogue Description	Introduces the students to the first steps in research and self-directed scientific work. Focuses on reviewing the literature concerning a selected topic and writing a report according to scientific writing guidelines.
Prerequisite(s)	CS 2 106 Proseminar

Course Code	CS 3 155
Course Title	Computer Networks
Credit Points	7
Catalogue Description	Covers the principles, design, implementation, and performance of large-scale networked systems. Explores the most important protocols of each layer of the OSI model. Introduces students to the basics of network security and wireless communication.
Prerequisite(s)	CS 3 117 Operating Systems

Course Code	CS 3 160
Course Title	Mobile Applications
Credit Points	6
Catalogue Description	Introduces the principles of mobile application design and development. Topics covered include an introduction to mobile application development (MVC) architecture, user interface design, input methods, data exchange, messages, notifications, networks, maps, location-based services, and databases in mobile applications.

Course Code	CS 3 226
Course Title	Introduction to Game Design and Development
Credit Points	7
Catalogue Description	Covers the fundamentals of computer game software development. Focuses on the design and development of game concepts, mechanics, user interfaces, level design, and application of Artificial Intelligence in games.
Prerequisite(s)	CS 1 107 Data Structures

Course Code	CS 2 134
Course Title	Introduction to Information Security
Credit Points	7
Catalogue Description	Provides students with a solid background and understanding of the underlying principles and concepts of information security. Provides students with the skills needed to analyse and evaluate information security threats and attacks. Covers a variety of topics, including information security management to application security, network security, and physical security. Exposes students to ethical, legal, compliance, and regulatory issues related to information security. Explores the topics of developing security policies, developing disaster recovery plans, main aspects of computer forensics, and crime investigation.

Course Code	CS 3 237
Course Title	Topics in Software Engineering
Credit Points	7
Catalogue Description	Covers a selected topic in software engineering. Explores the concepts that will be defined by the course coordinator.

Course Code	CS 3 242
Course Title	Internet of Things
Credit Points	7
Catalogue Description	Introduces students to the fundamentals of Internet of Things (IoT) and its related hardware and software technologies. Outlines IoT applications, trends, and challenges. Provides students with hands-on experiences via a series of exciting projects.

Course Code	CS 3 253
Course Title	Distributed Applications and Middleware
Credit Points	7
Catalogue Description	Combines the knowledge the students have acquired in several earlier courses. Explores the theoretical foundations of distributed applications. Includes practical programming workload.
Prerequisite(s)	CS 1 101 Programming Fundamentals

Course Code	CS 3 257
Course Title	Analysis and Design of Information Systems
Credit Points	7
Catalogue Description	Highlights the main techniques used to model and design information systems. Introduces the student to the conceptual, logical, and physical levels of modelling. Presents the main phases of analysis and design, including requirement analysis, analysis, design, implementation, and testing.

Course Code	CS 3 259
Course Title	Programming Languages
Credit Points	7
Catalogue Description	Introduces the students to the concepts of functional and logic programming. Discusses commonalities and differences among the different programming paradigms taking as example one programming language from each paradigm of which the syntax, semantics, and implementations are investigated.

Course Code	CS 3 261
Course Title	Topics in ACS: Advanced Algorithms
Credit Points	7
Catalogue Description	Covers various important techniques in the design of efficient algorithms, such as greedy, divide and conquer, dynamic programming, branch and bound, linear programming, and randomisation.
Prerequisite(s)	CS 1 107 Data Structures

Course Code	CS 3 262
Course Title	Topics in ACS: Wireless Sensor Networks
Credit Points	7
Catalogue Description	Introduces students to the increasingly important topic of Wireless Sensor Networks (WSNs). Focuses on understanding the fundamentals and background of WSNs, their applications, their architectures, and their management. Offers lab sessions to students in order to have hands-on for some WSN related concepts.

Course Code	CS 3 264
Course Title	Introduction to Parallel Computing
Credit Points	7
Catalogue Description	Introduces the foundations of parallel computing, including the principles of parallel algorithm design, analytical modelling of parallel programs, programming models for shared- and distributed-memory systems, parallel computer architectures, along with numerical and non-numerical algorithms for parallel systems. Provides students with hands-on knowledge of the fundamentals of parallel programming by writing efficient parallel programs in some of the programming models that they learn in class.
Prerequisite(s)	CS 1 107 Data Structures

Course Code	CS 3 265
Course Title	Information Theory and Data Compression
Credit Points	5
Catalogue Description	Introduces the historical and theoretical basis of information theory, the information rate of a code and trade-off between error detection and information rate. Discusses data compression, its various techniques as well as its application to image through JPEG and MPEG image compression.
Prerequisite(s)	CS 2 158 Probability and Statistics

Course Code	CS 3 266
Course Title	Introduction to Artificial Intelligence
Credit Points	7
Catalogue Description	Introduces the basic principles of artificial intelligence including Search, Logic, and Learning. Introduces different artificial intelligence techniques. Discusses these techniques and the problems for which they are applicable. Gives an overview of the limitations of these techniques.
Prerequisite(s)	CS 1 107 Data Structure

Course Code	CS 3 267
Course Title	Essentials of Cyber Security
Credit Points	7
Catalogue Description	Introduces students to cyber security trends and concerns, along with company and personal data security. Teaches students how to defend their systems and data from cyberattacks, preserve their data in a secure manner, and maintain their privacy on the Web and social media.

Course Code	CS 3 271
Course Title	Advanced Mobile Applications
Credit Points	7
Catalogue Description	Building on the Android-driven Mobile Apps course, this course continues the student-learning journey by providing advanced knowledge and skills essential to develop full mobile iOS applications. Topics covered include detailed tutorials on iOS app development architectures, user interface design, data presentation, data exchange, networking, maps, location-based services, and databases. It also provides an overview of hybrid mobile app development techniques, e.g. using Flutter.
Prerequisite(s)	CS 3 160 Mobile Applications

Course Code	CS 3 272
Course Title	Data Analytics and Visualisation
Credit Points	7
Catalogue Description	Introduces students to the state-of-the-art modelling, analysis and visualisation techniques. It also provides students with a foundation for visualisation to support exploratory analysis, statistical modelling, machine learning, and presentation of results on very large amounts of data.
Prerequisite(s)	CS 1 146 Math 2: Linear Algebra; CS 1 107 Data Structures

Course Code	CS 3 273
Course Title	Introduction to Cloud Computing
Credit Points	7
Catalogue Description	Provides students with basic knowledge related to the cloud computing paradigm. It focuses on its techniques, ecosystem, services, and applications. Students will learn distributed systems concepts (e.g., virtualisation and data parallelism) and big data patterns (e.g., Map-Reduce, NoSQL storage systems) necessary to build Cloud applications. Students will be exposed to state-of-the-art solutions for cloud computing developed by leading companies (e.g., Google, Amazon, Microsoft, Yahoo, VMWare).
Prerequisite(s)	CS 2 114 Database Systems; CS 3 155 Computer Networks

Course Code	CS 3 312
Course Title	Logistics
Credit Points	5
Catalogue Description	Provides an introduction into the field of logistics. Comprises the following key areas and their interrelationships: logistics concepts and strategies; quantitative methods for logistics analysis; optimisation and collaboration; IT tools and advanced planning systems (APS).

Course Code	CS 3 322
Course Title	Organisation and Human Resources
Credit Points	5
Catalogue Description	Introduces the students to the important aspects of working environments, where different motivations, rules and models shape different types of organisations. Covers the topic of human resource management.

Course Code	CS 3 324
Course Title	Investment and Finance
Credit Points	5
Catalogue Description	Presents several possibilities to assess real investment opportunities. Starts with a derivation of the net present value formula as the standard quantitative approach in capital budgeting under certainty, then discusses several extensions of the basic calculus, and ends with the additional recognition of uncertainty in the evaluation of investment projects.

Course Code	CS 3 344
Course Title	Marketing
Credit Points	5
Catalogue Description	Introduces some basic marketing concepts. Focuses on concepts, including policies for pricing, advertising, selling and manufacturing. Explores the concepts of market research and market analysis.

Course Code	CS 3 346
Course Title	Strategic Business Planning
Credit Points	5
Catalogue Description	Studies the basic concepts, problems and methods of business planning. Includes lectures and complementary exercises.

Course Code	CS 3 367
Course Title	AI for Business
Credit Points	4
Catalogue Description	Introduces students to the basics of Artificial Intelligence (AI) and how businesses across diverse sectors are using it for competitive advantage. In particular, it shows to students, through example and study cases, how AI could be used in Customer Service, Sales, and Marketing.

Course Code	CS 3 370
Course Title	Introduction to Business Intelligence
Credit Points	5
Catalogue Description	Decision makers need to collect complex business data from distributed systems and then employ analytics techniques to discover business relationships; to communicate efficiently with clients, and to ensure successful business practices. This course introduces students to the concepts of business intelligence (BI) as components and functionality of information systems. It shows how business problems can be solved by using BI tools (e.g., data warehouses, data mining and analytics). Case studies are used to explore the use of application software, web tools, success and limitations of BI as well as technical and social issues.

Course Code	CS 3 469
Course Title	Cryptography and Blockchain
Credit Points	7
Catalogue Description	Blockchain applications are rapidly gaining momentum across a range of sectors, including de-cartelized finance, supply chain, and smart contracts. Given that a blockchain is simply a growing list of records, called blocks, chronologically linked together using cryptography, this course examines the areas of cryptography, making the Blockchain technology possible. The course also provides advanced knowledge and skills essential to understanding Blockchain and its applications. Topics covered include symmetric and asymmetric cryptography, hash functions, PKI, digital signatures, peer-to-peer networking, blockchain operational protocol, blockchain types and applications, and cryptocurrencies.
Prerequisite(s)	CS 1 101 Programming Fundamentals

Course Code	CS 3 xxx
Course Title	Topics in Applied Computer Science
Credit Points	7
Catalogue Description	Covers a selected topic in applied computer science. Explores the concepts that will be defined by the course coordinator.

Course Code	CS 3 xxx
Course Title	Topics in Theoretical Computer Science
Credit Points	7
Catalogue Description	Covers a selected topic in theoretical computer science. Explores the concepts that will be defined by the course coordinator.
Prerequisite(s)	Depends on the topic chosen for this course

Course Code	CS 3 xxx
Course Title	Topics in Business
Credit Points	5
Catalogue Description	Covers a selected topic in business. Explores the concepts that will be defined by the course coordinator.

Course Code	CS 4 125
Course Title	Interactive Systems and Computer Graphics
Credit Points	7
Catalogue Description	Focuses on how to design good interactive systems, covering important design principles (learnability, visibility, error prevention, efficiency, and graphic design) and the human capabilities that motivate them (including perception, motor skills, color vision, attention, and human error). Introduces students to the fundamentals of the implementation of effective computer graphics.

Course Code	CS 4 130
Course Title	Research Methods
Credit Points	5
Catalogue Description	Builds the scientific research skills required to prepare, carry out, and complete research work activities. Trains students to investigate a selected research topic and write the related literature review, research proposal, and a complete report. Explores important issues, including Bachelor thesis, graduate studies, giving a research talk, ethics, and referencing.
Prerequisite(s)	Minimum of 150 CP

Course Code	CS 4 131
Course Title	Bachelor Thesis
Credit Points	12
Catalogue Description	Requires from students to select topics in computer science and critically investigate their requirements, design solutions, implement these solutions, and evaluate the results obtained. Requires from students to submit Bachelor thesis reports and present their works in the Thesis Colloquium.
Prerequisite(s)	Minimum of 180 CP, min. IELTS 6.0 or equivalent CS 4 130 Research Methods
Corequisite(s)	CS 4 132 Bachelor Thesis Colloquium

Course Code	CS 4 132
Course Title	Bachelor Thesis Colloquium
Credit Points	3
Catalogue Description	Provides a platform where students can present the intermediary and final results of their Bachelor Thesis.
Prerequisite(s)	Minimum of 180 CP, min IELTS 6.0 or equivalent CS 4 130 Research Methods
Co-requisite(s)	CS 4 131 Bachelor Thesis

Course Code	CS 4 133
Course Title	Internship
Credit Points	9
Catalogue Description	Provides students with insight into the daily activities of a computer science professional. Applies what has been learnt in class to real life situations
Prerequisite(s)	Minimum of 120 CP

Course Code	CS 4 236
Course Title	Data Mining Algorithms
Credit Points	7
Catalogue Description	This course introduces the students to intelligent algorithms that discover and build models for complex relationships in huge amounts of data. The course will start by introducing data warehousing techniques, followed by clustering, classification and association rules mining. The course will also use case studies for real life applications to demonstrate the value of these techniques.
Prerequisite(s)	CS 3 114 Database Systems

Course Code	CS 4 237
Course Title	Embedded Systems
Credit Points	7
Catalogue Description	Explores the fundamentals of embedded system hardware and firmware design. Offers intensive lab sessions to build students' hands-on experience on some embedded systems programming concepts and hardware techniques. Trains students to create systems combining hardware and software solutions.
Prerequisite(s)	CS 1 102 Computer Architecture and CS 3 117 Operating Systems

Course Code	CS 4 238
Course Title	Implementation of Databases
Credit Points	7
Catalogue Description	Introduces advanced topics related to database systems. Focuses in particular on different aspects of large and distributed database implementations with a specific attention to query processing, optimization, performance evaluation, and tuning.
Prerequisite(s)	CS 2 114 Database Systems

Course Code	CS 4 239
Course Title	Object-Oriented Software Design Patterns
Credit Points	7
Catalogue Description	Introduces advanced object-oriented software development theories and methodologies using design patterns. Focuses mainly on the methodology of architecting and designing highly modular and highly reusable software components and systems. Emphasizes the theory of software engineering reusable component models by using the standard software design patterns and employing the latest software design methodology.
Prerequisite(s)	CS 1 107 Data Structures

Course Code	CS 4 240
Course Title	Advanced Game Design and Development
Credit Points	7
Catalogue Description	Covers the architecture, design, and software development of game engines. Focuses on the design and development of game engines' core components and the essential elements of computer games' artificial intelligent (AI), genetic algorithms, and neural networks. Covers different paradigms of game engines.
Prerequisite(s)	CS 3 226 Introduction to Game Design and Development

Course Code	CS 4 250
Course Title	Analytical Information Systems
Credit Points	7
Catalogue Description	Covers the topics of Data Warehouses, OLAP (Online Analytical Processing) and Data Mining. Includes practical works and case studies with dedicated software tools.
Prerequisite(s)	CS 2 114 Database Systems

Course Code	CS 4 256
Course Title	Advanced Mobile Computing
Credit Points	7
Catalogue Description	Provides a detailed analysis of current mobile wireless network technologies and an introduction to the essentials of mobile wireless applications technologies. Introduces thin-client and smart client applications development for mobile wireless.

Course Code	CS 4 275
Course Title	Extended Reality
Credit Points	7
Catalogue Description	Introduces students to the new digitization and their potential for optimizing the Get to know product life cycle processes. The focus is on Virtual Reality (VR) and Augmented Reality (AR). Offers hands-on experience to develop xR applications and implement product development process.
Prerequisite(s)	CS 1 101 Programming Fundamentals

Course Code	CS 4 447
Course Title	Applied Automata Theory
Credit Points	7
Catalogue Description	Introduces advanced automata concepts that can be applied to real-world problems. Focuses on a thorough formal analysis of the presented concepts.
Prerequisite(s)	CS 2 111 Theory of Computing

Course Code	CS 4 448
Course Title	Combinatorial Optimisation
Credit Points	7
Catalogue Description	Deepens the topics covered in "Efficient Algorithms". Presents generic advanced algorithms to solve complex problems.
Prerequisite(s)	CS 2 109 Efficient Algorithms; CS 2 111 Theory of Computing

Course Code	CS 4 449
Course Title	Computational Geometry
Credit Points	7
Catalogue Description	Introduces the paradigm of computational geometry and its applications. Teaches how to design and analyse efficient algorithms and data structures for basic (but important) problems in discrete computational geometry, including convex hulls, line intersections, Voronoi diagrams, Delaunay triangulations, arrangements of lines and hyperplanes, and range searching.
Prerequisite(s)	CS 2 109 Efficient Algorithms

Course Code	CYS 3 101
Course Title	Web and Mobile App Security
Credit Points	7
Catalogue Description	Appraises vulnerabilities and threat vectors associated with Web and Mobile Computing Devices. This course contains a specific emphasis on mitigation techniques including security configurations as well as security software. Topics will include the following: Mobile Computing Overview, Wireless Communications Infrastructure Vulnerabilities, Wireless Communications Infrastructure Vulnerabilities Mitigation Techniques, Mobile Platform Vulnerabilities, Mobile Platform Vulnerabilities Mitigation Techniques, Mobile App Vulnerabilities, Mobile App Vulnerabilities Mitigation Techniques, Mobile Device Vulnerabilities, Mobile Device Vulnerabilities Mitigation Techniques and Organisational Mobile Device Security Policy Requirements.
Prerequisite(s)	CS 2 134 Introduction to Information Security

Course Code	CYS 3 102
Course Title	Cyber Crime Investigations and Forensics
Credit Points	7
Catalogue Description	Provides students with a comprehensive understanding of digital forensic principles. It also provide them with appropriate knowledge related to the collection, preservation, and analysis of digital evidence. To this end, the course will include topics related to computer and network technologies, operating system architectures, disk structures, and file system analysis. Students will learn about the importance of forensic procedures, legal considerations, control of digital evidences, and documentation of forensic analysis. They will also develop an understanding of the different applications and methods for conducting network and digital forensic acquisition and analysis. The course consists of lectures and student class presentations (seminars). It requires from students to make appropriate research efforts to investigate network forensic issues on their own.
Prerequisite(s)	CS 2 134 Introduction to Information Security

Course Code	CYS 3 103
Course Title	Ethical Hacking
Credit Points	7
Catalogue Description	Provides the skills and knowledge needed to secure organisational information assets from cyberattacks in a proactive manner. The course focuses on the code of conduct and ethics of attacking systems. The course also examines hacking tools and techniques used by security professionals and ethical hackers to protect computer networks. It includes topics such as attack vectors, intrusion detection, honey pots, penetration testing, cryptography and steganography, user rights and privileges, security baseline analysers, physical security, and operational security.
Prerequisite(s)	CS 2 134 Introduction to Information Security

Course Code	CYS 3 104
Course Title	Applied Cryptography
Credit Points	7
Catalogue Description	Introduces the fundamental and practical knowledge of cryptography and its applications. This course covers diverse topics on cryptography and network security techniques including bitcoin and blockchain, conventional encryption, asymmetric and symmetric cryptology, digital signatures, certificates, key exchange, key management, authentication, network access control, cloud computing security, electronic mail security, advanced crypto primitives. This course focuses on both theoretical concepts and practical applications of cryptanalysis and network security techniques.
Prerequisite(s)	CS 2 134 Introduction to Information Security

Course Code	CYS 2 105
Course Title	Cyber Security Risk Management
Credit Points	6
Catalogue Description	Introduces students to the fundamentals of cyber security risk management, its methodologies and tools. Through case studies, students will learn how to manage cyber security risks in the real world.
Prerequisite(s)	CS 2 134 Introduction to Information Security

Course Code	CYS 3 406
Course Title	Network Security: VPN and Firewalls
Credit Points	7
Catalogue Description	Provides a foundation in networking technologies that are core to creating secure networks. This course will focus on an introduction to Virtual Private Networks (VPNs) and firewalls for securing a network. Various network security related issues are introduced and examined. Different types of VPNs for securing data in an organisational setup are discussed along with the benefits and architecture of a VPN and how to implement a VPN. Other topics include the utility of firewalls in tackling security problems and the limitations of a firewall. In addition, instruction is also given on how to construct, configure and administer a firewall and the functionality of a firewall.
Prerequisite(s)	CS 2 134 Introduction to Information Security

Course Code	CYS 4 107
Course Title	Cyber Security Seminar
Credit Points	4
Catalogue Description	Offers the student the entry to self-directed scientific work related to Cyber sSecurity. The student chooses a topic, does the literature review and presents their work in a written report and in class.
Prerequisite(s)	CS 2 106 Proseminar

Course Code	CYS 4 108
Course Title	Disaster Recovery and Business Continuity
Credit Points	7
Catalogue Description	Helps the student understands a variety of topics in disaster recovery and business continuity such as: introduction to disaster recovery, concept of disasters, introduction to business continuity, disaster recovery processing plans, risk management techniques, facility protection during disaster recovery period, data/system recovery, incident response and public service effect in disaster recovery plan.
Prerequisite(s)	CS 2 134 Introduction to Information Security

Course Code	CYS 4 109
Course Title	Special Topic in Cyber Security
Credit Points	5
Catalogue Description	Covers a selected topic in Cyber Security. Explores the concepts that will be defined by the course coordinator. May include topics such as: Vulnerability Analysis, Penetration Testing; Securing the Cloud; Disaster Recovery; Secure Programming; etc.
Prerequisite(s)	Announced by the adviser

Course Code	CYS 4 110
Course Title	Data Storage Privacy and Security
Credit Points	5
Catalogue Description	Sensitizes regarding privacy and data protection in Big Data environments. The student will learn privacy preserving methodologies, as well as data protection regulations and concepts in Big Data system.
Prerequisite(s)	CS 2 134 Introduction to Information Security

Course Code	CYS 4 672
Course Title	IT Security and System Auditing
Credit Points	7
Catalogue Description	Introduces students to the main concepts and techniques in network security, information security and auditing. It also exposes students to the latest trend of computer attack and defence. It also covers concepts, methods, and best practices in securing information systems. Moreover, this course equips students with sufficient knowledge to view information systems as organisational assets to be valued and protected.
Prerequisite(s)	CS 2 134 Introduction to Information Security; CS 2 145 Accounting and Controlling

Course Code	ENG 1 102
Course Title	Physics 1
Credit Points	5
Catalogue Description	Aims to inspire critical thinking attitude toward the natural world. Introduces the laws of Newtonian Mechanics in detail. Focuses on understanding of the fundamental concepts and principles of Physics with particular focus on the fields of Mechanics, oscillation and wave. Studies Kinematics, Dynamics, moments and Energy, Oscillations as well as simple harmonic Oscillations to solve the real world problems using adequate mathematical skills. Owns laboratory portion which develops the experimental and data analysis skills.

Course Code	ENG 1 103
Course Title	Chemistry 1
Credit Points	5
Catalogue Description	Introduces students to fundamental chemical concepts and principles. Covers the major topics including manipulating data, the periodic table, nomenclature of common compounds, stoichiometry, reactions, ideal gas laws, thermochemistry, and electronic structure of the atom. Includes Lectures, Central Practical / Exercise as well as Lab sessions. Builds the foundation for the course Chemistry 2.

Course Code	ENG 1 104 (only ME & PE students)
Course Title	Introduction to CAD
Credit Points	3
Catalogue Description	Introduces students to the basic concepts of 3D modelling and technical drawing using a CAD system. The course teaches students how to model a number of different types of parts, which are commonly found in industry and it teaches students how to assemble these parts in order to achieve the goal of modelling an Engineering Design. The course will help students to appreciate that such modelling saves a significant amount of time and money in comparison to manufacturing a prototype, and as such, it helps them to appreciate the importance of being able to model well in CAD.

Course Code	ENG 1 108
Course Title	Physics 2
Credit Points	5
Catalogue Description	Introduces the basic concepts of electrostatics, current electricity, electromagnetism, waves, and modern physics. Includes the understanding of laws of electricity, magnetism, and electromagnetism to understand the working of the devices like capacitor, batteries, motors and generators. Aims to build creative and critical thinking to solve physical problems by using adequate mathematical tools. Includes laboratory classes to develop experimental and analytical skills on acquired data.
Prerequisite(s)	ENG 1 102 Physics 1

Course Code	ENG 1 109
Course Title	Chemistry 2
Credit Points	5
Catalogue Description	Builds upon the foundation of chemical concepts laid out in the first course and covers the basic concepts underlying chemical processes. Covers material including solutions, chemical kinetics, equilibrium, acids and bases, thermodynamics, and electrochemistry. Elaborates laboratory experiments that are designed to the concepts covered in the lecture. Helps the student develop the lab skills needed for higher level courses.
Prerequisite(s)	ENG 1 103 Chemistry 1

Course Code	ENG 1 112
Course Title	Project Work 2
Credit Points	4
Catalogue Description	Helps students to further develop an integrated approach to Project Work, building upon the work of Project Work I, with a particular focus on planning and project management skills as well as teamwork skills. Overall, this course aims to further help students apply their Engineering knowledge to the real world in order to teach them what is and what is not achievable in reality, in order to provide them with the experience to design and prepare better in their future projects during their Engineering studies and during their working life.
Prerequisite(s)	ENG 1 140 Project Work 1

Course Code	ENG 1 139
Course Title	Engineering Drawing
Credit Points	3
Catalogue Description	Introduces students to the fundamental concepts of technical drawings, drawing standards and basic machine elements. Students will be taught a range of topics during the course, which will enable them to accurately draw parts that are commonly used by Engineers, including shafts, bearings, and gears. Although such technical drawings can be drawn using CAD software, it is still very important to know the rules and conventions since the software needs to be informed by the user.

Course Code	ENG 1 140
Course Title	Project Work 1
Credit Points	3
Catalogue Description	Helps Students to develop an integrated approach to Project Work, with a particular focus on planning and project management skills as well as teamwork skills.

Course Code	ENG 1 141
Course Title	Engineering Principles and Calculations
Credit Points	4
Catalogue Description	Introduces the fundamental principles of material and energy balance in the context of a process engineering plant.
Prerequisite	ENG 1 103 Chemistry 1; ENG 1 145 Mathematics 1: Calculus

Course Code	ENG 1 143
Course Title	Programming for Engineering
Credit Points	3
Catalogue Description	Introduces students to the fundamentals of programming and engineering computations. Provides students with an introduction to computer systems and programming concepts and paradigms. Allows students to develop basic programming skills and emphasizes applying problem solving skills. Applies the concepts learned through a series of tutorials, lab works and assignments.

Course Code	ENG 1 145
Course Title	Mathematics 1: Calculus
Credit Points	6
Catalogue Description	Introduces the students to the basic knowledge of analysis for all further studies. Includes an elementary introduction, sequences, continuity, differentiation, integration, series and power series, and curve discussion.

Course Code	ENG 1 146
Course Title	Mathematics 2: Linear Algebra
Credit Points	6
Catalogue Description	Introduces the students to the understanding of algebraic structures as matrices and vector spaces and their applications. Explains the Gauss Algorithm and the link to matrices. Studies linear maps between vector space. Applies fundamental concept of eigenvalues and eigenvectors. Introduces Multi-Linear maps and their applications.

Course Code	ENG 1 147
Course Title	Mathematics 3: Advanced Calculus
Credit Points	6
Catalogue Description	Aims to further develop students' understanding and ability to use differentiation and integration for functions with several variables. Includes parametrization of curves, integration in several variables, ordinary differential equations, solution techniques, advanced Fourier analysis, multidimensional integrals in full dimension, ordinary differential equations, curves and surfaces in space, and theorems of Gauss and Stokes.
Prerequisite(s)	ENG 1 145 Mathematics 1: Calculus

Course Code	ENG 2 114
Course Title	Mechanics 1
Credit Points	5
Catalogue Description	Introduces Students to the fundamental concepts of Mechanics, with a particular focus on Statics. During this course students can expect to learn about forces, moments, friction, mechanical work, beams and many other basic concepts and problems related to Mechanics. Such knowledge is critical in the design of Mechanically sound Engineering Designs.
Prerequisite(s)	ENG 1 147 Mathematics 3: Advanced Calculus ENG 1 102 Physics 1

Course Code	ENG 2 115
Course Title	Electrical and Electronic Engineering
Credit Points	5
Catalogue Description	Helps Students to develop an understanding of the fundamental concepts underlying electromagnetism and electrical circuits and the respective applications in electrical and electronics engineering. During this course students will also learn about the Oman power grid and how to measure commonly used electrical parameters like voltage, current, resistance, power, etc.
Prerequisite(s)	ENG 1 108 Physics 2; ENG 1 147 Mathematics 3: Advanced Calculus

Course Code	ENG 2 116
Course Title	Environmental Engineering
Credit Points	5
Catalogue Description	Provides an introduction to environmental engineering issues, treatments and pollution control. Environmental Engineering is a growing sector in both Oman and worldwide since the general population is becoming more educated about Environmental issues and the effect they have on their health and wider lives. Therefore, this course helps to educate Engineering students how to minimize the effect their work has on the Environment.

Course Code	ENG 2 117
Course Title	Project Work 3
Credit Points	4
Catalogue Description	Helps students to further develop an integrated approach to project work, building upon the work of Project Work 2, with a particular focus on planning and project management skills as well as teamwork skills. Overall this course aims to further help students apply their Engineering knowledge to the real world in order to teach them what is and what is not achievable in reality, in order to provide them with the experience to design and prepare better in their future projects during their Engineering studies and during their working life.
Prerequisite(s)	ENG 1 112 Project Work 2

Course Code	ENG 2 119
Course Title	Mechanics 2
Credit Points	5
Catalogue Description	Introduces students to the fundamental concepts of Mechanics, with a particular focus on the mechanics of deformable bodies. The course will successfully enable students to accurately consider the strength of materials in their engineering designs, which will ensure that their designs are strong enough, within reason, to perform their intended task(s).
Prerequisite(s)	ENG 2 114 Mechanics 1

Course Code	ENG 2 120
Course Title	Thermodynamics 1
Credit Points	5
Catalogue Description	Introduces students to the fundamental concepts of Thermodynamics with a particular focus on matter conversions, and provide examples of their application in the field of engineering. During this course, students will learn, among other things, about the First Law of Thermodynamics and they will learn how this can be used to relate heat and work changes in a system to changes in the internal, kinetic and potential energy of the system.
Prerequisite(s)	ENG 1 145 Mathematics 1: Calculus ENG 1 146 Mathematics 2: Linear Algebra ENG 1 108 Physics 2 ENG 1 103 Chemistry 1

Course Code	ENG 2 121
Course Title	Project Work 4
Credit Points	4
Catalogue Description	Helps students to further develop an integrated approach to Project Work, building upon the work of Project Work 3, with a particular focus on planning and project management skills as well as teamwork skills. Overall this course aims to further help students apply their Engineering knowledge to the real world in order to teach them what is and what is not achievable in reality, in order to provide them with the experience to design and prepare better in their future projects during their Engineering studies and during their working life.
Prerequisite(s)	ENG 2 117 Project Work 3

Course Code	ENG 2 144 (only ME and PE students)
Course Title	Thermodynamics 2
Credit Points	4
Catalogue Description	Introduces Students to the fundamental concepts of Thermodynamics with a particular focus on energy conversions, and provides examples of their application in the field of engineering. This course builds upon the concepts students learned during Thermodynamics 1, and in particular, it aims to teach Mechanical and Process Engineering students aspects of thermodynamics, such as IC Engines and Equilibrium, respectively, that are specific to their engineering disciplines, in order to prepare them well for their further courses and professional life.
Prerequisite(s)	ENG 2 120 Thermodynamics 1

Course Code	ENG 2 148
Course Title	Mathematics 4: Numerical Mathematics
Credit Points	6
Catalogue Description	Introduces fundamental concepts underlying numerical mathematics. Studies the topics including errors, norms, solution of nonlinear equations, systems of linear equations, least squares method, interpolation as well as ordinary differential equations.
Prerequisite(s)	ENG 1 146 Mathematics 2: Linear Algebra ENG 1 143 Programming for Engineering

Course Code	ENG 3 123
Course Title	Material Science 1
Credit Points	6
Catalogue Description	Introduces students to the basic concepts and principles of Materials Science. The main focus of the course is on the mechanical behaviour of metallic, ceramic and plastic materials. This aims to help students ensure that their Engineering Designs use the correct materials with the appropriate finishes in order to ensure that their designs fulfil their intended purpose(s).
Prerequisite(s)	ENG 1 103 Chemistry 1

Course Code	ENG 3 125
Course Title	Thermodynamics Laboratory
Credit Points	4
Catalogue Description	Helps students develop experimental skills in the field of Thermodynamics, with a particular focus on matter and energy conversions. Overall, this course aims to help students apply the thermodynamic concepts they learn in Thermodynamics 1 to real world experiments, which they can expect to come across and work with during their Professional Engineering Careers.
Prerequisite(s)	ENG 2 120 Thermodynamics 1

Course Code	ENG 3 126
Course Title	Fluid Dynamics
Credit Points	7
Catalogue Description	Introduces students to the fundamental concepts underlying the field of Fluid Dynamics. Students will learn the fundamental equations of Fluid Dynamics through which they will understand the key concepts of the conservation of mass, momentum, and energy. The derivation of the continuity, Bernoulli, and momentum equations will be learned as well as derivation of formulae for unsteady flow problems. Students will further learn about Laminar and turbulent flows and will derive the logarithmic law and the universal law of the wall.
Prerequisite(s)	ENG 1 147 Mathematics 3: Advanced Calculus

Course Code	ENG 3 127
Course Title	Simulation Techniques
Credit Points	6
Catalogue Description	Introduces students to basic principles and tools of numerical simulations in the field of engineering, thereby, allowing them to solve simulation tasks independently. Students learn to propose mathematical models on their own and to apply simulation software to the proposed models. Such knowledge is critical for their future careers as Engineers since the use of simulation is becoming ever greater due to the significant time and cost savings its use results in.
Prerequisite(s)	ENG 1 143 Programming for Engineering ENG 2 148 Mathematics 4: Numerical Methods

Course Code	ENG 3 128
Course Title	Measurement Techniques Laboratory
Credit Points	4
Catalogue Description	Helps students to develop experimental skills related to the accurate measurement of parameters that Engineers come across in their daily working lives. Such real-life practical experimental skills are crucial because students will know how to actually measure the parameters practically rather than just knowing the theory about how to measure them.
Prerequisite(s)	ENG 2 115 Electrical and Electronics Engineering

Course Code	ENG 3 129
Course Title	Business Engineering
Credit Points	3
Catalogue Description	Provides students with an introduction into the fundamental concepts of Business, Project, Decision Theory, and Operations Management.
	Introduces concepts like quantitative methods in operations management, project planning, decision theory, and quality- and risk-management in decision making.
	Includes basics of (I) project management: project definition, project manager, project team, and project design, engineering economics, project portfolio selection, project planning methods and (II) structuring of decision problems, rational decision making, decisions under certainty, decisions under uncertainty, attitudes towards risk, decisions under multiple objectives.

Course Code	ENG 3 149
Course Title	Mechanics 3 (only ME and PE students)
Credit Points	5
Catalogue Description	Introduces students to the fundamental concepts of Mechanics, with a particular focus on Dynamics. In particular, students will be taught about the cylindrical coordinate system, the kinematics of rigid bodies, linear and angular momentum the principle of the centre of mass and its implications, and students will be taught about gyroscopic motion.
Prerequisite(s)	ENG 2 119 Mechanics 2

Course Code	ENG 4 130
Course Title	Research Methods
Credit Points	2
Catalogue Description	Helps students to develop the scientific research skills required to prepare, carry out and complete a Bachelor Thesis in the field of Engineering. In addition, students will learn about how to conduct research ethically, such as correctly referencing the work of others and not plagiarising the work of others, and respecting patents and copyrights.
Prerequisite(s)	170 Credit Points

Course Code	ENG 4 131
Course Title	Heat and Mass Transfer
Credit Points	7
Catalogue Description	Introduces the fundamental concepts underlying Heat and Mass Transfer and develops the skills required to apply the concepts to solve simple problems.
Prerequisite(s)	ENG 2 120 Thermodynamics 1 ENG 3 126 Fluid Dynamics

Course Code	ENG 4 132
Course Title	Control and Automation
Credit Points	7
Catalogue Description	Introduces students to the fundamental concepts underlying Control and Automation, and develops their skills, which are required to apply these concepts to solve simple problems. Such problems are becoming an ever more frequent occurrence in the life of Mechanical and Process Engineers due to the ever greater amount of automation and the need to control it within these fields, thus, making this course essential for these Engineers. Introduces how to integrate census and actuators with programmable logic controllers (PLCs) to automate industrial processes.
Prerequisite(s)	ENG 1 147 Mathematics 3: Advance Calculus ENG 2 115 Electrical and Electronic Engineering

Course Code	ENG 4 133
Course Title	Bachelor Thesis
Credit Points	12
Catalogue Description	Establish that a student is able to integrate learnt skills and knowledge to solve an existing engineering problem within a limited timeframe. Such skills are expected to come from several of the courses the student has taken throughout their Degree Program, and as such, by applying them to a real-world engineering problem, this course allows the student to gain the critical experience of applying their theoretical knowledge to the real world.
Prerequisite(s)	A minimum of 200 CP, min IELTS 6.0 or equivalent ENG 4 130 Research Methods
Corequisite(s)	ENG 4 134 Colloquium

Course Code	ENG 4 134
Course Title	Colloquium
Credit Points	3
Catalogue Description	Provides a platform where students can present the intermediary results of their Bachelor Thesis. Such presentations most commonly take the form of weekly meetings during which the student and their group discuss their Bachelor Thesis project with their supervisor, in particular the results they have collected over the previous week, so that the supervisor can advise the student and their group about the next steps they should take in their project. Such presentations of results, discussion and advice helps to ensure that the Bachelor Thesis of the student(s) is completed to a satisfactory level and on time.
Prerequisite(s)	A minimum of 200 CP, min IELTS 6.0 or equivalent; ENG 4 130 Research Methods
Corequisite(s)	ENG 4 133 Bachelor Thesis

Course Code	ENG 4 135
Course Title	Internship
Credit Points	15
Catalogue Description	Provides students with an insight into the daily activities of an engineering professional and it teaches them to apply what has been learnt in class to real life situations. Furthermore, it helps students to learn how to interact with fellow Engineers, many of whom have multiple years of experience, much beyond theirs. This helps the students to develop healthy and fruitful working relationship from the outset when they begin their Engineering Careers.
Prerequisite(s)	At least 170 CP

Course Code	ENV 3 104
Course Title	Global Changes & Sustainable Development
Credit Points	5
Catalogue Description	Introduces students to the fundamental concepts of global challenges and mitigation measures as well as the way to sustainable development. During this course, students will learn about news making topics such as water scarcity, agriculture and food security, renewable energy and energy efficiency and recycling. Such topics are critical for Environmental Engineers to know about in detail because their future careers will involve much work in the associated areas.

Course Code	ENV 3 101
Course Title	Environmental Engineering Laboratory Methods
Credit Points	5
Catalogue Description	Provide students with an introduction into various laboratory methods used in environmental engineering. Such an introduction is critical in teaching the students how the theory they have learned from their Environmental Engineering degree course is applied to the real world, which will prepare them well for their careers as Environmental Engineers.
Prerequisite(s)	ENV 3 105 Air Pollution Control ENV 3 108 Sea Water Desalination ENV 3 109 Light and Noise Pollution

Course Code	ENV 3 102
Course Title	Hydrology and Water Resources
Credit Points	6
Catalogue Description	Introduces students to the basic principles of the water cycle as well as environmental issues related to water resources management. During the course, students will learn about the hydrological cycle and the unwanted effects of water flows, such as erosion and flooding, can be mitigated against. In addition, students will also learn about water efficiency to enable them to use water well in their Engineering Designs.
Prerequisite(s)	ENG 3 126 Fluid Dynamics

Course Code	ENV 3 103
Course Title	Renewable Energy & Energy Efficiency
Credit Points	5
Catalogue Description	Introduces students to the basic principles underlying renewable energy systems, and environmental impact. Identify and assess available renewable energy resources; and select, modify, and integrate systems to meet specified energy requirements. Explains the importance of energy conservation and efficiency, energy audit in industry and buildings and processes applied in industrial heat recovery. Design an appropriate thermal energy storage system for heating and cooling applications.
Prerequisite(s)	ENG 2 120 Thermodynamics 1

Course Code	ENV 3 105
Course Title	Air Pollution Control
Credit Points	5
Catalogue Description	Helps students to understand the effects of air pollutants on human beings and the environment, what the sources of these air pollutants are, and what their physical and chemical behaviours in the atmosphere are. Also, students will be exposed to a wide range of control technologies and future trends towards preventing air pollution.
Prerequisite(s)	ENG 2 116 Environmental Engineering

Course Code	ENV 3 106
Course Title	Integrated Water Resources Management
Credit Points	6
Catalogue Description	Provides students with a deep insight into the theoretical and methodological elements underlying the notion of 'integrated water resources management' (IWRM), with a particular focus on the concepts and tools for the sustainable planning and management of water resources. Furthermore, students will learn how to prevent conflict over water resources; something which will only increase in the future as the earth's atmosphere becomes ever warmer.
Prerequisite(s)	ENV 3 102 Hydrology and Water Resources

Course Code	ENV 3 107
Course Title	Solid Waste Management
Credit Points	6
Catalogue Description	This course covers advanced engineering and scientific concepts and principles applied to the management of municipal solid waste (MSW) to protect human health and the environment and the conservation of limited resources through resource recovery and recycling of waste material.
Prerequisite(s)	ENG 2 116 Environmental Engineering

Course Code	ENV 3 108
Course Title	Sea Water Desalination
Credit Points	6
Catalogue Description	Provides students with a description of methods of water analysis and treatment. During this course, students will study properties of water and aqueous solutions. In addition, they will learn how to conduct detailed discussion and analyses of designs, maintenance, energy requirements and economics of the major processes of desalination such as distillation, reverse osmosis, and electro-dialysis.
Prerequisite(s)	ENG 2 116 Environmental Engineering

Course Code	ENV 3 109
Course Title	Light and Noise Pollution
Credit Points	5
Catalogue Description	Introduces students to the basic concepts of light and noise pollution and their control. In particular, the course teaches students how to measure light and noise pollution, what the sources of this pollution are and how to control it. Furthermore, students will learn about the documentation of the pollution, the regulations governing it and how their knowledge of light and noise pollution can be applied in Environmental Impact Assessment.

Course Code	ENV 3 110
Course Title	Green Building
Credit Points	6
Catalogue Description	Introduces students to the concept of Green Building, Climate Change and the Building Sector, Environmental Impacts of the Construction Industry, different rating systems, Sustainable Sites, tools and methods for Energy management and savings , Indoor Environmental Quality, Materials & Resources, recycling contents & Volatile Organic Contents, Green Building for new construction and Existing Buildings, tools and methods for water savings and water efficiency, innovation on design for green buildings.

Course Code	ENV 3 138
Course Title	Introduction to Geographic Information Systems (GIS)
Credit Points	3
Catalogue Description	Introduces students to an important Information and Communication Technology (ICT) toolbox to support the general objectives of the programme such as (1) the modelling of process and water systems, (2) planning, budgeting and exploitation of water systems, (3) evaluation, optimisation and management of water systems, and (4) impact analyses and decision support systems. The course does not concentrate on one specific water resources aspect or analysis/modelling technique but stimulates and allows the student to integrate different data sets, analysis and modelling tools into a common environment from where he/she can tackle the water resources problem in an integrated manner.

Course Code	ENV 4 111
Course Title	Environmental Law
Credit Points	2
Catalogue Description	Introduces Students to several distinct areas of the Omani environmental law. The course will emphasize the legal framework for environmental protection, including a study of administrative law. Students will be exposed to key Constitutional principles, statutes, and regulations that govern the administration of environmental policies. Overall, such knowledge is crucial so that students know how to design in accordance with the relevant laws and regulations.

Course Code	ENV 4 112
Course Title	Environmental Impact Assessment
Credit Points	5
Catalogue Description	Introduce Students to the environmental impacts of projects and activities and to environmental impact assessment. These concepts include understanding how laws work, quantitative and qualitative reasoning, understanding the meaning of environment for an engineer, interpreting graphs and tables, critical thinking, and reading. To meet these objectives, we will engage in lectures, group discussion, field work in environmental testing, analysing data, and writing an environmental impact assessment.
Prerequisite(s)	ENV 3 105 Air Pollution Control ENV 3 108 Sea Water Desalination

Course Code	IBSM 1 101
Course Title	General Mathematics
Credit Points	6
Catalogue Description	Introduces students to the basic concepts of mathematics (logic, sets, numbers, functions, and graphs) and their applications. Explains the Gauss Algorithm. Includes principles of mathematics, systems of linear equations, sequences, limits and series, continuity, integration methods as well as functions of several variables.

Course Code	IBSM 1 102
Course Title	Tourism Geography of Oman
Credit Points	5
Catalogue Description	Introduce students to the basic concepts of tourism and geography, with an applied focus on the geography of Oman and its physical and man-made tourist attractions. Includes introduction to travel and tourism, geography of tourism, tourist destinations, economic, social and environmental impact of tourism on places and patterns of tourism geography in Oman.

Course Code	IBSM 1 103
Course Title	The Business Environment
Credit Points	5
Catalogue Description	Introduces students to the field of business administration. Discusses the organizational concepts, structures, and functions necessary for facing the challenges of operating a business in the economic, social, and legal environment of today's business. Builds up students' ability to understand key factors in productivity and managing a business effectively through, e.g., real-world case analysis.

Course Code	IBSM 1 104
Course Title	Microeconomics
Credit Points	5
Catalogue Description	Introduces students to fundamental concepts and methods of economics with a focus on decision-making by households and firms and on the analysis of market outcomes. Includes scarcity, opportunity costs, and production possibilities, consumer behaviour, producer behaviour and cost minimisation competitive markets, monopoly and monopsony, game theory and oligopoly, market entry, markets for factor inputs, externalities and public goods, and incomplete information.

Course Code	IBSM 1 105
Course Title	Financial Accounting
Credit Points	5
Catalogue Description	Provides a solid foundation in the core accounting principles and basic accounting systems. Covers concepts and standards that are underlying financial accounting and reporting. Applies these concepts to the role of financial accounting in the transmission of information to external stakeholders, its objectives, and its limitations. Includes basic techniques of accounting and bookkeeping, the accounting cycle during a financial year, regulatory framework and international standards and financial statements.

Course Code	IBSM 1 106
Course Title	International Travel Operations
Credit Points	5
Catalogue Description	Introduces students to the tourism intermediation and operation business, the business of tour operator and travel agencies, the principles of identifying itineraries, negotiating contracts, challenges facing the sector, regulatory framework, packaging, marketing and distribution, managing the tourist experience, pricing packages and operating distribution systems, selecting itinerary and working with the logistics tour management.

Course Code	IBSM 1 107
Course Title	International Hospitality Management
Credit Points	5
Catalogue Description	Introduces the students to the fundamentals of hospitality operations and international hospitality management. Provides an appropriate background to understanding basic concepts of the international business management including globalization, internationalisation and franchise. Includes Hospitality operations, hotel departments and classifications, international expansion strategies, international hospitality associations, quality assurance, profitability and asset management.

Course Code	IBSM 1 110
Course Title	Decision Theory
Credit Points	5
Catalogue Description	Introduces students to the analysis of decision-making. Covers behavioural models that describe the determinants of human decision making as well as normative and prescriptive approaches that help to improve decisions. Includes structuring of decision problems, rational decision making, decisions under certainty: normative and positive theory, decisions under uncertainty: normative and positive theory attitudes towards risk, decisions under multiple objectives, dynamic decision making, interdependent decision making, and group decisions.

Course Code	IBSM 1 121
Course Title	Marketing
Credit Points	5
Catalogue Description	Familiarises students with core marketing concepts and strategies. Deals with finding the appropriate strategy for different market situations and with applying empirical methods of market research to analyse consumer behaviour. Includes key aspects of a marketing strategy, the marketing mix: product decisions, pricing decisions, sales decisions, communication decisions, consumer markets and consumer behaviour, business-to-business marketing, marketing of services, international marketing, and fundamentals of market research.

Course Code	IBSM 1 146
Course Title	Statistics
Credit Points	6
Catalogue Description	Introduces the students to critical evaluation of data and to the basic principles of probability theory and statistics (including discrete distributions and combinatorial and stochastic methods). Covers basic concepts and methods of descriptive and inductive statistics as well as testing hypotheses.
Prerequisite	IBSM 1 101 General Mathematics

Course Code	IBSM 2 111
Course Title	Port and Cruise Management
Credit Points	5
Catalogue Description	Addresses two main issues: the principles of ports management and an analysis of cruise tourism supply and demand. Includes types of ports, ports management, ports operations, international issues in maritime, organisations and regulatory framework, international cruise operators, international cruise markets, cruise tourism and sustainable development and cruise tourism marketing.

Course Code	IBSM 2 112
Course Title	Tourism Planning and Development 1
Credit Points	5
Catalogue Description	Covers theoretical concepts and principles of tourism planning and development with a focus on the suitability of tourism as a development vehicle in particular contexts. Includes rationale for tourism planning and development, tourism planning approaches and tools, tourist destination lifecycle concept, sustainable development planning and adverse effects of tourism development, tourism planning at different geographical scales (local, regional, national and supranational) and stakeholder integration in tourism planning.

Course Code	IBSM 2 113
Course Title	Business Law
Credit Points	4
Catalogue Description	Introduces relevant legal aspects of business operations. Covers main principles and legal codes that are involved in different areas of a business. Includes the legal System of the Sultanate of Oman, contracts (with specific reference to Omani and international sale contracts), legal forms of companies in Oman (companies' law), intellectual properties (patent, copyright, trademark, and trade secret), international trade (benefits and basic legal principles) and dispute settlement outside courts (negotiation, mediation, and arbitration).

Course Code	IBSM 2 114
Course Title	GIS and Statistical Analysis Tools
Credit Points	4
Catalogue Description	Strengthens students' skills in using a variety of IT and computer tools for addressing issues of tourism management. Studies competences in applying GIS as well as software for statistical analyses (such as SPSS) and for supporting participative processes in regional development, with particular focus on Oman and the Arabian world. Includes hypothesis testing, analysis of variance, spatial dependencies, structure of various software tools and practicing the use of tools relating to given problems.
Prerequisite	IBSM 1 146 Statistics

Course Code	IBSM 2 115
Course Title	Airport and Aviation Management
Credit Points	5
Catalogue Description	Offers an overview of management and operation issues within both the airports and aviation industry. Provides insights on regulatory frameworks and bilateral agreements that govern the aviation industry, and international organisations of concern. Includes the business of airports, issues in airport management and operations, regulatory framework and organisations, aviation and airlines business and patterns of development and recent trends in the aviation industry like low-cost carriers.

Course Code	IBSM 2 116
Course Title	Management Accounting
Credit Points	5
Catalogue Description	Covers contemporary accounting principles and basic accounting systems. Includes cost flows and cost terminology, estimating fixed and variable costs, bridging planning and control, activity-based costing, capital budgeting and strategic planning and control. Aims to build up the students' ability to analyse the information content of financial statements and data from managerial accounting systems.

Course Code	IBSM 2 117
Course Title	Tourism and Technology
Credit Points	5
Catalogue Description	Introduces the use for ICT for travel, tourism, and hospitality, this will include Global Distribution Systems and Global Reservation Systems. Focuses on the use of technological innovation in areas like sales, marketing, and consumer behaviour, etc. Includes e-tourism, e-hospitality, e-airlines, e-marketing especially as it relates to the use of social media, email marketing, and web portals.

Course Code	IBSM 2 118
Course Title	International Destination Management
Credit Points	5
Catalogue Description	Raises awareness about international tourism, from both a geographical and development perspective. Focuses on main issues that concern tourism as an option for development and how tourism developmental goals can be reached via different types of tourism, tourism and employment, tourism and gender. Includes geography of international tourism, issues in tourism development, models of tourism development, models of tourism management systems and main tourism destinations.

Course Code	IBSM 2 120
Course Title	Human Resource Management
Credit Points	5
Catalogue Description	Introduces students to core areas of human resource management (HRM) such as personnel planning, recruiting, retention and fluctuation, performance appraisal, training, team building, career development, compensation and international HRM.

Course Code	IBSM 2 122
Course Title	International Business Strategy
Credit Points	5
Catalogue Description	Provides a theoretical and practical understanding of how business strategy can be formulated in a global context. Studies the economic issues related to the globalisation of firms and markets. Covers the fundamental concepts of international trade theory, and the issues involved in the organisation and management of international firms. Includes principles of international business, patterns of globalisation, reasons for international trade, multinational firms, outsourcing and international production and strategies for internationalisation.

Course Code	IBSM 2 123
Course Title	Strategic Management
Credit Points	6
Catalogue Description	Focuses on the method of developing a strategic plan for a firm to obtain a competitive advantage. In particular how to position a firm with respect to its competitors and how to manage its resources and capabilities to gain sustainable advantage and profitability. Combines the study of two separate but complementary issues: the opportunities and challenges originating from the firm's external environment, and the resources and capabilities arising from the firm's internal environment. Includes strategy concept, creating competitive advantage, industry analysis, value chain and capabilities, human resources, corporate culture and organisational design, strategy formulation, strategy for multi-business companies and diversification, mergers and acquisitions, alliances, strategies for innovation, globalization and in a changing environment and applying game theory to strategic management.

Course Code	IBSM 3 119
Course Title	Macroeconomics
Credit Points	5
Catalogue Description	Introduces basic principles of macroeconomics that explain the determinants of economic aggregates such as national income, employment, the price level, or the exchange rate. Deals with fluctuations over the business cycle as well as with the macroeconomic development over the long run, and consequently integrates open economy issues into the analysis. Includes National Accounts, fundamentals of economic growth, labour markets and unemployment, prices and exchange rates in the long run, consumption, savings, and investments, the market for money, short-run equilibrium, aggregate demand and supply and exchange rates and the current account.

Course Code	IBSM 3 124
Course Title	Tourism Marketing and Communication
Credit Points	5
Catalogue Description	Covers essential marketing concepts by focusing on the promotional element of the marketing mix. Studies marketing communication strategies, and effective use of advertising, public relations, direct marketing, sales promotion, brochures and online marketing material. Introduces the role of travel media in communicating destinations, understanding destinations' brands and that of organisations whether public or private in the communication process.
Prerequisite(s)	IBSM 1 121 Marketing

Course Code	IBSM 3 125
Course Title	Project Management
Credit Points	4
Catalogue Description	Introduces concepts like quantitative methods and IT-tools for Project Planning, Project Control and Time-, Cost, Quality- and Risk-Management. Includes project management definitions, project manager, project team, and project design, project phases, project planning methods and quantitative methods, project controlling methods and tools, time, resource, and cost management, communication and project risk management and IT systems and tools for project management.

Course Code	IBSM 3 126
Course Title	Entrepreneurship and Innovation
Credit Points	4
Catalogue Description	Introduces students to the phase model of the innovation process, general concepts of project management and foundations of entrepreneurship. Includes exploring innovations, executing innovations, exploiting innovations, renewing innovations, innovation strategies, types of innovations, entrepreneurship and SMEs, barriers to entrepreneurship, and environment and entrepreneurial intention.

Course Code	IBSM 3 127
Course Title	Internship
Credit Points	15
Catalogue Description	Provides insight into the daily activities of a professional career. Applies previous knowledge to real life situations. Includes learning practical skills needed to work in the business, tourism and service industries.

Course Code	IBSM 3 129
Course Title	Finance and Investment
Credit Points	5
Catalogue Description	Provides an overview of the complex world of finance through insights into personal and corporate finance. Introduces the fundamental concepts and essential techniques to evaluate investment decisions like decision-making via net present value analysis. Covers financial instruments and risk and return analysis. Discusses capital structure and capital budgeting options.

Course Code	IBSM 3 132
Course Title	Tourism Planning and Development 2
Credit Points	5
Catalogue Description	Provides knowledge and skills required to appreciate and evaluate the economic, cultural and environmental impact of tourism planning and development on society. Includes integrated and multidimensional tourism planning concepts, impact planning and impact analysis, application of case studies to illustrate tourism planning and development approaches and impact, spatial tourism planning – including regulations, zoning strategies and control plans, tourism development as a strategy for regional development and urban revitalisation, community-based tourism planning and pro-poor tourism planning.
Prerequisite(s)	IBSM 2 112 Tourism Planning and Development 1

Course Code	IBSM 3 239
Course Title	International Tourism Hospitality at Sea (ITHAS)
Credit Points	5
Catalogue Description	Focuses on regional tourism promotion and development approaches implemented in the destination. Discusses relevant issues with various experts working in the field. Makes use of the cruising industry in along the coast of the Adriatic sea; students spend a week sailing, visiting destinations, assessing the tourism product attending and participating in lectures and seminars.

Course Code	IBSM 3 240
Course Title	Event Management
Credit Points	5
Catalogue Description	Introduces the students to international issues related with event tourism management both conceptually and practically. Explores theoretical concepts of event tourism, in particular convention management, fund raising, marketing events, events logistics and mega events management. Explores the development implication of this type of tourism and the system that needs to be in place to ensure its competitive success. Focuses on managing the legacies and its impact on local communities.

Course Code	IBSM 3 241
Course Title	Contemporary Issues in Tourism
Credit Points	5
Catalogue Description	Covers recent and current trends of tourism development. Includes contemporary issues in tourism development and planning both nationally and internationally. Includes contemporary issues in tourism such as politics, competitiveness, innovativeness, sustainability, development, and regional issues.

Course Code	IBSM 3 242
Course Title	Promoting the Knowledge Economy
Credit Points	5
Catalogue Description	Offers an overview of issues and approaches towards encouraging innovation- and knowledge-driven development processes with a specific focus to the Arab Gulf region. Analyses the state of knowledge, research and innovation higher education, labour market, migration, knowledge transfer, ICT, and various economic diversification strategies in the Arab Gulf from the rationale of the need for economic diversification of oil economies and the concomitant transition to a knowledge economy. Includes initiatives developed by the Arab Gulf countries to foster education, entrepreneurship, innovation, and science development.

Course Code	IBSM 3 243
Course Title	Foreign Direct Investment
Credit Points	5
Catalogue Description	Aims to review the theories and empirical analyses that explain FDI and their effects on economic development. Provides students with an updated knowledge on FDI and their key challenges for developing countries. Theoretical strategies for attracting FDI are introduced and their practical real-world implementation by a variety of countries are discussed.

Course Code	IBSM 3 249
Course Title	Managerial Economics
Credit Points	5
Catalogue Description	This course is an application of economic theories (mainly microeconomics) to practical business decisions. In addition to deepening their ability to use economic tools/knowledge in practical managerial decisions, it equips students with the knowledge and skills needed for estimating and/or forecasting demand and costs of a firm through a hands-on approach. Topics include demand theory and estimation, cost theory and estimation, price and non-price decisions as well as strategic interactions a business may face in different market structures, dilemmas involved in decision making in situations of rivalry, and coping up with government regulations (e.g. anti-trust laws).
Prerequisites	IBSM 1 104 Microeconomics; IBSM 1 146 Statistics

Course Code	IBSM 3 250
Course Title	Basics of Healthcare Economics
Credit Points	5
Catalogue Description	Health Economics implements the methodology of economic analysis and evaluation in the health sector; it helps students to understand the functioning (and possible failure) of the health market and provides criteria for measuring the effectiveness and efficiency of health policy.
Prerequisites	IBSM 1 104 Microeconomics

Course Code	IBSM 3 251
Course Title	Healthcare Service Management
Credit Points	5
Catalogue Description	The course introduction to healthcare service management introduces the topic of managing services in healthcare, how to make services more effective and efficient, and how to improve the customer relationship. The course begins by introducing you to the topic of services and the complexity of the service delivery process. The aim of the course is to develop a deeper understanding of the underlying factors that contribute to successfully manage services in service organisations and to create service value for customers. The course is designed for students that have elementary knowledge of services and service management.

Course Code	IBSM 4 128
Course Title	Tourism and Consumer Behaviour
Credit Points	5
Catalogue Description	Focuses on understanding tourists' behaviour and motivation to travel. Explores the economic and social factors influencing tourist behaviour and destination choice. Studies the impacts of such behaviour on planning for the tourism product. Covers case studies of different tourist types and different types of tourism. Includes principles of consumer behaviour, tourist behaviour, tourist motivation, and case studies related to tourist typology.

Course Code	IBSM 4 130
Course Title	Culture and Heritage Tourism
Credit Points	4
Catalogue Description	Covers the basic concepts underlying culture and heritage as major assets for tourism development, in particular tangible and intangible heritage including museums, world heritage sites, crafts, music etc. Introduces various means for managing culture and heritage focusing on world heritage sites; representation; interpretation; and visitor management. Includes management of culture and heritage, UNESCO and the World Heritage Centre, profile of cultural tourists, representation of culture, conservation, role of international organisations, case studies of successful heritage tourism approaches and suitable schemes for heritage tourism promotion.

Course Code	IBSM 4 131
Course Title	Research Methods for the Service Sector
Credit Points	5
Catalogue Description	Develops the scientific research skills required to prepare, carry out and complete a Bachelor Thesis in the field of International Business and Service Management. Identifies the various sources of secondary data and conducting analysis leading to policy development and strategies. Includes the research process, description and analysis of research methodologies appropriate in the field of engineering, reading for research and research ethics.

Course Code	IBSM 4 133
Course Title	Revenue Management
Credit Points	6
Catalogue Description	Covers the fundamentals of revenue management as a discipline that tries to predict consumer behaviour and to develop strategies of capacity allocation and revenue optimization. Includes business intelligence and data mining, data driven strategies to maximize revenue, levers of revenue management, the process of revenue management and revenue management applications, from different areas: airlines, hotel chains, rental car companies.
Prerequisite(s)	IBSM 1 146 Statistics

Course Code	IBSM 4 134
Course Title	Tourism Project Appraisal
Credit Points	5
Catalogue Description	Introduces basic concepts related to appraising business development plans, in particular the ability to conduct a cost benefit analysis to identify possible gains and losses of such projects. Covers the different impacts of business projects on the society and the environment. Includes types of business development projects, project appraisal techniques, cos-benefit analysis, and feasibility analysis of business projects.
Prerequisite(s)	IBSM 3 129 Finance and Investment

Course Code	IBSM 4 135
Course Title	Applied Economics
Credit Points	5
Catalogue Description	Applies empirical methods on questions as they occur in many fields of business and economics such as microeconomics, macroeconomics, finance, or marketing. Studies ways of obtaining relevant research data and how to use this data for simple empirical tests of hypotheses and for making predictions.
Prerequisite(s)	IBSM 1 146 Statistics

Course Code	IBSM 4 136
Course Title	Leadership
Credit Points	5
Catalogue Description	Introduces core types and instruments of leadership in a business environment. Includes leadership types and instruments, leadership and individual behaviour, leadership in teams, diversity management, leadership and firm performance and leadership and organisational change.

Course Code	IBSM 4 137
Course Title	Bachelor Thesis
Credit Points	12
Catalogue Description	Demonstrates the ability to perform an independent research or consultancy project during which obtained skills and knowledge are applied in an appropriate way to solve an existing research or consultancy problem in the field of business & tourism within a limited timeframe and taking into account principle rules of academic writing and conduct.
Prerequisite(s)	A minimum of 180 CP, min IELTS 6.0 or equivalent, and IBSM 4 131 Research Methods for the Service Sector
Corequisite(s)	IBSM 4 138 Colloquium

Course Code	IBSM 4 138
Course Title	Colloquium
Credit Points	3
Catalogue Description	Provides a platform for presenting intermediary results of bachelor thesis or consultancy project.
Prerequisite(s)	A minimum of 180 CP, min IELTS 6.0 or equivalent, and IBSM 4 131 Research Methods for the Service Sector
Corequisite(s)	IBSM 4 137 Bachelor Thesis

Course Code	IBSM 4 245
Course Title	International Excursion
Credit Points	6
Catalogue Description	Provides credit-bearing academic opportunity for students, in an international setting that optimises cultural immersion to deepen the learning and enrich personal growth. The course is challenging intellectually, physically, and emotionally. Engages students in hands-on experiential learning side-by-side with community members to address complex issues and deliver sustainable solutions.

Course Code	IBSM 4 246
Course Title	Global Economy: Current Issues
Credit Points	5
Catalogue Description	In this course students will learn about current challenges for the world economy and their consequences for Oman and the Gulf region. The course will begin with a lecture on selected principles and concepts that are helpful to understand contemporary discussions of the economic issues involved. Students will then prepare short written essays on the individual topics covered.

Course Code	IBSM 4 247
Course Title	International Trade
Credit Points	5
Catalogue Description	Introduces students to international trade theory and policy, thereby enabling them to understand the functioning of the global economic system.
Prerequisite(s)	IBSM 1 104 Microeconomics

Course Code	IBSM 4 248
Course Title	Service Management
Credit Points	5
Catalogue Description	The course focuses on the challenges of managing and marketing service offerings. Students will implement their knowledge of strategic business making in a simulation game. The competitive 24/7 web-based business simulation provides an environment for students to see how their strategy turns out. Students should learn to formulate their overall strategy and translate theoretical concepts into strategic management skills.

Course Code	IBSM 4 252
Course Title	Total Quality Management
Credit Points	5
Catalogue Description	Enable students to understand the principles of total quality management. The course focuses on the consistent application of quality in handling products and services with the outcome of exceeding customer expectations. It provides a background on the different quality tools which can be adapted in future business ventures as well as explores quality management strategies of world class organisations.

Course Code	IBSM 4 253
Course Title	Oman Sailing Adventure and Tourism
Credit Points	5
Catalogue Description	Builds upon the knowledge and skills of several modules previously completed throughout the programme and allows the students to bring it together in a practical approach. The module includes the Sailing and Adventure course offered by Shabab Oman II; where the students learn sailing and navigation skills. This practical training is linked to a set of soft skills that students also have been introduced to in previous modules i.e. leadership, decision making and team building. This is complemented by an academic module introducing the students to Oman, geography, economy and tourism sector all within the framework of the Sustainable Development Goals SDGs 2030. The course engages the students in hands on experiential learning – and is ideal as a preparation for employment. This course is aligned to vision 2040 with a specific focus on national priority: Citizenship identity, national heritage and culture
Prerequisite/s	IBSM 1 102 Tourism Geography of Oman IBSM 2 112 Tourism Planning and Development 1

Course Code	LOG 1 101
Course Title	Maths 1: Calculus
Credit Points	6
Catalogue Description	Introduces the students to the basic knowledge of analysis for all further studies. Includes an elementary introduction, sequences, continuity, differentiation, integration, series and power series, and curve discussion.

Course Code	LOG 1 102
Course Title	Logistic Management
Credit Points	7
Catalogue Description	Introduces the subject of logistics and supply chain management. Covers basic concepts in these fields such as transportation and warehousing. Applies several successful industry examples to introduce students to practical applications of logistics management. Includes matching Supply and Demand, transportation and warehousing, designing global logistics, networks, supply chain contracts, supply chain risk management, supply chain sustainability, industry examples and successful cases of logistics management

Course Code	LOG 1 103
Course Title	The Business Environment
Credit Points	5
Catalogue Description	Introduces students to the field of business administration. Discusses the organizational concepts, structures, and functions necessary for facing the challenges of operating a business in the economic, social, and legal environment of today's business. Builds up students' ability to understand key factors in productivity and managing a business effectively through, e.g., real-world case analysis.

Course Code	LOG 1 104
Course Title	Microeconomics
Credit Points	5
Catalogue Description	Introduce students to fundamental concepts and methods of economics with a focus on decision-making by households and firms and on the analysis of market outcomes. Includes scarcity, opportunity costs, and production possibilities, consumer behaviour, producer behaviour and cost minimisation competitive markets, monopoly and monopsony, game theory and oligopoly, market entry, markets for factor inputs, externalities and public goods, and incomplete information.

Course Code	LOG 1 106
Course Title	Maths 2: Linear Algebra
Credit Points	6
Catalogue Description	Introduces the students to the understanding algebraic structures as matrices and vector spaces and their applications. Explains the Gauss Algorithm and the link to matrices. Studies linear maps between vector space. Applies fundamental concept of eigenvalues and eigenvectors. Introduces Multi-Linear maps and their applications.

Course Code	LOG 1 110
Course Title	Decision Theory
Credit Points	5
Catalogue Description	Introduces students to the analysis of decision-making. Covers behavioural models that describe the determinants of human decision making as well as normative and prescriptive approaches that help to improve decisions. Includes structuring of decision problems, rational decision making, decisions under certainty: normative and positive theory, decisions under uncertainty: normative and positive theory, attitudes towards risk, decisions under multiple objectives, dynamic decision making, interdependent decision making and group decisions.

Course Code	LOG 1 115
Course Title	Production, Logistics, and Transportation Management
Credit Points	5
Catalogue Description	Continues the introduction of basic concepts from logistics by exploring the areas of production logistics and transportation management. Combines both areas through logistic concepts and methods to provide a foundation for understanding logistic networks and supply chains. Covers concepts of production planning and control, methods of planning in production, logistics, and transportation (APS-matrix), cases from Different Industries and quantitative Models in Production, Logistics, and Transportation Management.
Prerequisite(s)	LOG 1 102 Logistics Management

Course Code	LOG 1 121
Course Title	Marketing
Credit Points	5
Catalogue Description	Familiarises students with core marketing concepts and strategies. Deals with finding the appropriate strategy for different market situations and with applying empirical methods of market research to analyse consumer behaviour.
	Includes key aspects of a marketing strategy, the marketing mix: product decisions, pricing decisions, sales decisions, communication decisions, consumer markets and consumer behaviour, business-to-business marketing, marketing of services, international marketing, and fundamentals of market research.

Course Code	LOG 1 144
Course Title	Financial Accounting
Credit Points	5
Catalogue Description	Provides a solid foundation in the core accounting principles and basic accounting systems. Covers concepts and standards that are underlying financial accounting and reporting. Applies these concepts to the role of financial accounting in the transmission of information to external stakeholders, its objectives, and its limitations. Includes basic techniques of accounting and bookkeeping, the accounting cycle during a financial year, regulatory framework and international standards and financial statements.

Course Code	LOG 1 146
Course Title	Statistics
Credit Points	6
Catalogue Description	Introduces the students to critical evaluation of data and to the basic principles of probability theory and statistics (including discrete distributions and combinatorial and stochastic methods). Covers basic concepts and methods of descriptive and inductive statistics as well as testing hypotheses.

Course Code	LOG 2 107
Course Title	Modelling Language
Credit Points	2
Catalogue Description	Supports the use of the state-of-the-art modelling language as a way to solve optimisation problems. Covers Modelling Languages, the Modelling Language AIMMS, examples for Using AIMMS to Model Optimisation Problems from Logistics, and individual Modelling Case Study.

Course Code	LOG 2 108
Course Title	Operations Research and Management
Credit Points	5
Catalogue Description	Introduces the concepts and approaches that help to manage production processes and business operations. Covers basic methods, models, and algorithms of Operations Research such as linear optimization, the classical transportation problem and selected OR problems. Includes introduction into Data Analysis, Optimization and Simulation, Linear Optimisation (LP), transportation problems, assignment problems, shortest Path problems and Knapsack Problem and Branch and Bound.

Course Code	LOG 2 112
Course Title	Procurement
Credit Points	6
Catalogue Description	Introduces the fundamentals of purchasing in supply chain relationships. Covers key aspects of the procurement process. Includes procurement structure and organisation, key procurement variables, the procurement process, procurement and supplier integration, insourcing and outsourcing, supplier evaluation and selection, global sourcing, negotiation and managing contracts.

Course Code	LOG 2 113
Course Title	Business Law
Credit Points	4
Catalogue Description	Introduces relevant legal aspects of business operations. Covers main principles and legal codes that are involved in different areas of a business. Includes the legal System of the Sultanate of Oman, contracts (with specific reference to Omani and international sale contracts), legal forms of companies in Oman (companies' law), intellectual properties (patent, copyright, trademark, and trade secret), international trade (benefits and basic legal principles) and dispute settlement outside courts (negotiation, mediation, and arbitration).

Course Code	LOG 2 114
Course Title	Distribution Networks
Credit Points	5
Catalogue Description	Covers the area of distribution systems and distribution networks. Focuses on strategic design of Logistics networks (including tactical and operational decisions, distribution channels, systems, networks, and strategies, subnetworks), Warehouse networks, and Transportation Networks. Quantitative location and transportation models and solution approaches

Course Code	LOG 2 116
Course Title	Management Accounting
Credit Points	5
Catalogue Description	Covers contemporary accounting principles and basic accounting systems. Includes cost flows and cost terminology, estimating fixed and variable costs, bridging planning and control, activity-based costing, capital budgeting and strategic planning and control. Aims to build up the students' ability to analyze the information content of financial statements and data from managerial accounting systems.

Course Code	LOG 2 117
Course Title	Supply Chain Management
Credit Points	5
Catalogue Description	Introduces the foundations, methods and tools of supply chain management. Covers strategic as well as operational issues with particular focus on the use of information technology in supply chain. Includes the concept of supply chain management (SCM), supply chain performance; achieving strategic fit and scope, supply chain drivers and metrics, forecasting and demand planning, inventory management in supply chains, operational SCM, and information technology in supply chain.
Prerequisite(s)	LOG 1 146 Statistics LOG 2 108 Operations Research and Management

Course Code	LOG 2 118
Course Title	IT Systems in Logistics
Credit Points	5
Catalogue Description	Introduces the specific aspects of employing IT systems in logistics and supply chain management. Covers IT systems such as ERP and Advanced Planning Systems. Includes types and Areas of IT support (ERP Systems, Planning systems), basic technologies (System Integration, Data Acquisition, Planning and Analysing Supply Chains), software systems (e.g. ERP, Advanced Planning Systems, Data-Warehouse-Systems) and cases using IT systems in Logistics and SCM.

Course Code	LOG 2 120
Course Title	Human Resource Management
Credit Points	5
Catalogue Description	Introduces students to core areas of human resource management (HRM) such as personnel planning, recruiting, retention and fluctuation, performance appraisal, training, team building, career development, compensation and international HRM.

Course Code	LOG 2 123
Course Title	Strategic Management
Credit Points	6
Catalogue Description	Focuses on the method of developing a strategic plan for a firm to obtain a competitive advantage. In particular how to position a firm with respect to its competitors and how to manage its resources and capabilities to gain sustainable advantage and profitability. Combines the study of two separate but complementary issues: the opportunities and challenges originating from the firm's external environment, and the resources and capabilities arising from the firm's internal environment. Includes strategy concept, creating competitive advantage, industry analysis, value chain and capabilities, human resources, corporate culture and organisational design, strategy formulation, strategy for multi-business companies and diversification, mergers and acquisitions, alliances, strategies for innovation, globalization and in a changing environment and applying game theory to strategic management.

Course Code	LOG 3 119
Course Title	Macroeconomics
Credit Points	5
Catalogue Description	Introduces basic principles of macroeconomics that explain the determinants of economic aggregates such as national income, employment, the price level, or the exchange rate. Deals with fluctuations over the business cycle as well as with the macroeconomic development over the long run, and consequently integrates open economy issues into the analysis. Includes National Accounts, fundamentals of economic growth, labour markets and unemployment, prices and exchange rates in the long run, consumption, savings, and investments, the market for money, short-run equilibrium, aggregate demand and supply and exchange rates and the current account.

Course Code	LOG 3 122
Course Title	Industrial Projects in Logistics
Credit Points	8
Catalogue Description	Covers the practical aspects of executing an industrial project in logistics. Includes defining the project aims and goals, finding the project structure and schedule, presentation of the project plan, presentation of intermediate results (after 50% of the overall project duration), presentation of the final results, final report and short report to the management of the enterprise.
Prerequisite(s)	LOG 1 102 Logistics Management LOG 2 107 Modelling Language

Course Code	LOG 3 124
Course Title	Transportation and Traffic
Credit Points	4
Catalogue Description	Covers the areas of transportation and traffic, in particular, transportation logistics, the required traffic systems, and traffic infrastructure. Includes services provided by transportation systems, engineering foundations of transport and traffic modes (Road, Rail, Water Way, Air Transportation and Traffic), transport chains, Multi-mode transportation, and Hubs-Cross docking, methods in transportation logistics (shortest path, TSP, VRP, Trans-Shipment, Flow Problems) and Planning Tasks, Telematics in traffic and transportation and sustainable traffic and transportation networks.
Prerequisite(s)	LOG 1 102 Logistics Management LOG 2 108 Operations Research and Management

Course Code	LOG 3 125
Course Title	Project Management
Credit Points	4
Catalogue Description	Introduces concepts like quantitative methods and IT-tools for Project Planning, Project Control and Time-, Cost, Quality- and Risk-Management. Includes project management definitions, project manager, project team, and project design, project phases, project planning methods and quantitative methods, project controlling methods and tools, time, resource, and cost management, communication and project risk management and IT systems and tools for project management.

Course Code	LOG 3 126
Course Title	Entrepreneurship and Innovation
Credit Points	4
Catalogue Description	Introduces students to the phase model of the innovation process, general concepts of project management and foundations of entrepreneurship. Includes exploring innovations, executing innovations, exploiting innovations, renewing innovations, innovation strategies, and types of innovations, entrepreneurship and SMEs, barriers to entrepreneurship, and environment and entrepreneurial intention.

Course Code	LOG 3 127
Course Title	Internship
Credit Points	15
Catalogue Description	Provides insight into the daily activities of a professional career. Applies previous knowledge to real life situations. Includes learning practical skills needed to work in the logistic industry.

Course Code	LOG 3 128
Course Title	Production Logistics
Credit Points	5
Catalogue Description	Covers the fundamental concepts and methods of production logistics and ways to apply this knowledge to cases from industrial practice. Includes introduction to production logistics, production planning and control, material planning, inventory management, and disposition, logistics characteristic lines, lean production and logistics, business Game on Lean Logistics and IT-Systems in production logistics (SCM, ERP, manufacturing execution systems).
Prerequisite(s)	LOG 1 115 Production, Logistics and Transportation Management

Course Code	LOG 3 129
Course Title	Finance and Investment
Credit Points	5
Catalogue Description	Provides an overview of the complex world of finance through insights into personal and corporate finance. Introduces the fundamental concepts and essential techniques to evaluate investment decisions like decision-making via net present value analysis. Covers financial instruments and risk and return analysis. Discusses capital structure and capital budgeting options.
Prerequisite(s)	LOG 1 110 Decision Theory

Course Code	LOG 4 131
Course Title	Research Methods
Credit Points	2
Catalogue Description	Develops the scientific research skills required to prepare, carry out and complete a Bachelor Thesis in the field of Logistics. Identifies the various sources of secondary data and conducting analysis leading to policy development and strategies. Includes the research process, description and analysis of research methodologies appropriate in the field of engineering, reading for research and research ethics.

Course Code	LOG 4 132
Course Title	Material Flows and Intra-Logistics
Credit Points	6
Catalogue Description	Introduces the main functions of Intra-logistics and variety of their technical realizations. In addition, the typical applications of intra-logistics and material flow systems are introduced (factories, warehouses, sorting and re-sorting facilities). Includes main components of an intra-logistics system, warehouses (e.g. high rack warehouses), conveying technique and systems, storage and retrieval systems, order picking, sorting, and packaging, automated identification techniques and material flow systems.
Prerequisite(s)	LOG 2 117 Supply Chain Management

Course Code	LOG 4 133
Course Title	Revenue Management
Credit Points	6
Catalogue Description	Covers the fundamentals of revenue management as a discipline that tries to predict consumer behaviour and to develop strategies of capacity allocation and revenue optimization. Includes business intelligence and data mining, data driven strategies to maximize revenue, levers of revenue management, the process of revenue management and revenue management applications, from different areas: airlines, hotel chains, rental car companies.
Prerequisite(s)	LOG 1146 Statistics

Course Code	LOG 4 134
Course Title	Factory Planning
Credit Points	5
Catalogue Description	Introduces the phases of a factory-planning project and methods and tools involved in the process of factory planning. Covers aims and objectives of factory planning, the phases of the planning of a factory, value stream analysis, structural design, layout planning, change management, industrial type of architecture, factory planning of an automotive supplier and project management in factory planning.

Course Code	LOG 4 135
Course Title	Applied Economics
Credit Points	5
Catalogue Description	Applies empirical methods on questions as they occur in many fields of business and economics such as microeconomics, macroeconomics, finance, or marketing. Studies ways of obtaining relevant research data and how to use this data for simple empirical tests of hypotheses and for making predictions. Includes Multiple Regression Models, Multiple Regression Analysis with Discrete Variables dealing with Heteroscedasticity and Multicollinearity, dealing with Indigeneity, Time Series Analysis and Panel Data Analysis.
Prerequisite(s)	LOG 1 146 Statistics

Course Code	LOG 4 136
Course Title	Leadership
Credit Points	5
Catalogue Description	Introduces core types and instruments of leadership in a business environment. Includes leadership types and instruments, leadership and individual behaviour, leadership in teams, diversity management, leadership and firm performance and leadership and organisational change.

Course Code	LOG 4 137
Course Title	Bachelor Thesis
Credit Points	12
Catalogue Description	Demonstrates the ability to perform an independent research or consultancy project during which obtained skills and knowledge are applied in an appropriate way to solve an existing research or consultancy problem in the field of logistics within a limited timeframe and taking into account principle rules of academic writing and conduct.
Prerequisite(s)	A minimum of 180 CP, min IELTS 6.0 or equivalent; LOG 4 131 Research Methods
Corequisite(s)	LOG 4 138 Colloquium

Course Code	LOG 4 138
Course Title	Colloquium
Credit Points	3
Catalogue Description	Provides a platform for presenting intermediary results of bachelor thesis or consultancy project.
Prerequisite(s)	A minimum of 180 CP, min IELTS 6.0 or equivalent; LOG 4 131 Research Methods
Corequisite(s)	LOG 4 137 Bachelor Theses

Course Code	LOG 4 145
Course Title	Warehouse and Inventory Management
Credit Points	5
Catalogue Description	Explores management decisions related to warehouse design, operations, and inventory. Discusses the role of warehouses in supply chains. Studies the trade-off between time and space of design decisions related to layouts and operational strategies. Inventory policies are analysed.

Course Code	LOG 4 230
Course Title	Automotive Logistics
Credit Points	5
Catalogue Description	Introduces the main issues related to logistics in the automotive industry. Covers basic concepts and optimization methods used for solving production and logistics problems typical for the sector. Includes practical assignments to apply learned competencies to real world situations. Includes an overview of the automotive industry, the automotive supply chain outsourcing and supplier networks, procurement strategies, production concepts: just in time and just in sequence, distribution networks and current trends in automotive production and logistics.

Course Code	LOG 4 239
Course Title	Railway Logistics
Credit Points	5
Catalogue Description	Introduces the area of railway logistics and rail (or train) transport. Covers trains, infrastructure, and operations. Includes introduction and history of train transport, passenger and freight trains, railway infrastructure, rail operations (train schedules and timetables, ticket prices and cargo fees, control systems and safety), energy-efficiency of rail transportation, trains in multi-modal transportation and policy implications of rail transportation

Course Code	LOG 4 240
Course Title	Airport Logistics
Credit Points	5
Catalogue Description	Offers an overview of management and operation issues within both the airports and aviation industry. Provides insights on regulatory frameworks and bilateral agreements that govern the aviation industry, and international organisations of concern. Includes the business of airports, issues in airport management and operations, regulatory framework and organisations, aviation and airlines business and patterns of development and recent trends in the aviation industry like low-cost carriers.

Course Code	LOG 4 241
Course Title	Container Terminals
Credit Points	5
Catalogue Description	Introduces the special area of container terminal logistics with particular focus on the layout and operation of container harbours. Includes introduction to container logistics (complete path of a container from origin to destination), basic knowledge about vessels, loads and harbours, the specifics of container terminals, safety and ISPS-code, information management, containers in multi-modal transport and optimization models and applications

Course Code	LOG 4 242
Course Title	Advanced Operations Research and Management
Credit Points	5
Catalogue Description	Introduces advanced concepts and approaches needed to manage production processes and business operations. Covers fundamental models, methods, and algorithms of Operations Research such as discrete and combinatorial, nonlinear and dynamic programming. Includes Mixed Integer Problems, Branch and Bound, Discrete and Combinatorial Optimization Problems (Set packing, Set covering, Set partitioning, TSP, VRP, FLP), Heuristics and Metaheuristics, Nonlinear Optimization, Dynamic Programming and Discrete Event Simulation.
Prerequisite(s)	LOG 2 108 Operation Research and Management

Course Code	LOG 4 243
Course Title	Inventory Management
Credit Points	5
Catalogue Description	Introduces students to the areas of warehouses and inventory management. Students learn about warehouse layout, different types of warehouses, picking and packing, and about inventory policies
Prerequisite(s)	LOG 2 114 Distribution Methods

Course Code	LOG 4 244
Course Title	Shipping Commercial Practice
Credit Points	5
Catalogue Description	Provides an insight into international trade and concomitant commercial shipping practice. Includes vocabulary and shipping terms, primary commercial contracts of international trade, INCO Terms 2010, introduction to Marine Transit Insurance, bills of Lading, Mates Receipts, LC's and Commercial Invoices and Marine Contracts of Carriage

Course Code	LOG 4 245
Course Title	International Excursion
Credit Points	5
Catalogue Description	Provides credit-bearing academic opportunity for students, in an international setting that optimises cultural immersion to deepen the learning and enrich personal growth. The course is challenging intellectually, physically, and emotionally. Engages students in hands-on experiential learning side-by-side with community members to address complex issues and deliver sustainable solutions.

Course Code	LOG 4 246
Course Title	Ocean Shipping and Maritime Logistics
Credit Points	5
Catalogue Description	Introduces aspects of ocean shipping and maritime logistics. Selected topics are international shipping and port development, supply chain security, innovative smart port development, green ports, maritime clusters, and maritime orientated hinterland connections

Course Code	LOG 4 248
Course Title	Optimisation Applications in Logistics
Credit Points	5
Catalogue Description	Supports the use of a state-of-the-art modeling language as a way to solve optimisation problems. Covers a Modeling Language, (such as GAMS or AIMMS), examples for using software to model optimisation problems from logistics, supply chain and manufacturing case studies.

Course Code	LOG 4 252
Course Title	Total Quality Management
Credit Points	5
Catalogue Description	Enable students to understand the principles of total quality management. The course focuses on the consistent application of

	quality in handling products and services with the outcome of exceeding customer expectations. It provides a background on the different quality tools which can be adapted in future business ventures as well as explores quality management strategies of world class organisations.

Course Code	LS 1 001
Course Title	German 1
Credit Points	4
Catalogue Description	The main aims of the course are: 1) to learn German to a level which enables students to talk about everyday situations and events; building on the outcomes of the previous semester, the course aims at achieving the European reference level A1; and
	2) to raise students' understanding of diverse cultural issues which emerge in an environment where many cultures are represented and where international interaction, mainly with Germany and Aachen University in particular, is frequent.

Course Code	LS 1 002
Course Title	English
Credit Points	4
Catalogue Description	The Bachelor Academic English course is a General English course with a strong focus on study skills and academic writing.
	Main objectives of the course:
	- Develop Study skills.
	- Develop the Academic writing skills expected at Bachelor level programs.
	- Develop clear concepts of academic ethics and integrity

Course Code	LS 1 003
Course Title	German 2
Credit Points	4
Catalogue Description	The main aims of the course are: 1) to learn German to a level which enables students to talk about everyday situations and events; building on the outcomes of the previous semester, the course aims at achieving the European reference level A1; and
	2) to raise students' understanding of diverse cultural issues which emerge in an environment where many cultures are represented and where international interaction, mainly with Germany and Aachen University in particular, is frequent.
Prerequisite(s)	LS 1 001 German 1

Course Code	LS 1 009
Course Title	Advanced English
Credit Points	4
Catalogue Description	Focus on English for Academic Purposes

Course Code	LS 1 012
Course Title	IT Ethics
Credit Points	4
Catalogue Description	Introduces fundamental ethical concepts related to the development and use of computers in the work environment and in private life. It covers intellectual property rights, data privacy, security threats, and regional cultural differences in these issues.

Course Code	LS 1 017
Course Title	Creative Design
Credit Points	4
Catalogue Description	Explores the essential foundations and basic principles of design and its creative processes and aims to develop core competences in creative thinking and relevant practical skills.

Course Code	LS 1 019
Course Title	Digital Life
Credit Points	4
Catalogue Description	As smart, high-tech digital devices are becoming ever more ubiquitous, our lives are increasingly digitised and far more Internet-connected. This course is designed to provide a high-level introduction to a number of cutting-edge Internet-related topics, aimed at students with relatively low or no background in computer science. It Introduces the core concepts of Emerging Technologies, Social Media Platforms, and Information Security.
Prerequisite(s)	Not for students registered in BSc CS, AI, and Cybersecurity

Course Code	LS 1 026
Course Title	Introduction to Photography
Credit Points	4
Catalogue Description	Gives the students hands on ability of photographing. They will be guided through different types of photography and its use in various situations. They will learn the features of a DSLR camera and practice its various modes.

Course Code	LS 1 029
Course Title	Cosmos Travel
Credit Points	4
Catalogue Description	Introduces the basic structure of the universe in which we live. It covers the introduction to the constituents of the universe and what is our existence and presence in the universe. It also focuses on the distances involved and the size of the different objects and the universe in general. It also takes a journey from the beginning to the current shape of the universe around us. This course develops the basic understanding of the celestial objects around us including our home planet and the home galaxy.

Course Code	LS 1 033
Course Title	Presentation Techniques and Scientific Report Writing
Credit Points	4
Catalogue Description	Covers fundamental techniques of presenting scientific work in written form. Students will learn to organize and write a scientific report, a manuscript for a journal or a research proposal. Includes the preparation of a presentation and gives a guide for proper referencing of other academic work.

Course Code	LS 2 004
Course Title	German 3
Credit Points	4
Catalogue Description	The main aims of the course are: 1) to learn German to a level which enables students to talk about everyday situations and events; building on the outcomes of the previous semester, the course aims at achieving the European reference level A1; and 2) to raise students' understanding of diverse cultural issues which emerge in an environment where many cultures are represented and where international interaction, mainly with Germany and Aachen University in particular, is frequent.
Prerequisite(s)	LS 1 003 German 2

Course Code	LS 2 006
Course Title	Adobe Photoshop
Credit Points	4
Catalogue Description	Introduces knowledge of design elements and setting Photoshop project requirements. Develops visual art concepts and techniques of digital imaging using the Adobe Photoshop software as a tool. Requires production of original work that reflects a high degree of individual expression. Facilitates the integration of technical ability with visual communication and creative artistic work.

Course Code	LS 2 007
Course Title	Advanced Microsoft Excel
Credit Points	4
Catalogue Description	Provides hands-on applications using Microsoft Excel. Develops students' skills to create, manipulate and utilise spreadsheets. Aims to teach students advanced skills and design concepts necessary for employing Microsoft Excel to provide solutions to complex business problems. Covers advanced topics in spreadsheet and workbook design, complex formulas, and functions. Includes hands-on experiences with exercises and projects to provide students with a thorough working knowledge of Microsoft Excel.
Prerequisite(s)	Not for students registered in BSc CS, AI and Cybersecurity

Course Code	LS 2 008
Course Title	Presentation Techniques and Research Methods
Credit Points	4
Catalogue Description	Instructs students in using various methods of presentation techniques, visualisation, graphical depiction, and presentation of data and information using basic computer tools such as PowerPoint and Excel. Students learn how to operationalise data on different structures and processes related to the field of study or, e.g., using data about Oman provided by NCSI-National Centre for Statistics and Information, in order to present and visualise them in adequate and understandable ways such as tables, maps and basic graphs. This is complemented by instructions and exercises on basic issues of research methodology (primary / secondary research, qualitative / quantitative / mixed methods). Students learn how to search for information, how to use and refer to various sources of literature, and how to correctly compile and present information in academic terms, including academic writing and presentations. Students also learn to (re)apply basic elements of time management and project management to e.g. successfully complete assignments and projects.

Course Code	LS 2 010
Course Title	German 4
Credit Points	4
Catalogue Description	Aims of the course are: 1) to learn German to a level which enables students to talk about everyday situations and events; building on the outcomes of the previous semester, the course aims at achieving the European reference level A2; and
	2) to raise students' understanding of diverse cultural issues which emerge in an environment where many cultures are represented and where international interaction, mainly with Germany and Aachen University in particular, is frequent.
Prerequisite(s)	LS 2 004 German 3

Course Code	LS 2 015
Course Title	Work Smart
Credit Points	4
Catalogue Description	Focuses on skill-set evaluation, basic work ethics, and action-planning.

Course Code	LS 2 016
Course Title	Preparation for Employment
Credit Points	4
Catalogue Description	Introduces students to core skills, values, and qualities that will enable them to thrive in life.

Course Code	LS 2 023
Course Title	Introduction to Artificial Intelligence
Credit Points	4
Catalogue Description	Provides the fundamentals of Artificial Intelligence (AI), what can and cannot be done with AI. Ideal for students interested in AI utilization, benefits, and limitations.
Prerequisite(s)	Not for students registered in BSc AI

Course Code	LS 2 025
Course Title	Study Smart
Credit Points	4
Catalogue Description	This course is about how to learn and developing a mind-set for developing strategies for fast and optimal learning.

Course Code	LS 2 031
Course Title	Meteorology
Credit Points	4
Catalogue Description	Provides an introduction to atmospheric phenomena and weather. It is designed to provide comprehensive knowledge of the Earth's atmosphere and its changing behaviour and how it influences our daily lives. Basic physical principles and processes are emphasized that are important for understanding the world and have broad implications for students interested in weather and global environmental change and other environmental disciplines. A special focus will be the climate in Oman and regional weather phenomena as it applies to different topics throughout the course. This includes local weather such as Al Khareef phenomena in South of Oman and rain over Al Hajar mountains.

Course Code	LS 2 032
Course Title	Scientific Reading and Writing
Credit Points	4
Catalogue Description	Introduces tools for literature research and covers formal aspects of referencing and organising scientific texts. Introduces practical aspects of information extraction from scientific papers and writing own scientific texts.

Course Code	LS 3 005
Course Title	Entrepreneurship
Credit Points	4
Catalogue Description	The course is an introductory course in Entrepreneurship and Innovation. The course aims to expose undergraduate students of various academic backgrounds of business venturing and entrepreneurial activity. Students will apply themselves through developing their own business ideas and assessing them using knowledge and skills acquired during the course.
Prerequisite(s)	Not for students registered in BSc IBSM and Logistics

Course Code	LS 3 011
Course Title	Customer Relationship Management
Credit Points	4
Catalogue Description	Provides an introductory course to Customer Relationship Management and Customer Service. The students of this course will be exposed to both theoretical and practical standard practices, strategies and technologies that companies use to manage and analyse customer interactions and information throughout the customer lifecycle, with the goal of improving business relationships with customers, assisting in customer retention and driving sales growth.

Course Code	LS 3 013
Course Title	German 5
Credit Points	4
Catalogue Description	The main aims of the course are: 1) to learn German to a level which enables students to talk about everyday situations and events; in particular the course works towards the Europe reference level A2, and 2) to encourage students to apply their understanding of cultural fluidity to address the diverse cultural issues which emerge in an environment where many cultures are represented and where international interaction, mainly with Germany and Aachen University in particular, is frequent.
Prerequisite(s)	LS 2 010 German 4

Course Code	LS 3 014
Course Title	Design Thinking
Credit Points	4
Catalogue Description	Design thinking as a creative approach to problem-solving is implicitly expected in all disciplines and professions, but rarely is it explicitly taught like in this course. While creativity is often overrated as a complex myth or undervalued as a simple method, this course takes a pragmatic approach to learning to think and act like a designer. The focus is on the patterns of design thinking, which are the many moves in a design process that lead to progress in successful projects. Participants will be guided to identify these patterns of design thinking through the analysis of design processes from their own experiences as well as from professional designers' projects and to apply them in a design exercise. Participants will learn what drives the creative problem-solving processes and will gain confidence and skills about how to steer it independently.

Course Code	LS 3 018
Course Title	Academic Reading and Writing
Credit Points	4
Catalogue Description	Introduces the process of writing an academic essay. Builds knowledge, skills and competence in: analysing the essay question prompt; planning the essay; conducting a literature search; reading academic texts and selecting information for the essay; integrating information into the essay; organising a draft essay; building a coherent argument; using academic style, language and vocabulary; reviewing and revising the essay; and presenting the essay.

Course Code	LS 3 027
Course Title	Leadership
Credit Points	4
Catalogue Description	Introduces core types and instruments of leadership in a business environment. Includes leadership types and instruments, leadership and individual behaviour, leadership in teams, diversity management, leadership and firm performance, and leadership and organisational change.
Prerequisite(s)	Not for students registered in BSc IBSM and Logistics

Course Code	LS 3 028
Course Title	Introduction to Agile and Scrum Framework
Credit Points	4
Catalogue Description	Introduces Agile and the different frameworks within Agile. It will have a focus on Scrum. Students will learn what it means to be Agile and how to apply Scrum to improve quality of work.

Course Code	LS 3 030
Course Title	Explore Geology
Credit Points	4
Catalogue Description	Gives an overview of the structure and composition of the Earth, and an insight in the main internal and external geological processes. Covers essential geological topics including the solar system, earth system, plate tectonics and the evolution of atmosphere, hydrosphere, and biosphere through time. Studies the composition of the Earth's crust, including fundamental rock-forming minerals and the rock cycle. Introduces briefly the geology of Oman.
Pre-requisite(s)	Not for students registered in BSc AGEO

Course Code	MECH 2 101
Course Title	Introduction to Mechanical Engineering
Credit Points	5
Catalogue Description	Provides students with an introduction into the field of mechanical engineering, with a particular focus on product life-cycle starting from product development, production, quality management, field use and recycling. Such knowledge with prepare students well for their further Mechanical Engineering studies as well as their professional lives once they graduate.

Course Code	MECH 3 102
Course Title	Machine Design 1
Credit Points	5
Catalogue Description	Introduces students to the basic concepts of Machine Design Examines properties of materials, explores the causes of stress, strain and deformation analysis of solid elements as applied to mechanical design. The analysis of members under combined stresses. Covers the design of mechanical elements including power screws, fasteners, bearings, shafts, welded joints and engineering tolerances and surfaces.
Prerequisite(s)	ENG 1 104 Introduction to CAD; ENG 2 119 Mechanics 2

Course Code	MECH 3 103
Course Title	Material Science 2
Credit Points	5
Catalogue Description	Helps students to build upon the basic concepts and principles of Materials Science, which they were taught in Material Science 1. The main focus of the course is on the material and processing selection for given components and applications. This aims at further helping in choosing the correct materials to ensure that their designs fulfil the required purpose/s in terms of mechanical properties and duration.
Prerequisite(s)	ENG 3 123 Material Science 1

Course Code	MECH 3 104
Course Title	Machine Design 2
Credit Points	5
Catalogue Description	Helps students to further develop the basic concepts of Machine Design that they were taught during Machine Design I. During the course, students will be taught a range of topics, which will further prepare them well to design machines and any moving objects. Such topics include comparison stress, fatigue strength and roller and plain bearings.
Prerequisite(s)	MECH 3 102 Machine Design 1

Course Code	MECH 4 105
Course Title	Production Technology
Credit Points	5
Catalogue Description	Introduces students to the fundamental concepts underlying Production Technology and helps to develop the skills required to apply these concepts to a range of manufacturing industries. Overall, this course teaches students about many common well-known manufacturing processes as well as less common and less well-known cutting-edge manufacturing processes, to enable them to design machines to apply these processes in their careers as Mechanical Engineers.
Prerequisite(s)	ENG 4 132 Control and Automation; ENG 3 103 Material Science 2

Course Code	MECH 4 106
Course Title	Machine Tools
Credit Points	5
Catalogue Description	Introduces students to the fundamental principles underlying the use of machines as tools in engineering. This course aims to build upon the students' knowledge and expertise gained in Machine Design; students know how to design machines, so they now learn about the Tools used in the Machine, so that it can be used to manufacture products.
Prerequisite(s)	ENG 4 132 Control and Automation; MECH 3 104 Machine Design 2

Course Code	MECH 4 107
Course Title	Control and Automation Laboratory
Credit Points	4
Catalogue Description	Helps students to develop experimental skills in the field of Control and Automation. Overall, this laboratory course helps students to apply the theoretical knowledge of the subject that they learned in Control and Automation, to the real-world, which is critical in their development as Mechanical Engineers, especially as the world is becoming more automated.
Prerequisite(s)	ENG 4 132 Control and Automation

Course Code	PROC 3 102
Course Title	Chemical Process Engineering
Credit Points	5
Catalogue Description	Introduces students to the basic concepts for dimensioning chemical reactors. The course begins by introducing the students to idealized chemical reactors without heat transfer, and it helps to develop their knowledge and understanding by teaching them the influence of non-idealities from hydrodynamics and the influence of heat transfer on the reactor.
Prerequisite(s)	ENG 2 144 Thermodynamics 2; PROC 3 110 Introduction to Process Engineering

Course Code	PROC 3 103
Course Title	Petroleum and Petrochemical Processing
Credit Points	5
Catalogue Description	Introduces students to the basic properties of Crude Oil processing, crude oil characterization and lab test, Overall Petroleum processes, Crude oil transportation and pipe line networking, Crude oil preliminary treatment (desalting and sweetening), and numerous other related topics. Students will develop skills to apply this knowledge to solve simple problems related to this field. The course is designed to provide students with a comprehensive overview on refinery processes and their interaction. Focus is given with reference to engineering aspects of separation and reactor units. The importance of downstream processing to petrochemicals is stressed.
Prerequisite(s)	ENG 1 109 Chemistry 2; PROC 3 102 Chemical Process Engineering

Course Code	PROC 3 104
Course Title	Thermal Separation Processes
Credit Points	5
Catalogue Description	Introduces students to the basic concepts for dimensioning thermal unit operations. The focus is on absorption, solvent extraction, distillation and rectification. Such knowledge is critical for Process Engineers who will likely go into chemical process industries that apply such processes to produce the chemicals they market, in particular, the petrochemicals industry.
Prerequisite(s)	ENG 4 131 Heat Mass Transfer

Course Code	PROC 3 110
Course Title	Introduction to Process Engineering
Credit Points	4
Catalogue Description	Provides students with an insight into the basic structures of process engineering and selected unit operations from chemical, mechanical and thermal Process engineering. Overall this course aims to prepare students for their process engineering courses in their degree programme as well as to prepare them for their careers as Process Engineers.
Prerequisite(s)	ENG 1 109 Chemistry 2; ENG 1 141Engineering Principles and Calculation

Course Code	PROC 4 105
Course Title	Multi-Phase Flow
Credit Points	4
Catalogue Description	Introduces students to the the fundamental concepts of the mathematical description of multiphase flow, with particular focus on fluid-particle flows. During the course, students will learn about the motion of single particles as well as the motion of bubbles and drops. Students will learn how to model particle ladened flows, and they will learn about fluidised beds and liquid-gas systems.
Prerequisite(s)	ENG 3 126 Fluid Dynamics

Course Code	PROC 4 108
Course Title	Process Laboratory
Credit Points	2
Catalogue Description	Helps students to develop basic practical skills required in the profession of Process Engineering. Overall, this Laboratory course teaches students how the theoretical knowledge they have learned about Process Engineering in their lectures can be applied in the real world, to real processes, to enable them to readily do likewise when they begin their Careers as Process Engineers.
Prerequisite(s)	ENG 4 132 Control and Automation; PROC 3 102 Chemical Process Engineering; PROC 3 104 Thermal Separation Processes PROC 4 109 Mechanical Process Engineering

Course Code	PROC 4 109
Course Title	Mechanical Process Engineering
Credit Points	4
Catalogue Description	Introduces students to the fundamental principles and the design of mechanical separation processes. Students will study solid particle behaviour, which includes classification of particles, particles size analysis, and screening, particle size reduction, and enlargements processes settling and sedimentation, the study of factors affecting settling, flocculent and hindered settling, the design of a settling tank, solid-liquid filtration, and many other topics.
Prerequisite(s)	ENG 3 126 Fluid Dynamics; ENG 4 131 Heat and Mass Transfer

Course Code	PROC 4 111
Course Title	Plant Design 1
Credit Points	3
Catalogue Description	Introduces students to the fundamental principles of plant design. Course makes students aware of the nature of plant design and the external and internal design constraints. It helps students to develop the skills to apply these principles to demonstrate competence in selecting process and creating process flow-sheets. It familiarizes students with the context of process engineering plant selection as well as helping them to understand simple feasibility study methods and to use them to determine the productivity rate and an estimation of productivity. Furthermore, students will calculate the overall material and energy balance and then carry out individual mass and energy balances around each industrial unit.
Prerequisite(s)	PROC 3 110 Introduction to Process Engineering PROC 3 104 Thermal Separation Process

Course Code	PROC 4 112
Course Title	Plant Design 2
Credit Points	2
Catalogue Description	The aim of the course is to introduce the fundamental principles underlying the application of; equipment design, control system, the plant and location layout, the equipment layout, and finally plant cost estimation. To develop the skills of the senior students to apply these principles in the context of a process engineering plant.
Prerequisite(s)	ENG 4 132 Control and Automation; PROC 3 102 Chemical Process Engineering; PROC 4 111 Plant Design 1

Course Code	UPAD 1 102
Course Title	Creative Techniques 1
Credit Points	3
Catalogue Description	Introduces free hand sketching by the analysis of structure of space, volume, scale and composition. Proposes different methods and skills to provide students with a general overview of the different drawing techniques. Encourages students to develop their practical and creative abilities. At the end of the course, each student submits a sketchbook.

Course Code	UPAD 1 103
Course Title	History of Urban Development 1
Credit Points	3
Catalogue Description	Deals with the phenomenon "city" in its historic transition and gives an overview on the development of urban patterns from the Neolithic revolution until today. In addition to the review of the Western development special attention is given to the Arabian City and its different formations in Arabia, Africa, and Asia; other examples responding to Western or Arabic impacts will be highlighted.

Course Code	UPAD 1 105
Course Title	Introduction to Project Design
Credit Points	6
Catalogue Description	Introduces design being the core discipline for architecture and urban planning. Teaches students to observe space, react to a program, find a solution, conceptualise and present an idea that reflects a specific topic or challenge. Helps to understand and translate the abstraction of a plan.

Course Code	UPAD 1 106
Course Title	Perception of Space and Shapes
Credit Points	4
Catalogue Description	Introduces the concept of space, abstract through to architectural. Emphasis is on composition and basic design principles.

Course Code	UPAD 1 109
Course Title	Integrated Project 1
Credit Points	6
Catalogue Description	Represents the core course in design in each semester. Helps to develop a solution for a practically oriented assignment. The emphasis of this process is on analysis, concept and implementation. These steps must follow a consistent argumentation. The focus is on a small-scale architecture project.
Prerequisite(s)	UPAD 1 105 Introduction to Project Design

Course Code	UPAD 1 111
Course Title	Urban Design I
Credit Points	4
Catalogue Description	Introduces the urban context. The functional and spatial qualities of different local urban situations are analysed and critically evaluated.

Course Code	UPAD 1 113
Course Title	History of Urban Development 2
Credit Points	3
Catalogue Description	Deals with the phenomenon "city" in its historic transition and gives an overview over the development of urban patterns from the Neolithic revolution until today. In addition to the review of the Western development special attention is given to the Arabian City and its different formations in Arabia, Africa, and Asia; other examples responding to Western or Arabic impacts will be highlighted.
Prerequisite(s)	UPAD 1 103 History of Urban Development I

Course Code	UPAD 1 115
Course Title	Creative Techniques 2
Credit Points	3
Catalogue Description	Explores different ways of seeing, analysing and structuring every information. This provides the base for finding good solutions to given tasks, open-mindedness and lateral thinking. Enables students to experience and apply different various creative methods (playful, systematic, intuitive) in order to achieve unique and personal results. Encourages students to share their ideas, to stand up to constructive feedback and to cooperate.
Prerequisite(s)	UPAD 1 102 Creative Techniques I

Course Code	UPAD 1 117
Course Title	Computer Aided Design 1
Credit Points	5
Catalogue Description	Introduces the current standard computer applications. Course should run parallel and in co-ordinance with Integrated Project Studios.
Prerequisite(s)	UPAD 1 175 Technical Drawing

Course Code	UPAD 1 174
Course Title	Architecture 1
Credit Points	4
Catalogue Description	Introduces the basic elements that constitute architecture, as well as some of their modes of representation.

Course Code	UPAD 1 175
Course Title	Technical Drawing
Credit Points	5
Catalogue Description	Introduces basic geometry and the use of technical drawing as relevant in architecture and urban planning. Introduces the site and contextual surrounding of architectural entities. Emphasis is on principles of orientation, maps, site surveying and plan drawing.

Course Code	UPAD 1 176
Course Title	Architecture 2
Credit Points	4
Catalogue Description	Introduces the basic concepts of architecture on the example of small-scale architecture.
Prerequisite(s)	UPAD 1 105 Introduction to Project Design; UPAD 1 174 Architecture 1

Course Code	UPAD 2 114
Course Title	Computer Aided Design 2
Credit Points	4
Catalogue Description	Extends teaching of current standard computer applications. Runs parallel and in co-ordinance with Integrated Project Studios.
Prerequisite(s)	UPAD 1 117 Computer Aided Design 1

Course Code	UPAD 2 116
Course Title	Urban Planning History 1
Credit Points	2
Catalogue Description	Introduces the historical development of urban planning from its beginning in the 19th century until today. Focuses on the principal formation of the academic discipline, its ongoing interrelation with the built environment and its varying exigencies and scopes.
Prerequisite(s)	UPAD 1 113 History of Urban Development 2

Course Code	UPAD 2 120
Course Title	Urban Design 2
Credit Points	5
Catalogue Description	Introduces the fundamentals of urban typologies with help of key examples. Enables students to integrate urban elements into urban contexts and apply these structures to design projects. Closely correlates with Integrated Project II.
Prerequisite(s)	UPAD 1 109 Integrated Project 1; UPAD 1 111 Urban Design 1

Course Code	UPAD 2 123
Course Title	Integrated Project 2 (Focus: City and Landscape)
Credit Points	6
Catalogue Description	Represents the core course in design in each semester. A solution for a practically oriented assignment must be developed. The emphasis of this process is on analysis, concept, and implementation. These steps must follow an inherent logic: from idea to presentation.
Prerequisite(s)	UPAD 1 109 Integrated Project 1

Course Code	UPAD 2 127
Course Title	Urban Planning History 2
Credit Points	2
Catalogue Description	Provides introduction to the historical development of urban planning from its beginning in the 19th century until today. Focuses especially on the principal formation of the academic discipline, its ongoing interrelation with the built environment and its varying exigencies and scopes.
Prerequisite(s)	UPAD 2 116 Urban Planning History 1

Course Code	UPAD 2 131
Course Title	Integrated Project 3 (Focus: Building and Construction)
Credit Points	6
Catalogue Description	Represents the core course in design in each semester. Requires a developed solution for a practically oriented assignment. Emphasis of this process is on analysis, concept and implementation. These steps must follow an inherent logic: from idea to presentation.
Prerequisite(s)	UPAD 2 123 Integrated Project 2

Course Code	UPAD 2 135
Course Title	Urban Design 3
Credit Points	5
Catalogue Description	Introduces different urban theories. Enables application in small design exercises in correlation with the learning outcomes of Urban Design 1 and 2.
Prerequisite(s)	UPAD 2 120 Urban Design 2

Course Code	UPAD 2 177
Course Title	Architecture 3
Credit Points	5
Catalogue Description	Examines an overview of the characteristic elements and concepts of residential buildings, seen from a socio, economic, urban and architectural view in order to understand the design decisions behind architectural solutions.
Prerequisite(s)	UPAD 1 109 Integrated Project 1; UPAD 1 176 Architecture 2

Course Code	UPAD 2 178
Course Title	Architecture 4
Credit Points	4
Catalogue Description	Provides an overview of the characteristic elements and concepts of non-residential architecture, such as e.g. commercial, educational, cultural, industrial, transport, religious buildings, in order to understand the design decisions behind architectural solutions.
Prerequisite(s)	UPAD 2 120 Urban Design 2

Course Code	UPAD 2 179
Course Title	Building Construction 3
Credit Points	3
Catalogue Description	Introduces basic knowledge about the local climate conditions and comfort requirements. Introduces basics of building physics, as well as technical equipment used regionally.
Prerequisite(s)	UPAD 2 192 Building Construction 2

Course Code	UPAD 2 180
Course Title	Building Construction 4
Credit Points	3
Catalogue Description	Introduces Façade Systems and Design with regards to structure, thermal envelope, protective layers and apertures.
Prerequisite(s)	UPAD 2 192 Building Construction 2; UPAD 2 179 Building Construction 3

Course Code	UPAD 2 181
Course Title	Computer Aided Design 3
Credit Points	4
Catalogue Description	Introduces use of Adobe Suite in graphical presentation and layout of Projects. Enables students to work specifically on producing a portfolio of their previous project work.
Prerequisite(s)	UPAD 2 114 Computer Aided Design 2

Course Code	UPAD 2 190
Course Title	Building Construction 1
Credit Points	3
Catalogue Description	Introduces the forces and loads that act upon a building as well as structural systems and elements of a building's load-bearing structure.

Course Code	UPAD 2 192
Course Title	Building Construction 2
Credit Points	4
Catalogue Description	Introduces relevant building materials and their application in construction. Examines the characteristics, properties, usefulness and sustainability of commonly used materials. Covers the proper representation and arrangement in architectural drawings.
Prerequisite(s)	UPAD 2 190 Building Construction 1

Course Code	UPAD 3 137
Course Title	Economics 1
Credit Points	3
Catalogue Description	Introduces the economical preconditions of urban development. Enables students to achieve a general idea of the economical and urban planning coherences by analysing the social developments of urban structures on micro- and macro-structural levels and the possibility to solve the urban requirements through planning. Offers an application of processes and elements of urban economic planning on current projects and site developments.

Course Code	UPAD 3 138
Course Title	Urban Preservation & Renewal
Credit Points	5
Catalogue Description	Introduces basic knowledge of preservation concepts. The development of basic ideas and concepts for a careful handling of historical buildings is shown through case studies of the conservation of historical monuments.
Prerequisite(s)	UPAD 2 131 Integrated Project 3

Course Code	UPAD 3 140
Course Title	Integrated Project 4 (Focus: Building and Construction)
Credit Points	9
Catalogue Description	Represents the core course in design in each semester. Requires a developed solution for a practically oriented assignment. Emphasis of this process is on analysis, concept, and implementation. These steps must follow a consistent argumentation. In this semester, the focus is on the interplay of architectural design and building construction.
Prerequisite(s)	UPAD 2 131 Integrated Project 3

Course Code	UPAD 3 141
Course Title	Planning Law 1
Credit Points	3
Catalogue Description	Introduces Building Regulations in combination with student assignments. Offers an application of the canon of building legislation to a concrete project.

Course Code	UPAD 3 143
Course Title	Integrated Project 5 (Focus: City and Landscape)
Credit Points	9
Catalogue Description	Represents the core course in design in each semester. Requires a developed solution for a practically oriented assignment. Emphasis of this process is on analysis, concept and implementation. These steps must follow an inherent logic: from idea to presentation.
Prerequisite(s)	UPAD 3 138 Urban Preservation and Renewal; UPAD 3 140 Integrated Project 4

Course Code	UPAD 3 145
Course Title	Economics 2
Credit Points	3
Catalogue Description	Introduces the economical preconditions of urban development. Enables students to achieve a general idea of the economical and urban planning coherences by analysing the social developments of urban structures on micro- and macro-structural levels and the possibility to solve the urban requirements through planning. Investigates application of processes and elements of urban economic planning on current projects and site developments.
Prerequisite(s)	UPAD 3 137 Economics I

Course Code	UPAD 3 146
Course Title	International Urban Design
Credit Points	5
Catalogue Description	Provides knowledge of urban design and planning principles in an international context in order to enable the students to understand the differences and similarities of urban structures in different countries worldwide. Investigates a broad overview of project examples in various surroundings and climate zones. Applies systematic analysis of urban design projects within different countries. Investigates emerging trends in urbanism in relation to the regional and local context.
Prerequisite(s)	UPAD 3 140 Integrated Project IV

Course Code	UPAD 3 147
Course Title	Planning Law 2
Credit Points	3
Catalogue Description	Introduces Planning Regulations in combination with student assignments. Investigates application of the canon of Urban Planning regulation to a concrete project.
Prerequisite(s)	UPAD 3 141 Planning Law I

Course Code	UPAD 3 189
Course Title	Urban Planning Theory
Credit Points	4
Catalogue Description	Introduces analysis of urban theory of different regions. Investigates application of these in the Gulf Region. Focuses especially to the percolation of different approaches.

Course Code	UPAD 3 194
Course Title	Building Construction 5
Credit Points	4
Catalogue Description	Introduces basic knowledge of the building process' managerial, legal and contractual aspects.
Prerequisite(s)	UPAD 2 180 Building Construction 4

Course Code	UPAD 3 195
Course Title	Urban Infrastructure and Technologies
Credit Points	4
Catalogue Description	Introduces the local public infrastructure and interactions with the urban patterns. Closely studies traffic and mobility, energy, water and waste management, technical infrastructure systems and organisational demands.

Course Code	UPAD 3 228
Course Title	Landscape Architecture
Credit Points	4
Catalogue Description	Introduces Landscape Design: functional, aesthetic and ecological connections between building, open space and landscape.

Course Code	UPAD 3 257
Course Title	Design Project Documentation
Credit Points	4
Catalogue Description	Elaborates the process of design behind architectural or urban projects for Thesis. Enables students to synthesise the process of their design thinking, starting from analysis and exploration of approaches, until addressing stated problems with design tools and summarising the achievements. The documented outcome is the written record of the project that aims to explain the process to those who want to implement the design, understand it, or reference it to solve their own problem.

Course Code	UPAD 3 266
Course Title	Documenting Omani Heritage
Credit Points	4
Catalogue Description	Aims to document Omani buildings within their context by drawings. Field trips to different sites are conducted and students are instructed in different drawing techniques. The documentation will be exhibited and published.

Course Code	UPAD 3 267
Course Title	Intro to GIS for Architects and Urban Planners
Credit Points	4
Catalogue Description	Introduces ArcGIS software.

Course Code	UPAD 3 369
Course Title	Model 101
Credit Points	4
Catalogue Description	Introduces model making. Implies a selection, discussion and understanding of significant architectural projects. The work is divided into three stages: Research, Dimensioning and Modelling. Encourages students to research and understand the given examples in order to develop an architectural model from this analysis. Focuses especially on creative interpretation, abstraction and choice of scale

Course Code	UPAD 3 388
Course Title	BIM Systems
Credit Points	4
Catalogue Description	Extends teaching of current standard computer applications. Runs parallel and in coordination with Integrated Project Studios

Course Code	UPAD 3 396
Course Title	Field Trip
Credit Points	4
Catalogue Description	Provides the opportunity to explore architectural and urban planning examples in a specific context. This field trip shows students examples of best practice in and around Muscat. Exact location and activities will vary from year to year depending on the semester topic. Parallel to this studies will help students to understand different contexts and different sustainable approaches in architecture and urban planning.

Course Code	UPAD 4 151
Course Title	Excursion
Credit Points	5
Catalogue Description	Provides the opportunity to explore architectural and urban planning examples in a broader context. A guided excursion shows students examples of best practice within their context. Comparative studies will help students to understand different contexts and different approaches in architecture and urban planning.

Course Code	UPAD 4 152
Course Title	Integrated Project 6 (Focus: Architecture or Urban Planning)
Credit Points	9
Catalogue Description	Represents the core course in design in each semester. Requires a developed solution for a practically oriented assignment. Emphasis of this process is on analysis, concept, and implementation. These steps must follow an inherent logic: from idea to presentation.
Prerequisite(s)	UPAD 3 143 Integrated Project 5

Course Code	UPAD 4 153
Course Title	Internship
Credit Points	7
Catalogue Description	Aims to provide the students insight into the practical work as a planner, designer or architect and to apply classroom knowledge to real life situations. This should be done in a firm or practice that deals with the discipline of urban planning and architecture. A written report must be handed in after successful completion of the internship.

Course Code	UPAD 4 155
Course Title	Colloquium
Credit Points	3
Catalogue Description	Consists of a number of intermediary critiques where students will present the current status of their thesis to check their progression. Aims to regulate the progression of thesis. A pass in the course colloquium is a requirement for final submission of the Bachelor Thesis.
Prerequisite(s)	Min. 210 CP, min. of IELTS 6.0 or equivalent
Corequisite(s)	UPAD 4 156 Bachelor Thesis

Course Code	UPAD 4 156
Course Title	Bachelor Thesis
Credit Points	12
Catalogue Description	Represents the final project work for Bachelor students. Requires a developed solution for a practically oriented assignment. The extent of the work is more advanced compared to the Integrated Project. The basic steps of analysis, concept and implementation remain. These steps must follow an inherent logic: from idea to presentation.
	Requires a formulation of an analytical assignment that supports the conceptual approach of the individual design project – in written form. The topic of the Thesis can be manifold and reflect the broad spectrum of the fields of architecture and urban planning. The main focus of the topic is either architecture or urban planning. The student has to choose either one. Two intermediate colloquiums will help to guide the progress of the individual work.
Prerequisite(s)	Min. 210 CP, min IELTS 6.0 or equivalent, UPAD 4 152 Integrated Project 6 and UPAD 4 153 Internship
Corequisite(s)	UPAD 4 155 Colloquium

Course Code	UPAD 4 158
Course Title	Brief Design
Credit Points	7
Catalogue Description	Represents a short design exercise. Gives students a task and 2-3 days to execute it. Varies in topics and might also touch other fields of study. Over the course of the 8 Semesters each student must pass 7 brief design exercises. 4 brief design exercises will be offered per semester.

Course Code	UPAD 4 219
Course Title	Sociological Basics
Credit Points	4
Catalogue Description	Introduces basics of social developments and their structural and spatial consequences (demography, mobility, migration, segregation, etc.). Introduces and discusses methods and instruments of social science in relation to urban design.

Course Code	UPAD 4 224
Course Title	Arabic Urban Design
Credit Points	4
Catalogue Description	Introduces Arabic urban structures, features of the traditional Islamic city and its treatment of space and organisation.

Course Code	UPAD 4 225
Course Title	Mapping
Credit Points	4
Catalogue Description	Understanding and mapping different collected data, from on-site observations to survey results, is a crucial skill for architects and urban planners. Without the ability to visualize complex data, the communication is simply impossible. In addition, data visualization is an essential tool within the process of developing a solution, a design or a strategic concept for any planning task. This course will introduce the students to relevant data collection, evaluation and visualization on base of maps and cartography. To understand the above, historic as well as contemporary references will be discussed and analysed

Course Code	UPAD 4 232
Course Title	Arabic Building Typologies
Credit Points	4
Catalogue Description	Explores the Arabic built environment taking a close look at the different distinct Arabic building typologies: Housing, places of trade, places of worship and public places.

Course Code	UPAD 4 233
Course Title	Daylight Simulation
Credit Points	4
Catalogue Description	Gives practical knowledge on basic daylight simulation and to perform general climate analysis for a given location

Course Code	UPAD 4 234
Course Title	Practical Building Workshop
Credit Points	4
Catalogue Description	Introduces the practical application of construction in a hands-on workshop setting. Students, by way of a predetermined design, participate in the planning, organising, fabrication and construction of a structure, preferably with materials which are readily available (i.e. recycled, earth, commonplace). A direct interaction with materials and the tools necessary to execute a design is encouraged. Focus is on "learning by doing" and an understanding of the reality of construction.

Course Code	UPAD 4 249
Course Title	Theory and Models of Spatial Development
Credit Points	4
Catalogue Description	Provides an overview of different theories and models describing and explaining spatial development. According to their advanced training, the course teaches students to analyse varying urban theories and compare them with actual developments.

Course Code	UPAD 4 250
Course Title	Decision Making Theory and Techniques
Credit Points	4
Catalogue Description	Introduces the mediating role of the urban designer and urban planner, summarising the different parties participating in planning processes and showing their different demands. Seeks to enhance the student's ability to report, discuss and coordinate within planning teams and semi-public hearings.

Course Code	UPAD 4 258
Course Title	Housing Typologies
Credit Points	4
Catalogue Description	Explores Courtyard Housing Typologies. This specific and traditional building typology origins within the Arabic culture and has gained relevance in the contemporary building production. The course introduces a contemporary interpretation of this traditional spatial model.

Course Code	UPAD 4 282
Course Title	Advanced Architectural Design Analysis
Credit Points	4
Catalogue Description	Explores contemporary architecture in the Gulf region

Course Code	UPAD 4 283
Course Title	Architectural Design Sprint
Credit Points	4
Catalogue Description	Develops contemporary architectural design solutions for the Gulf region in a competition format

Course Code	UPAD 4 284
Course Title	Ethnographic Planning
Credit Points	4
Catalogue Description	Frequently sidestepping slower and studied processes toward progress. This is seen in the vast number of projects affecting the geography while straining to regard fully and holistically, the unique cultural, environmental and social qualities of the countries (on intimate-architectural and large- urban scales). By engaging studied and practiced ethnographic methods of research, analyses and proposals, we intend to highlight opportunity areas for innovation and understand the real needs in regions of a country within varied sectors that affect the urban landscape. Therefore, the aim of this course is to understand and apply ethnographic research methods to inform the urban planning process in Oman.

Course Code	UPAD 4 285
Course Title	Advanced Urban Design Analysis
Credit Points	4
Catalogue Description	Explores contemporary urban design in the Gulf region

Course Code	UPAD 4 286
Course Title	Urban Design Sprint
Credit Points	4
Catalogue Description	Develops contemporary urban design solutions for the Gulf region in a competition format

Course Code	UPAD 4 371
Course Title	Thesis Preparation
Credit Points	3
Catalogue Description	Introduces the Bachelor Thesis. Short but intensive course that focuses on key skills, especially analysis, concept and implementation.
Prerequisite(s)	Min. 180 CP, min IELTS 6.0 or equivalent and UPAD 4 152 Integrated Project 6

Course Code	UPAD 4 372
Course Title	Visualisation Techniques
Credit Points	4
Catalogue Description	Develops visualisation techniques for both architecture and urban planning
Prerequisite(s)	UPAD 3 143 Integrated Project 5

Course Code	UPAD 4 373
Course Title	Urban Analysis and Design
Credit Points	4
Catalogue Description	Develops analysis and design skills in the urban context
Prerequisite(s)	UPAD 3 143 Integrated Project 5

Master courses

MSc in Applied Geosciences

Course Code	AGEO 5 101
Course Title	Petroleum Resources
Credit Points	5
Catalogue Description	Intends to introduce students the full life cycle of petroleum deposits, from Exploration, via Appraisal, Development, and Production to abandonment, including an overview of petroleum economics. All key technical concepts will be discussed briefly, and students will work through a case history example in teams.

Course Code	AGEO 5 102
Course Title	Water Resources
Credit Points	5
Catalogue Description	Teaches fundamentals of the hydrological cycle and water resources for geoscientists.

Course Code	AGEO 5 103
Course Title	Mineral Resources
Credit Points	5
Catalogue Description	Outlines mineral resources, particularly those important to Oman, and the background for the economic evaluation of the resources. It introduces the formation and characteristics of metallic and non-metallic mineral deposits. Emphasis will be on VMS, SEDEX, Carbonate-Hosted, magmatic, and porphyritic Copper, Manganese, Gold and Chromite deposits. Industrial Rocks & Minerals and some strategic important commodities like Rare Earth Element and Graphite deposits will be also discussed.

Course Code	AGEO 5 104
Course Title	Principles of Natural Resources Studies
Credit Points	5
Catalogue Description	Provides an overview of the principles of the key natural resources. That includes petroleum geology and hydrocarbon exploration, production, and unconventional hydrocarbons, the water cycle and aquifers, mineral exploration, exploitation, and an overview over the industrial minerals sector. The students get introduced to geoscience data, models, and their interpretation. This is followed by an overview of different sectors of Industries related to natural resources.

Course Code	AGEO 5 105
Course Title	Applied Sedimentology and Stratigraphy
Credit Points	5
Catalogue Description	Provides the fundamentals of stratigraphy and an advanced knowledge of sediment deposition and transport. It is aimed at providing sedimentological knowledge as key skill for petroleum exploration, production/development activities and for building predictive models. The course will also give an overview of sedimentary rocks in the industrial minerals sector and as aquifers or barriers. Emphasis will be placed on physical properties of sediments, sediment transport, environments in which sediments form, and on the inherent variability in reservoir quality and geometry.

Course Code	AGEO 5 106
Course Title	Tectonics and Structural Geology
Credit Points	5
Catalogue Description	An overview of the tectonics of sedimentary basins, covering geometry, kinematics, and dynamics. Building on the basic concepts of stress, strain, and brittle and ductile rock deformation, the students learn about the tectonic evolution of sedimentary basins, structural style, faults, folds, and fractures at an advanced level. Additional topics covered are fault and fracture statistics, juxtaposition analysis and an introduction to palinspastic reconstruction and geomechanic modelling.

Course Code	AGEO 5 107
Course Title	Mathematics for Geoscientists
Credit Points	5
Catalogue Description	Teaches fundamental mathematics for geoscientists.

Course Code	AGEO 5 108
Course Title	Scientific Programming
Credit Points	5
Catalogue Description	Teaches fundamentals of scientific programming using MATLAB and SciLab packages.
Prerequisites	AGEO 5 107 Mathematics for Geoscientists

Course Code	AGEO 5 109
Course Title	Applied Geophysics
Credit Points	5
Catalogue Description	Gives an advanced level overview of geophysical methods and the principles of acquisition, processing, and interpretation of geophysical data, to allow the student to work with geophysics specialists in a multidisciplinary team. Main focus of this course is on seismic techniques: data acquisition, processing, visualization and interpretation of seismic data and an overview of the software used in the industry. A brief overview about the application of geo-magnetics, gravimetry and geo-electrical methods in the search for mineral deposits will complete the course.
Prerequisites	AGEO 5 106 Tectonics and Structural Geology

Course Code	AGEO 5 110
Course Title	Geology Field Course
Credit Points	5
Catalogue Description	Advanced geological field course in Oman to study large scale examples of a wide spectrum of geological phenomena, and to evaluate them in the context of petroleum geoscience, mineral industry and hydrogeology.

Course Code	AGEO 5 111
Course Title	Applied Geo-statistics
Credit Points	5
Catalogue Description	Familiarises the student with the basic principles and concepts of geo-statistics and illustrate the important role of geo-statistics to handle uncertainties in geosciences. The course allows the participants to handle data uncertainty in work related to resource and reserve assessments.
Prerequisites	AGEO 5 107 Mathematics for Geoscientists

Course Code	AGEO 5 112
Course Title	Scientific Writing and Research Methods
Credit Points	5
Catalogue Description	Theory and practice of writing scientific manuscripts and company reports, scientific methods used, presenting results to an interdisciplinary audience.

Course Code	AGEO 5 121
Course Title	Master's Project and Colloquium
Credit Points	20
Catalogue Description	To undertake and complete the study of a problem applicable to the petroleum or minerals industry or in the field of applied hydrogeology. The project is an extended, independent, self-directed piece of practical work integrating and reinforcing the material taught on the courses, and giving a detailed insight into the demands of, and ways of working in the hydrocarbon or minerals industry or in the hydrogeological sector.
Prerequisites	Completed at least 90 Credit Points.

Course Code	AGEO 5 213
Course Title	Seismic Interpretation
Credit Points	5
Catalogue Description	Principles of geological interpretation of seismic reflection data. This will include the various practices that tie geology to seismic (i.e. synthetic seismograms, VSP's), and understanding the limitation of seismic data. Structural as well as stratigraphic interpretation of data. A key part of this course is to gain 2D and 3D seismic interpretation experience in a workstation environment.
Prerequisites	AGEO 5 109 Applied Geophysics; AGEO 5 106 Tectonics & Structural Geology; AGEO 5 105 Applied Sedimentology and Stratigraphy

Course Code	AGEO 5 214
Course Title	Production Geology and Reservoir Engineering
Credit Points	5
Catalogue Description	Familiarise the student with the basic principles and concepts of reservoir engineering, and illustrate the pivotal position reservoir engineering has to: • Assess reserves of an oil/gas field. • Create a field development plan for an oil/gas accumulation. • Manage reserves The course allows the participants to work efficiently in integrated teams responsible for planning development and production of oil/gas fields.

Course Code	AGEO 5 215
Course Title	Advanced Geophysics
Credit Points	5
Catalogue Description	To gain sufficient theoretical and practical experience with seismic interpretation at the reservoir scale with focus on seismic modelling, seismic attributes, and quantitative interpretation techniques.
Prerequisites	AGEO 5 109 Applied Geophysics; AGEO 5 213 Seismic Interpretation

Course Code	AGEO 5 216
Course Title	Practical Project for PGEO
Credit Points	5
Catalogue Description	The aim of this course is to discuss modern techniques for analysing, interpreting, visualising, and exploiting the data that is captured in scientific and commercial environments. The course will develop the ideas taught in the basic course of Petroleum Resources and discuss the issues in applying them to real-world data sets provided by industry or scientific institutions. The student will learn the techniques of data-visualisation and presentation.
Prerequisites	AGEO 5 101 Petroleum Resources

Course Code	AGEO 5 217
Course Title	Petroleum Systems Analysis/Modelling
Credit Points	5
Catalogue Description	This course provides the student an overview of the dynamics of sedimentary basins; the mechanisms of basin formation, evolution of basin fill and structure, thermal history, evolution of transport properties and fluid flow. The fundamentals of petroleum geochemistry are discussed, which followed by an overview of basin modelling techniques and their application to understand petroleum systems and the changes in the chemistry of organic material from the origin of organic matter and embedding in sediments to the production of oil and gas.
Prerequisites	AGEO 5 108 Scientific Programming

Course Code	AGEO 5 218
Course Title	Petrophysics and Well Log Analysis
Credit Points	5
Catalogue Description	The course teaches advanced methods to measure the properties of rocks using open-hole wire line logs, focussing on assessment of the in-situ and moveable hydrocarbons. It provides an overview of the major techniques for down-hole logging, their physical basis, visualisation of the results and interpretation of the data.
Prerequisites	AGEO 5 109 Applied Geophysics

Course Code	AGEO 5 219
Course Title	Prospect Analysis
Credit Points	5
Catalogue Description	The course is an extended practical exercise with the aim to develop strategies for evaluation of the exploration potential of an area. It illustrates types of interpretations and decisions that are made in the hydrocarbon industry for exploration of projects.
Prerequisites	AGEO 5 213 Seismic Interpretation; AGEO x xxx Petroleum Geochemistry and Basin Modelling; AGEO 5 218 Petrophysics and Well Log Analysis

Course Code	AGEO 5 220
Course Title	Assigned Project for PGEO
Credit Points	5
Catalogue Description	To gain sufficient theoretical and practical experience with Petroleum Exploration. In contrast to the more exploration focused Practical Project, the Assigned Project is focusing on field scale and allows the student to apply modelling techniques to an industry-provided dataset. The course will also consider environmental and socio-economic aspects of a petroleum project.
Prerequisite	AGEO 5 216 Practical Project for PGEO

Course Code	AGEO 5 313
Course Title	Fundamentals of Hydro-Engineering
Credit Points	5
Catalogue Description	The course teaches fundamentals of hydro-engineering with respect to groundwater reservoirs, highlights groundwater quantity and groundwater quality.
Prerequisite	AGEO 5 102 Water Resources

Course Code	AGEO 5 314
Course Title	Hydrogeochemistry
Credit Points	5
Catalogue Description	The course gives an overview of hydrogeochemistry, processes and analytical methods.

Course Code	AGEO 5 315
Course Title	Hydrogeological Modelling
Credit Points	5
Catalogue Description	The course is and introduction to groundwater modelling; it treats flow as well as basic transport processes, using analytical or numerical methods; the course is done hands-on in a computer lab, using popular groundwater modelling software; it contains pre-processing, processing, and post-processing steps.
Prerequisites	AGEO 5 107 Mathematics for Geoscientists; AGEO 5 108 Scientific Programming

Course Code	AGEO 5 316
Course Title	Practical Project for HGEO
Credit Points	5
Catalogue Description	The aim of this course is to discuss modern techniques for analysing, interpreting, visualising and exploiting the data that is captured in scientific and commercial environments. The course will develop the ideas taught in the basic course of Water Resources and discuss the issues in applying them to real-world data sets provided by industry or scientific institutions. The student will learn the techniques of data-visualisation and presentation.
Prerequisites	AGEO 5 102 Water Resources

Course Code	AGEO 5 317
Course Title	Hydraulic Testing and Inverse Modelling
Credit Points	5
Catalogue Description	This course teaches special hydrogeological testing methods and application of these under different conditions.
Prerequisites	AGEO 5 108 Scientific Programming; AGEO 5 315 Hydrogeological Modelling

Course Code	AGEO 5 318
Course Title	Geothermics
Credit Points	5
Catalogue Description	The course teaches temperature related topics of seepage, groundwater and the earth crust.
Prerequisites	AGEO 5 108 Scientific Programming

Course Code	AGEO 5 319
Course Title	Hydrogeological Field Methods
Credit Points	5
Catalogue Description	The course provides the major field methods in hydrogeology.

Course Code	AGEO 5 320
Course Title	Assigned Project for HGEO
Credit Points	5
Catalogue Description	To gain sufficient theoretical and practical experience concerning water related problems. In contrast to the basic practical project, the Assigned Project is focusing on the combination of methods. It allows the student to apply modelling techniques to a practical set-up. The course will also consider environmental and socio-economic aspects of a hydrogeological project.
Prerequisites	AGEO 5 314 Hydrogeochemistry; AGEO 5 315 Hydrogeological Modelling; AGEO 5 216 Practical Project for HGEO

Course Code	AGEO 5 413
Course Title	Exploration Geochemistry
Credit Points	5
Catalogue Description	This course provides the student an overview of the sampling methods and analytical tools used for the exploration of mineral resources. This includes a critical analysis of geochemical data, the selection of "pathfinder" elements for precious metal deposits and the selection of appropriate analytical methods for different types of deposits. Students will become familiar with: (i) fundamentals of inorganic geochemistry, (ii) techniques and criteria for mineral deposit classification, (iii) analytical methods.
Prerequisites	AGEO 5 103 Mineral Resources; AGEO 5 111 Applied Geostatistics

Course Code	AGEO 5 414
Course Title	Ore Deposits
Credit Points	5
Catalogue Description	This course focuses on the study of processes responsible for the formation of ore deposits and the important characteristic features of mineralised environments, including geologic and tectonic setting, structural controls, alteration patterns, and geochemistry. It introduces methods for exploring for minerals, including industrial minerals with a strong focus on the situation in Oman and the wider region.
Prerequisites	AGEO 5 103 Mineral Resources

Course Code	AGEO 5 415
Course Title	Exploration Geophysics
Credit Points	5
Catalogue Description	To gain sufficient theoretical and practical experience with interpretation of geoelectrical, gravity and geomagnetic data at the scale of mineral deposits with focus on the role of a geologist during the interpretation of geophysical data.
Prerequisites	AGEO 5 109 Applied Geophysics

Course Code	AGEO 5 416
Course Title	Practical Project for MGEO
Credit Points	5
Catalogue Description	The aim of this course is to discuss modern techniques for analysing, interpreting, visualising, and exploiting the data that is captured in scientific and commercial environments. The course will develop the ideas taught in the basic course of Mineral Resources and discuss the issues in applying them to real-world data sets provided by industry or scientific institutions. The student will learn the techniques of data-visualisation and presentation.
Prerequisites	AGEO 5 103 Mineral Resources

Course Code	AGEO 5 417
Course Title	Fundamentals of Mining Engineering
Credit Points	5
Catalogue Description	Introduction to the fundamentals of mining engineering and mineral processing methods, adapted to the special situation in Oman and neighbouring countries. Underground and surface mining methods will be studied with emphasis to applications to given deposit types and spatial constraints. General mine plan, sequence of development and cycle of operations, and principal processing methods for mineral commodities in Oman and the region.

Course Code	AGEO 5 418
Course Title	Ore Mineralogy
Credit Points	5
Catalogue Description	A course covering metalliferous and non-metalliferous ore deposits, including the use of transmitted and reflected light microscopy for identifying ore minerals and their intergrowths. Mineral deposits formed in a wide variety of geological environments are introduced, emphasising their relationship to petrological processes. Geological settings and alterations during exhumation and weathering.
Prerequisites	AGEO 5 414 Ore Deposits

Course Code	AGEO 5 419
Course Title	Modelling and Evaluation of Orebodies
Credit Points	5
Catalogue Description	To gain sufficient theoretical and practical experience in Ore Body Modelling based on exploration data. This includes sampling theory; concept of resource and reserve, ore grade, cut-off grade, nugget effect; statistical and numerical methods; basic computational tools and statistical packages (Micromine) used in the global mining industries; and the basic codes on reporting and uncertainty in geological evaluation (NI43-101 and JORC codes).
Prerequisites	AGEO 5 414 Ore Deposits; AGEO 5 111 Applied Geostatistics; AGEO 5 415 Exploration Geophysics; AGEO 5 413 Exploration Geochemistry

Course Code	AGEO 5 420
Course Title	Assigned Project for MGEO
Credit Points	5
Catalogue Description	To gain sufficient theoretical and practical experience with mineral exploration at the deposit scale with focus on orebody modelling, ore grade estimation and economic evaluation of an orebody. In contrast to the more exploration focused Practical Project, the Assigned Project is focusing on a known deposit and allows the student to apply modelling techniques to an industry-provided dataset. The course will also consider environmental and socio-economic aspects of a mining project.
Prerequisites	AGEO 5 413 Exploration Geochemistry; AGEO 5 415 Exploration Geophysics; AGEO 5 416 Practical Project

MSc in Architecture and Urban Planning

Course Code	AUP 5 101
Course Title	Sustainability
Credit Points	3
Catalogue Description	'Green' Architecture and Urban Design are not only about technology and emissions, but rather based on an intelligent integration of multiple factors throughout the design process. Therefore the course will provide a detailed overview of how architecture and planning relates to efforts intended to manage, organise and protect natural and human resources. Students will explain not only the basic principles of sustainability and energy efficiency but also the socio-cultural, ethical, judicial, and behavioural dimensions. Global and local climatic conditions will be identified and evaluated. The qualities of regenerative cycles and systems will be demonstrated in order to enable the students to integrate them within a sustainable project development.

Course Code	AUP 5 102
Course Title	Research Methods
Credit Points	3
Catalogue Description	The course introduces the particular model and method of epistemology used for scientific research. It focuses on the research methods state of art in architecture and urbanism, with a special emphasis on rapid urbanisation. Students will create a research design tailored to the research question. They will be qualified to choose the best suitable tools in order to perform a triangulation: quantitative and qualitative surveys, mapping, tracking etc.

Course Code	AUP 5 103
Course Title	Culture
Credit Points	3
Catalogue Description	Architecture and urban settlements traditionally reflect the interdependence between cultural values and the built environment. In this module students will be equipped with theoretical and practical skills to express complex cultural matters and evaluate their relevant consequences for architectural and urban planning. Thereby students describe and discuss historical origins and find a way to face new challenges caused by globalisation and the digital revolution.

Course Code	AUP 5 104
Course Title	Design Thinking
Credit Points	3
Catalogue Description	Looks at the process behind the production of design projects. The course gives an overview of the different methods of recording design practices and the theoretical models that arise from there. Students will be instructed to critically reflect and communicate with appropriate terminology about their own design processes and those of others

Course Code	AUP 5 105
Course Title	Economics
Credit Points	3
Catalogue Description	Introduction to the economical preconditions of urban development. Basic and advanced principles and models of economic analysis are used to demonstrate how urban development, growth and activity work. By analysing the social developments of urban structures on micro- and macro-structural levels and the possibility to solve the urban requirements through planning, the student achieves a general idea of the economical and urban planning coherences. Processes and elements of urban economic planning will be applied on current projects and site developments

Course Code	AUP 5 106
Course Title	Project Management
Credit Points	3
Catalogue Description	A solid framework on how to accomplish project management goals focusing on planning, executing, monitoring, and controlling will be provided to the students. The course introduces the ten project management skill areas: integration, scope, time, cost, quality, human resources, communication, risk, procurement, and stakeholder management. Using tools and techniques, such as work breakdown structures and network diagrams students will analyse, assess and apply the selected principles to case studies as well as real- world situations.

Course Code	AUP 5 107
Course Title	Thesis Preparation
Credit Points	3
Catalogue Description	The Master Thesis preparation course is an introduction to the Master Thesis. It is a short but intensive course that focuses on key skills, especially analysis, concept and implementation. Students will improve their skills in conceptual design which follows an inherent logic from idea to presentation. Additionally, with short analytical assignments the conceptual approach of the individual design project will be formulated in written form

Course Code	AUP 5 108
Course Title	Thesis Colloquium
Credit Points	3
Catalogue Description	The course colloquium is bound to the Master Thesis. It consists of a number of intermediary critiques where students will present the current status of their thesis to check their progression. The aim of the course is to regulate the progression of the Thesis. A pass in the course Colloquium is a requirement for final submission of the Master Thesis

Course Code	AUP 5 210
Course Title	Studio Architecture Design Project 1
Credit Points	12
Catalogue Description	The task of the first semester design studio project is to design a small case study building while focusing on the principles and details of climate adaptive, energy-efficient, and sustainable construction. Contents from other courses of this semester will be structured in a way that students can make connections between the content-oriented courses and this application-driven design studio. The students will be able to elaborate an architectural project in three basic steps: analysis, concept development and design implementation.

Course Code	AUP 5 211
Course Title	Technical Systems for Architecture
Credit Points	3
Catalogue Description	Technical building systems control thermal and visual conditions within a building and are essential to meet the interior comfort requirements. The course examines an effective utilization of technical equipment as well as an appropriate shape and orientation of the building with a special focus on the climatic conditions of the Middle Eastern region.

Course Code	AUP 5 212
Course Title	Analysis Architecture
Credit Points	3
Catalogue Description	Architectural analysis is the reverse process of architectural design. It starts with examining a completed building or published project and aims at carving out its conceptual core. Students will conduct an architectural analysis by producing appropriate plans and diagrams to illustrate to the outcome of the analysis. The course can be taught in conjunction with the Architecture Design Studio in semester 1.

Course Code	AUP 5 213
Course Title	Simulation for Architecture
Credit Points	3
Catalogue Description	To support the work of the design studio, this course will offer knowledge of building performance analysis software. By applying a series of model-based simulation techniques (e.g. solar radiation and shading analysis, thermal properties) students will learn how to optimise the energy demand and daylight qualities of a building already during the early-stage design phase.

Course Code	AUP 5 214
Course Title	Studio Architecture Design Project 2
Credit Points	12
Catalogue Description	The design studio projects are the core courses of each semester. The main topic of the second semester is "Identity". The task of the second semester design studio project is to design a large public building focusing on the urban setting of the building, its complex functional layout, and its formal appearance. Contents from other courses of this semester will be structured in a way that students can make connections between the content-oriented courses and this application-driven design studio. The students will be able to elaborate an architectural project with a concrete building program and specific requirements regarding its context and ecological qualities.
Prerequisites	AUP 5 210 Studio Architecture Design Project 1

Course Code	AUP 5 215
Course Title	Advanced Structural Design
Credit Points	3
Catalogue Description	To represent a solid unit, an architectural design idea needs to be developed in line with an appropriate and effective structural system. In this course the logic of structural elements is deepened. The composition of these elements into a three-dimensional structural support system is practiced. Widespan systems such as truss, spaceframe, fabric, and dome structures are introduced to the students. A thorough conceptual outline and discussion is provided for a direct implementation within the design studio.
Prerequisites	AUP 5 210 Studio Architecture Design Project 1

Course Code	AUP 5 216
Course Title	Advanced Building Construction
Credit Points	3
Catalogue Description	In terms of energy consumption and comfort the performance of a building largely depends on its envelope. Students are introduced to various types of wall sections such as composite systems and their physical properties. Different façade systems such as curtain façades, glazing and shading systems are studied. Thermal properties of building materials are analysed and evaluated.
Prerequisites	AUP 5 210 Studio Architecture Design Project 1

Course Code	AUP 5 217
Course Title	History of Architecture
Credit Points	3
Catalogue Description	The main focus of the course is on the period of modern architecture from the early 20th century until today. During the lectures, the historic foundations of the modern movement in architecture will be presented and evaluated. Furthermore, the critic of its outcomes will be studied and local adaptations in Europe, America, Arabia, Africa, and Asia will be compared.

Course Code	AUP 5 218
Course Title	Digital Information Systems for Architecture (BIM)
Credit Points	3
Catalogue Description	Students will be introduced to the advantages of using model-based shared knowledge resources for the construction and operation of buildings. With the help of Building Information Modelling (BIM) software, the properties, processes, and relations between the various parts of a building are digitally recorded and managed in order to facilitate and optimise the construction phase as well as the operation of facilities regarding time, costs, and efficiency. The principles of Building Information Modelling will be illustrated, and students will be able to apply those within the software.

Course Code	AUP 5 219
Course Title	Studio Architecture Design Project 3
Credit Points	12
Catalogue Description	The task of the third semester design studio project is to design an ensemble of buildings with mixed uses, focussing on open spaces, landscaping, communal facilities, and infrastructure. Contents from other courses of this semester will be structured in a way that students can make connections between the content-oriented courses and this application-driven design studio.
Prerequisites	AUP 5 214 Studio Architecture Design Project 2

Course Code	AUP 5 220
Course Title	Advanced Building Construction 2
Credit Points	3
Catalogue Description	Overall energy consumption is the key criterion in the evaluation of a building's performance. Students will enhance their skills on how to conduct a thorough simulation, analysis, and optimisation of the energy demand of a building. The experience in the previous technical courses is practiced in depth in a project taking all interior as well as external aspects into account.
Prerequisites	AUP 5 214 Studio Architecture Design Project 2; AUP 5 216 Advanced Building Construction 1

Course Code	AUP 5 221
Course Title	Theory of Architecture
Credit Points	3
Catalogue Description	The course gives an introduction to the historical development of the theory of architecture to create a basis for an overview of contemporary theoretical discourses. The educational outcome is extended by readings and discussions of key writings on the topic.

Course Code	AUP 5 222
Course Title	Visualisation for Architecture
Credit Points	3
Catalogue Description	In order to support the design process and the graphical outcomes of the studio projects, students will study a theoretical framework of visualisation of architecture and apply the newly selected techniques in order to serve as effective tools for an appropriate 3D architectural representation of design ideas. The integration of non-digital drawings and further processing with digital editing software is also part of the course.

Course Code	AUP 5 223
Course Title	Master Thesis Architecture
Credit Points	24
Catalogue Description	The Master Thesis is the final project work for Master students. As for the design studios, a solution for a practically oriented assignment must be developed. The extent of the work is more advanced compared to the design studio. The basic steps of analysis, concept and implementation remain. These steps must follow an inherent logic: from idea to presentation. An analytical assignment that supports the conceptual approach of the individual design project will be formulated in written form. The topic of the Thesis can be manifold and reflect the broad spectrum of the fields of architectural design. The main focus of the topic is architecture. Two intermediate colloquiums will help to guide the progress of the individual work.

Course Code	AUP 5 310
Course Title	Studio Urban Planning Project 1
Credit Points	12
Catalogue Description	The aim of this studio is to design a small-scale urban structure on a neighbourhood level. Students will be asked to apply state of the art skills in urbanism - collected in simultaneously held conceptual lectures – transformed to practical solutions in order to enhance liveability. The relationship between complex urban infrastructures and urban form as well as the intersection between public and private realms will be investigated. Climate adapted urban design, energy efficiency and ecological design strategies will be integrative part of the design studio.

Course Code	AUP 5 311
Course Title	Technical Systems Urban Planning
Credit Points	3
Catalogue Description	This course comprises all technical, institutional, legal, and organisational premises, which are required for the functioning of urban settlements. The course will concentrate especially on questions regarding water, waste, energy and mobility. Students will be able to develop suitable solutions fitting the different contextual challenges, matching the needed scale.

Course Code	AUP 5 312
Course Title	Urban Planning Analysis
Credit Points	3
Catalogue Description	Introduction to the fundamentals of urban analysis with the help of one or several exercises. The students will conduct an urban analysis within a given context and produce appropriate plans and diagrams to illustrate the outcomes. Specific urban conditions will be critically evaluated. The course will be taught in conjunction with the Urban Design Studio in semester 1.

Course Code	AUP 5 313
Course Title	Simulation for Urban Planning
Credit Points	3
Catalogue Description	In line with established software standards, students will evaluate and assess given and developed urban models within a diverse context. Environmental factors will be simulated. Complex urban systems with passive and active systems as well as advanced technologies and developments will be modeled. The results will be integrated into the urban planning task of the Studio Urban Planning Project.

Course Code	AUP 5 314
Course Title	Studio Urban Planning Project 2
Credit Points	12
Catalogue Description	The design studio focuses on the city as a man-made ecosystem and its interdependency of regional and local context. It indicates the crucial relationship of in- and outflows of natural and man-made resources as well as the impact of cultural, sociological, and

historic influences on a specific site. An exact analysis is the prerequisite for the design work. The insight of this analytical approach leads to the configuration of private and public space of individual housing schemes and collective urban form in a medium size.

Course Code	AUP 5 315
Course Title	Traffic Planning
Credit Points	3
Catalogue Description	Traffic and mobility will be discussed as a critical aspect of planning and an essential element of our social and economic well-being, which at the same time has a significant impact on our environment. In this course the use of quantitative techniques for modelling urban transportation systems and their performances will be explored. The students will examine the different challenges concerning public and private transport in metropolitan areas concentrating on future options in the region and beyond.

Course Code	AUP 5 316
Course Title	Landscape Design
Credit Points	3
Catalogue Description	Introduction to the essential elements of landscape design. The course will outline the functional, aesthetic, and ecological aspects. The tools of design with vegetation will be examined. The relationship between buildings, open spaces and landscape will be studied.

Course Code	AUP 5 317
Course Title	History of the City
Credit Points	3
Catalogue Description	Deals with the phenomenon 'city' in its contemporary form and gives an overview of the development of urban patterns from 1918 until today. In addition to the review of the Western development, special attention is given to the Arabian City and its different formations in Arabia, Africa, and Asia.

Course Code	AUP 5 318
Course Title	Digital Information (GIS)
Credit Points	3
Catalogue Description	The course introduces students to the key concepts and technical skills involved in analysing spatial phenomena using geographic information systems. Students will be taught basic software skills and tools of environmental data acquisition necessary for spatial planning. Based on their outline, students will further be trained in database design, statistics, and information processing. Additional software will be introduced to broaden the skills of computational applications in spatial and urban design.

Course Code	AUP 5 319
Course Title	Studio Urban Planning Project 3
Credit Points	12
Catalogue Description	This design studio focuses on the city as a large-scale entity with strong impact on human development. Previously skills of former semesters and courses build a strong base for an exploration of urban agglomeration as a complex system of interconnections. By assessing historical and theoretical references, urban typologies, and social norms the students will integrate their design within a larger geographical and civil context.

Course Code	AUP 5 320
Course Title	Governance
Credit Points	3
Catalogue Description	This course focuses on the in-depth study of the urban legislation processes as well as the importance of participation and community development. Local and regional differentiation of primary, secondary & tertiary sector planning will be studied, as well as public and private governance. Students will collect information about participatory processes involving various stakeholders in different development programs and projects. The goal is to assess, use and evaluate opportunities and possibilities, found in the local context of Oman's planning and participation strategies.
Prerequisites	AUP 5 314 Studio Urban Planning Project 2

Course Code	AUP 5 321
Course Title	Theory of the City
Credit Points	3
Catalogue Description	Introduction to the contemporary development of the city. Special focus is laid on current topics of urbanisation, e.g. globalisation, urban landscape, social cohesion, sustainability, and migration. The lectures give an introduction to the historical development of urban theory and continues to explain different paradigms and models of urban planning. These are discussed and assessed with the help of key writings on the topic.

Course Code	AUP 5 322
Course Title	Visualisation for Urban Planning
Credit Points	3
Catalogue Description	The ability to visualise and communicate concepts, ideas and assessments is crucial in urban design projects. This course focuses on the students' competency in urban plan drawings, choice of scale, levels of abstraction and useful integration of visual data communication. Students will develop their skills in data processing and database management (e.g. GIS) as well as spreadsheet calculations creating charts and diagrams. The goal is the ability to display information relevant to the planning project and interlinking it with the design process.

Course Code	AUP 5 323
Course Title	Master Thesis Urban Planning
Credit Points	24
Catalogue Description	The Master Thesis is the final project work for Master students. As for the design studios, a solution for a practically oriented assignment must be developed. The extent of the work is more advanced compared to the design studio. The basic steps of analysis, concept and implementation remain. These steps must follow an inherent logic: from idea to presentation. An analytical assignment that supports the conceptual approach of the individual design project must be formulated in written form. The topic of the Thesis can be manifold and reflect the broad spectrum of the fields of urban planning. The main focus of the topic is urban planning. Two intermediate colloquiums will help to guide the progress of the individual work.

Course Code	AUP 5 401
Course Title	Architectural Climate Concept
Credit Points	3
Catalogue Description	The task of the course is to design a small case study building with the focus on the principles and details of climate adaptive, energy efficient, and sustainable construction. The students will elaborate an architectural project in three basic steps: analysis, concept development and design implementation.

Course Code	AUP 5 402
Course Title	Colours
Credit Points	3
Catalogue Description	The task of the course is mainly about an empirical and experimental approach to assess the importance of colours. The task will be to elaborate different case studies about colours using different approaches of drawing techniques, surfaces and types of colours which are suitable for architectural presentation drawings.

Course Code	AUP 5 403
Course Title	Digital Modeling and Fabrication
Credit Points	3
Catalogue Description	The task of the course is focusing on new possibilities of model-making by new 3D software connected with innovative fabrication processes like 3D printing. The students will be able to create detailed architecture models of whole buildings, details or urban situations with those 3D techniques.

Course Code	AUP 5 404
Course Title	Intelligent Façades
Credit Points	3
Catalogue Description	This course has the main topic of creating aesthetic facade design with special focus on climate adaptive, energy-efficient, and sustainable facade construction for a given building. The students will be able to elaborate an architectural design in three basic steps: analysis, concept development and design implementation.

Course Code	AUP 5 405
Course Title	Architecture, Ethics, and Philosophy
Credit Points	3
Catalogue Description	During the lectures the philosophical movements from the past until today and their importance for architects will be presented, discussed and judged. The historic foundations of ethics will be illustrated and the critic of its outcomes will be interpreted. Adaptations in the past and present will be compared and evaluated.

Course Code	AUP 5 406
Course Title	Architectural Rendering and Visualisation
Credit Points	3
Catalogue Description	The task for the course is to create a series of high-quality architectural renderings of an earlier designed project. Renderings and visualisations of international architecture competitions will be analysed and evaluated. The appearance from the outside and the interior design will be represented in in different ways by using different rendering and visualisation techniques. The students will learn how to create renderings which illustrate the atmosphere of architectural and urban design projects.

Course Code	AUP 5 407
Course Title	Complex Building Typologies
Credit Points	3
Catalogue Description	The main topic in the course will be to analyse a specific complex building ensemble, e.g. an airport, a university or a hospital. The students will compare different project examples of one typology with the help of architectural plans, pictures and project descriptions. Typological similarities, differences or abnormalities will be presented at the end of the course through plans, sections, elevations, visualisations and models in various scales.

Course Code	AUP 5 408
Course Title	Architectural Sketching Field Trip
Credit Points	3
Catalogue Description	During the course students will observe and analyse cultural heritage of local architecture spaces by drawings, sketches and illustrations. They improve their skills of drawing significant traditional architectural and urban spaces in perspective and right proportion.

Course Code	AUP 5 409
Course Title	Advanced BIM
Credit Points	3
Catalogue Description	The course focuses on a specific individual theme, depending on actual topics in architecture and urban design. Students will use Building Information System (BIM) software to design buildings and infrastructure. They will focus on how BIM improve decisions and preferences across the building and infrastructure lifecycle.

Course Code	AUP 5 410
Course Title	Structural Textile Shading System
Credit Points	3
Catalogue Description	The task is to design a small case study structure for a textile shading system. Focusing on climatic advantages and sustainable constructive details the structure should be a climatic support for a building or other architectural space. The students will elaborate an architectural textile structure design in three basic steps: Analysis, concept development and design implementation.

Course Code	AUP 5 411
Course Title	Concept of Historic Preservation
Credit Points	3
Catalogue Description	During the course students will create a historic preservation concept for an actual architectural structure worthy of preservation. Suitable objects to preserve will be given to the students. The students will analyse the proposed building or structure by observing, measuring, and documenting the object. For every specific object, students will develop a unique historic preservation proposal.

Course Code	AUP 5 412
Course Title	Parametric Design
Credit Points	3
Catalogue Description	This elective course will focus on the design of a part of a building (façade) with the help of parametric design software. Different tools and techniques will be applied. Students will be instructed how to integrate various parameters such as climate data, ecological factors and energetic aspects into the digital parametric design process. The computer-generated design examples will be presented through plans, sections, elevations, visualisations, and models in various scales.

MSc Computer Science courses

Course Code	CS 5 101
Name of Course	Advanced Analysis and Design of Information Systems
Credit Points	6
Catalogue Description	This course highlights the main techniques used to model and design information systems. It introduces the student to the conceptual, logical, and physical levels of modelling. It presents the main phases of analysis and design, including requirement analysis, analysis, design, implementation, and testing.

Course Code	CS 5 102
Name of Course	Ethics and Policies
Credit Points	6
Catalogue Description	Computer ethics should guide computing professionals when make decisions regarding professional and social conduct. We distinguish between personal codes, work place code, and formal codes of ethics.

Course Code	CS 5 103
Name of Course	Machine Learning
Credit Points	6
Course Description	This is an introductory course to machine learning that covers the main methodologies and techniques of machine learning and statistical inference. The course will explore concepts of machine learning such as classification and linear regression. The course will also cover the most recent advents in machine learning such as deep neural networks and deep belief networks.

Course Code	CS 5 104
Name of Course	Research and Thesis Preparation 1
Credit Points	6
Course Description	The aim of this course is to develop the scientific research skills required to prepare, carry out and complete a master's thesis in the field of computer science. The student chooses a topic, performs a literature review, writes a report, and gives a presentation. This course should guide the student in choosing a topic for the master's thesis.

Course Code	CS 5 105
Name of Course	Advanced Database Systems
Credit Points	6
Course Description	This course expands upon basic database concepts and introduces advanced topics such as query optimisation, advanced SQL programming, concurrency, data warehouses, XML, and database security

Course Code	CS 5 106
Name of Course	Advanced Topics in Networks
Credit Points	6
Course Description	The course exposes students to selected advanced topics in networking. The focus will be on the areas of internet, communities and social networks, and wireless networking.

Course Code	CS 5 107
Name of Course	Research and Thesis Preparation 2
Credit Points	6
Course Description	The aim of this course is to further develop the scientific research skills required to prepare, carry out and complete a master's thesis in the field of computer science. The student chooses a topic, performs a literature review, writes a report, and gives a presentation. Ideally, the topic is chosen in connection with a research project or the master's thesis.

Course Code	CS 5 108
Name of Course	Technology Strategic Management
Credit Points	6
Course Description	This course focuses on the strategic perspective of the general manager and study how these leading firms generate value from their IT investments. This course will include a review of both IT business models, strategies, and policies utilised in managing a market and technology driven company. Contemporary strategic management and ethical leadership are examined through selected industry case studies. This course will offer an examination of how organisations invest in new technologies to gain a competitive edge. Students will learn how to improve core business performance through strategic planning and market analysis. Students will acquire first-hand experience with formulating and implementing strategic plans. Students will be prepared, as Chief Executive, Chief Information, and Chief Technology Officers, to lead the firm and the technology arm of the company in the appropriate use of information technology to achieve the organisation's strategic objectives. Finally, this course will equip Students with the knowledge necessary to recognise from a business perspective how to generate business value from IT investments.

Course Code	CS 5 109
Name of Course	Research and Thesis Preparation 3
Credit Points	6
Course Description	The aim of this course is to further develop the scientific research skills required to prepare, carry out and complete a master's thesis in the field of computer science. The student chooses a topic, performs a literature review, writes a report, and gives a presentation. Ideally, the topic is chosen in connection with a research project or the master's thesis

Course Code	CS 5 110
Name of Course	Thesis Colloquium
Credit Points	3
Course Description	Provides a platform where students can present the intermediary and final results of their Master Thesis.
Corequisite(s)	CS 5 111 Master Thesis

Course Code	CS 5 111
Name of Course	Master's Thesis
Credit Points	27
Course Description	In this course the student choose a research topic, carry out the research and write a masters thesis, Ongoing work as well as the final defense of the thesis are presented in the course thesis colloquium.
Prerequisite(s)	At least 2 courses of research and theses preparation.
Corequisite(s)	CS 5 110 Thesis Colloquium

Course Code	CS 5 201
Name of Course	Big Data Analytics
Credit Points	6
Course Description	This is an introductory course to big data analytics that covers the main methodologies and techniques of big data management and analysis. The course will first provide an overview of big data and its applications in different fields. This course will explore the technologies behind big data analytics focusing on Hadoop technology. Furthermore, this course will cover an introduction to Big Data analytics technology stack and layers and the foundational technologies. Moreover, this course will introduce big data analysis technologies and visualisations.
Pre-requisite/s	CS 5 103 Machine Learning

Course Code	CS 5 202
Name of Course	Data Modelling and Presentation
Credit Points	6
Course Description	This is an introductory course to principles of logical data and High-Level Data Model Concepts and presentation. The course will introduce students to the process of logical data modelling using requirement engineering. Moreover, this course covers the process of data modelling using attributive and associative contextual logical entities, entity relationship diagrams, and super types and subtypes. Furthermore, the course will cover the latest technologies in data modelling techniques and layered data logical architecture. Finally, the course will introduce students to the art of data presentation for intelligence inference.

Course Code	CS 5 203
Name of Course	Network Forensics
Credit Points	6
Course Description	The course provides students with a comprehensive understanding of digital forensic principles. It also provides them with appropriate knowledge related to the collection, preservation, and analysis of digital evidence. To this end, the course will include topics related to computer and network technologies, operating system architectures, disk structures, and file system analysis. Students will learn about the importance of forensic procedures, legal considerations, control of digital evidence, and documentation of forensic analysis. They will also develop an understanding of the different applications and methods for conducting network and digital forensic acquisition and analysis. The course consists of lectures and student class presentations (seminars). It requires from students to make appropriate research efforts to investigate network forensic issues on their own.

Course Code	CS 5 204
Name of Course	Network Security
Credit Points	7
Course Description	This course aims at providing students with a solid background and understanding of the underlying principles and concepts of information security and to provide them with the skills needed to analyse and evaluate information security threats and attacks. Particularly, the course will cover a variety of topics that will prepare students to develop a skill set and broaden their knowledge of information security. Such topics will range from information security management to application security, network security, and physical security. Students will be also exposed to the legal, compliance, and regulatory issues in addition to ethical issues related to information security. Moreover, students will be instructed on how to develop security policies, disaster recovery plans and the main aspects of computer forensics and crime investigation. All of these topics will be linked to practical cases and real-life experiences that are specific to Oman.

Course Code	CS 5 205
Name of Course	Data Visualisation for Data Science
Credit Points	6
Course Description	Introduces students to the visual tools and techniques used in modern data science to develop and deploy data driven applications. It also provides students with a foundation for visualisation to support exploratory analysis, statistical modelling, machine learning, and presentation of results on structured and unstructured data.

Course Code	CS 5 206
Name of Course	Statistics for Data Science and Business Analysis
Credit Points	6
Course Description	Covers the fundamentals of statistical techniques and tools that a data scientist needs to make data driven decisions and perform hypothesis testing. This includes how to work with different types of data and distributions, plot different types of data, calculate correlation and covariance, and estimate confidence intervals.

Course Code	CS 5 207
Name of Course	Advanced Software Engineering
Credit Points	6
Course Description	This course provides the students with the latest advancement in software engineering methodologies for leading software engineering projects, starting from the idea formulation and requirement engineering to software product delivery.

Course Code	CS 5 208
Name of Course	Advanced Algorithm Design
Credit Points	6
Course Description	The course teaches various important techniques for the design of efficient algorithms, such as greedy, divide-and-conquer, dynamic programming, branch and bound, linear programming, and randomisation.
Prerequisite/s	Efficient Algorithms (undergraduate level) or equivalent. Students who did not take such a course must take the undergraduate course at GUtech.

Course Code	CS 5 209
Name of Course	Web Systems Integration
Credit Points	6
Course Description	The course explains the web systems integration paradigm which is revolutionising the way we produce software. It describes various scenarios in which this integration plays a part. It also introduces many technologies which are being used to enable this integration. This course will provide students with the skills necessary to participate in an integration project.

Course Code	CS 5 301
Name of Course	Project Risk Management
Credit Points	6
Course Description	The course describes key concepts related to project risk management. In addition to demystifying risks, it focuses on risk identification and analysis as well as on the use of approaches and tools to mitigate risks and build a risk management culture. The course consists of lectures and student class presentations (seminars). It requires from students to make appropriate research efforts to investigate project risk management issues on their own.

Course Code	CS 5 302
Name of Course	Introduction to e-Government
Credit Points	6
Course Description	The course introduces the students to the basic concepts of e-government. In particular, it discusses different managerial issues, the data flows of e-Government, the infrastructure development, the latest trends in e-Government, etc. It also discusses case studies of different countries.

Course Code	CS 5 303
Name of Course	Cyber Physical Systems
Credit Points	6
Course Description	The course provides students with appropriate knowledge related to the Cyber Physical System (CPS) paradigm. It highlights the architectures and applications of CPS. It particularly describes how wireless sensor networking technologies can help in establishing and maintaining seamless communications between the physical and cyber systems to enable efficient, secure, reliable acquisition, management, and routing of data. The course consists of lectures and student class presentations (seminars). It requires from students to make appropriate research efforts to investigate cyber physical system issues on their own.

Course Code	CS 5 304
Name of Course	Cloud Computing
Credit Points	6
Course Description	The course provides students with proper knowledge related to the cloud computing paradigm. It focuses on its related techniques, ecosystem, services, and applications. The course consists of lectures and student class presentations (seminars). It requires from students to make appropriate research efforts to investigate cloud computing issues on their own.

Course Code	CS 5 312
Name of Course	Internship
Credit Points	6
Course Description	The aim of the internship is to provide insight into the daily activities of a computer science professional and to apply what has been learnt in class to real life situations.

Course Code	CS 5 313
Name of Course	Connected Healthcare
Credit Points	6
Course Description	Focuses on health care data including their common standards. It also puts an emphasis on healthcare data analysis and visualisation Shows how machine learning can be applied on health care data.

MEng in Industrial Production and Manufacturing

Course Code	IPM 5 101
Course Title	Production of Materials
Credit Points	7
Catalogue Description	The aim of this course is to introduce the students to theoretical aspects of common mineral processing techniques and the associated equipment utilised nowadays in mining and extractive metallurgy practices. The issues related with the understanding of the regional and local geological context will also be addressed.

Course Code	IPM 5 102
Course Title	Advanced Production Processes and Technologies
Credit Points	7
Catalogue Description	The aim of this course is to give to the students the Knowledge and understanding of the most important manufacturing processes applied to ferrous and non-ferrous materials and polymers.

Course Code	IPM 5 103
Course Title	Testing and Control Products and Process
Credit Points	5
Catalogue Description	The aim of this course is to give to the students the knowledge and the skills to make quantitative analyses of metal samples and to sensorise manufacturing and production processes.

Course Code	IPM 5 104
Course Title	Quality Management and Design Review
Credit Points	5
Catalogue Description	The aim of this course is to give to the students the knowledge of the most diffused theories of Total Quality Management, of the ISO 9000 Standard, of incoming material sampling procedures and to give advanced knowledge of the most diffused theories of quality improvement, problem solving and robust design

Course Code	IPM 5 105
Course Title	Principles of Economy and Entrepreneurship
Credit Points	6
Catalogue Description	The aim of this course is to understand the basic issues of corporate management, the fundamentals of economics, business organisation and entrepreneurship, with respect to manufacturing companies and other types of organisations.

Course Code	IPM 5 106
Course Title	Material Mechanics
Credit Points	5
Catalogue Description	The aim of this course is to analyse the behaviour of the materials available for mechanical engineering applications and to present advanced methodologies for structural design and assessment of related components. The course will cover the topics of material resistance, fatigue behaviour of materials and understanding the principles of fracture mechanics.
Prerequisites	IPM 5 101 Production of Materials

Course Code	IPM 5 107
Course Title	Material Selection and Engineering
Credit Points	7
Catalogue Description	The aim of this course is to introduce to basic concepts and principles of material selection process. The students will be able to evaluate and select between the engineering materials (metals, polymers, composites and ceramics) considering functional and processing requirements, service and reliability requirements and costs. Examples of the selection process applied to several industrial fields will be addressed.
Prerequisites	IPM 5 102 Advanced Production Processes and Technologies

Course Code	IPM 5 108
Course Title	Non Traditional and Additive Manufacturing Processes
Credit Points	5
Catalogue Description	The aim of this course is to improve knowledge and understanding of nontraditional and additive manufacturing processes.

Course Code	IPM 5 109
Course Title	Computer-integrated Manufacturing and Manufacturing Systems
Credit Points	5
Catalogue Description	The aim of this course is to understand the latest concepts, business processes, and technologies in Computer-Integrated Design and Manufacturing and to Manufacturing systems and their importance on improving product quality, reducing manufacturing lead times, reducing per unit production costs and improving responsiveness to changing customer needs.

Course Code	IPM 5 110
Course Title	Plant Management and Logistics
Credit Points	8
Catalogue Description	The aim of this course is to give understand the basic concepts related to industrial plants design and management, improve the production performances, to understand the logistic process evolution and optimisation.

Course Code	IPM 5 111
Course Title	Recycling and Life Cycle Assessments
Credit Points	5
Catalogue Description	The aim of this course is to introduce the notions of "urban mining" and the use of unit operations known from the mineral processing technology in the area of treatment of solid wastes and by products, to understand the importance of waste as secondary raw materials, to understand the principles of Life Cycle Assessment of materials and products.

Course Code	IPM 5 112
Course Title	Advanced Surface Technology and Engineering
Credit Points	5
Catalogue Description	The aim of this course is to understand the most relevant techniques of surface coatings and of surface characterisation.
Prerequisites	IPM 5 101 Production of Materials; IPM 5 107 Material Selection and Engineering

Course Code	IPM 5 113
Course Title	Virtual Manufacturing and Process Simulation
Credit Points	6
Catalogue Description	The goal of this course is to understand the methodologies and application of virtual manufacturing in studying the complex phenomena occurring during manufacturing and the influence of process parameters on the final part quality.
Prerequisites	IPM 5 102 Advance Production Processes and Technologies

Course Code	IPM 5 115
Course Title	Environmental Aspects and Sustainability of Industrial Processes
Credit Points	4
Catalogue Description	The aim of this course is to analyse the environmental effects from the industrial and mining activities, the management aspects and their implication to the local legislation and the conservation of natural resources. Being able to analyse the pros and the cons of the different methods for rehabilitation of industrial and mining sites.
Prerequisites	IPM 5 101 Production of Materials IPM 5 107 Material Selection and Engineering

Course Code	IPM 5 119
Course Title	Colloquium
Credit Points	3
Catalogue Description	This course provides a platform where students can present the intermediary and final results of their master thesis
Corequisite(s)	IPM 5 120 Master Thesis

Course Code	IPM 5 120
Course Title	Master Thesis
Credit Points	20
Catalogue Description	The student will choose a research topic, carry out the research and write a master thesis. Ongoing work as well as the final defence of the thesis are presented in the Thesis Colloquium.
Corequisite(s)	IPM 5 119 Colloquium

Course Code	IPM 5 121
Course Title	Internship
Credit Points	7
Catalogue Description	The internship will provide the student insight into the daily activities of an engineer in production technology and will force the student to apply what has been learnt in classes to real, industrial life situations

Course Code	IPM 5 214
Course Title	Micro- and Nano-Scale manufacturing
Credit Points	5
Catalogue Description	The aim of this course is to generate the knowledge on micro- and nano-scale manufacturing of products and surfaces. In particular, topics related with processes, machines, mechanisms of positioning and control will be addressed.
Prerequisites	IPM 5 102 Advanced Production Processes and Technologies

Course Code	IPM 5 216
Course Title	Specific Processing Techniques Applied to Local Ores
Credit Points	5
Catalogue Description	The aim of this course is to analyse the specific processing techniques applied to local ore type
Prerequisites	IPM 5 101 Production of Materials; IPM 5 107 Material Selection and Engineering

Course Code	IPM 5 317
Course Title	Project Management
Credit Points	5
Catalogue Description	The aim of this course is to introduce students to concepts, quantitative methods and IT tools for Project Planning, Project Control and Time, Cost, Quality, and Risk Management.
Prerequisites	IPM 5 104 Quality Management and Design Review

Course Code	IPM 5 318
Course Title	Business Laws and Regulations in Oman
Credit Points	5
Catalogue Description	This course introduces to relevant legal and regulatory aspects of business operations in Oman. Students obtain an elementary understanding of main principles and legal codes that are involved. Real world examples illustrate the practical implications of the different issues involved.

MBA courses

Course Code	MBA 5 001
Course Title	Managing People and Organisations
Credit Points	5
Catalogue Description	Introduces theories and frameworks for the analysis of individual, group and organisational behaviour. Take decisions and develop action plans on which effective leadership is based. Grasp concepts vital for effective human resource management - including personnel selection, reward and compensation systems and collective bargaining.

Course Code	MBA 5 002
Course Title	Financial Management
Credit Points	5
Catalogue Description	Introduces an overview of the major concepts in finance for national and global companies and participants in the international financial market. Focus is placed on the valuation of various securities, the opportunity cost of capital principle and the improvement of both private and corporate investment decisions (e.g. financial mathematics, criteria of investment decision-making and capital budgeting).

Course Code	MBA 5 003
Course Title	Advanced Financial Management
Credit Points	5
Catalogue Description	Introduces the theory and practice of finance from an analytical perspective. Apply the basic financial concepts of risk, return and valuation to decisions that a corporate financial officer or manager of a small business must make about sources and usage of funds in evolving financial markets.

Course Code	MBA 5 004
Course Title	Competitive Analysis and Strategy
Credit Points	5
Catalogue Description	Introduces company strategy definition including competitive analysis, mission objectives, product-market choices and organisational characters as well as the allocation of resources to achieve organisational objectives and resolve conflicting shareholder interests. Participants develop their skills in situational analysis and strategy development.

Course Code	MBA 5 005
Course Title	Strategic Marketing Management
Credit Points	5
Catalogue Description	Examine the challenge of developing and implementing the most appropriate combination of variables to implement a company's marketing strategy in target markets. Develop skills in applying analytical perspectives, concepts and decision-making, pricing and communication programmes.

Course Code	MBA 5 006
Course Title	Managerial Economics
Credit Points	5
Catalogue Description	Examines a problem-orientated understanding of macroeconomic business environments. Topics include the global monetary system, in particular the role of the dollar, the impact of current account imbalances, fluctuations of asset prices, exchange rates and commodity prices and their impact on economic performance. Study basic concepts behind US and EU macroeconomic policy.

Course Code	MBA 5 007
Course Title	Operations Management
Credit Points	5
Catalogue Description	Internalise up-to-date methods for the optimal management of both production and distribution of goods and services. Examine fundamental interdependencies between IT, operations, human resources, and corporate strategy - focusing on concepts of productivity and tools for improvement, such as supply chain management and process management.

Course Code	MBA 0 008
Course Title	Entrepreneurship and Innovation
Credit Points	5
Catalogue Description	The force of "creative destruction" is key to success for start-ups, companies, and societies. Strategic impact of "the new" in terms of marketing and organisation, and specific interdependencies between the success of innovation and the entrepreneur initiating and driving it. Innovation resistance and resistance resolution.

Course Code	MBA 5 010
Course Title	Business and Society
Credit Points	5
Catalogue Description	This course is designed to inform and stimulate thinking on issues of ethics and corporate responsibility encountered in business and how they impact society. Companies find it challenging to deal with increasingly complex social and environmental problems as an integral part of business strategy and operations. The question arises what the appropriate response of business to these social and environmental issues is.

Course Code	MBA 5 013
Course Title	International Business
Credit Points	5
Catalogue Description	Today's globalisation has fundamentally and irreversibly changed the dynamics of international business. Through the liberalisation of foreign trade around the globe new markets develop and new opportunities for firms emerge. Nevertheless, the phenomenon of globalisation is multi-facetted and also inhabits potential threats. This poses new challenges to leaders in understanding how to lead their corporations into the future.

Course Code	MBA 5 014
Course Title	Logistics and Supply Chain Management
Credit Points	5
Catalogue Description	Logistics and supply chain management (SCM) are broad, far-reaching activities that have a major impact on a society's standard of living. In modern society we have come to expect excellent logistics and supply chain services and tend to notice them only when there is a problem. The module touches on principles of LSCM and current challenges in that field.

Course Code	MBA 5 015
Course Title	Business Laws and Regulations in Oman
Credit Points	5
Catalogue Description	This course introduces to relevant legal and regulatory aspects of business operations in Oman. Students obtain an elementary understanding of main principles and legal codes that are involved. Real world examples illustrate the practical implications of the different issues involved.

Course Code	MBA 5 016
Course Title	Business Intelligence and Analytics
Credit Points	5
Catalogue Description	The aim of this course is to introduce students to methods and strategies of collecting and analysing data to improve business decisions. It illustrates how these methods can be applied to real world problems in various fields, such as revenue management, customer relationship management, or supply chain management.

Course Code	MBA 5 018
Course Title	Master Thesis
Credit Points	15
Catalogue Description	The thesis aims to demonstrate the ability to perform an independent research project during which obtained skills and knowledge are applied in to analyse an existing research or consultancy problem, to derive and critically discuss solutions for this problem and to present the outcome in written form. The thesis can take the form of an empirical analysis, a case study, or a systematic review of the literature. The intended duration of the Master thesis is 3 months, and the length of the thesis should be between 20,000 and 25,000 words.