



Dhofar University

College of Arts and Applied Sciences (CAAS)

Department of Computer Science

Post Graduate Program



<http://caas.du.edu.om/master-in-it/>

Handbook

Master of Science in Information Technology (MSIT)



P.O. Box 2509, Postal Code 211, Salalah, Sultanate of Oman



+968 2323 7000



+968 2323 7777

Table of Contents

S.No.	Title	Page No.
1	About Dhofar University (DU)	3
2	About Department of Computer Science (CS)	4
3	Master of Science in Information Technology (MSIT) Program	5
4	Program Objectives	5
5	Program Learning Outcomes	5
6	Program Graduate Attributes	6
7	Teaching and Learning Strategies	6
8	Admission Criteria	7
9	Enrollment Documents	7
10	Program Curriculum Plan	8
11	Graduation Requirements	8
12	Important Note	9
13	List of Core Courses	9
14	List of Elective Courses	9
15	Study Plan	10
16	Transfer from Another Recognized College/University	11
17	Grading System	11
18	Academic Load	12
19	Drop and Add	12
20	Attendance System	13
21	Withdrawal from Courses	13
22	Postponing Studies	13
23	Withdrawal from University	14
24	Re-Admission to the University	14
25	Tuition Fees	14

26	Tuition Refund Policy	14
27	Incomplete Course Work	14
28	Request for Review of Grades	15
29	Academic Advisors	15
30	Assessments and Examinations	15
31	Thesis Selection, Specifications, Procedures, Supervision and Evaluations	16
32	Course Descriptions	33
33	Recommended Links	38

About Dhofar University (DU)

Background

Dhofar University is a private institution of higher education in Salalah, Sultanate of Oman, established by Ministerial Decree No. 5/2004 issued in January 2004. The University formally commenced its operations in September 2004. Dhofar University (DU) has a Board of Trustees that represents its highest policy making body, and was established with academic.

Campus Facilities

The brand new campus was designed to be conforming to local needs and cultural context while meeting both international design standards and those of the Ministry of Higher Education. The campus includes: an administration building, three buildings for the three colleges and the Foundation Program, a common classroom building, a main library building, a student activities center, theatre, a mosque, female student dormitories, and housing for senior administration, New Engineering workshop and ECO house

Location and Climate

Being in Salalah, the University community enjoys the well-known geographic beauty of Dhofar region and the mild weather throughout the year particularly in the summer, which is locally known as Khareef. The temperature remains steady in the upper twenties, with occasional rise to mid-thirties. The long and clean sandy shores of Salalah, one of the most beautiful in the world, are ideal for fishing and swimming. The nearby mountains are ideal for hiking.

Vision

Dhofar University aspires to occupy a recognized position among the institutions of quality higher education.

Mission

Dhofar University strives to achieve excellence in teaching, research, and community service, in an open learning environment conducive to creativity and innovation and to the acquisition of cutting-edge professional knowledge.

Objectives

- To ensure academic excellence in all fields of study offered at the University
- To enable students to explore their capabilities and take full advantage of the educational opportunities offered at Dhofar University in order to develop to their full intellectual potential.

- To produce morally responsible individuals who are highly competent in their fields of specialization and well prepared to succeed in life.
- To produce life-long self-learners committed to serve their society.

Values

- The core values of Dhofar University are:
- Academic excellence
- Individual responsibility
- Life-long learning
- Quality
- Continuous improvement

About Department of Computer Science (CS)

Vision

Through effective teaching, research and community services, the Department of Computer Science yearns to provide its community an immaculate learning environment while infusing the state of the art curriculum open to a world of global Information technological opportunities.

Mission

The computer science department aims at providing students with balanced theoretical and practical background in a variety of computer science topics. Through the fulfillment of coursework, practical projects, and community service activities, students are endowed with the necessary skills and experiences to develop successful careers in computer science and information technology. The program also prepares students to pursue higher education and research in computer science by promoting life-long independent learning.

Objectives

The objectives of the Computer Science programs are to:

- Promote effective learning by exposing students to balanced theoretical and practical experiences that demand thinking and practice;
- Provide excellent teaching by adopting advanced knowledge in computing and other information and communication technologies and effective teaching practices;
- Offer the students opportunities to develop careers in computer science and information technology;
- Prepare students to assume positions in public and private sectors, computer industry, or educational institutions;
- Offer the graduates opportunities to pursue higher education in computer science;

- Provide students with solid liberal education, training and appropriate learning skills and values; and
- Promote life-long independent learning.

Career Opportunities

Graduates of the Computer Science program will have many career choices spanning wide range of fields. Most notable are: computing and communicating industries, investment banks and financial institutions, global defense and aerospace, management and computing consultancies, research laboratories and media industries. Graduates will have employment opportunities in almost any enterprises as system analysts and designers, trainers, instructors, system engineers, programmers, database developers and managers, network managers, and computer science consultants, but the continuing expansion of the use of computers in commercial and financial operations means employment opportunity in diverse industries. Innovative fields include gaming industry, virtual reality, multimedia applications, computer animations, internet support and development, as well as many other related industries.

Master of Science in Information Technology (MSIT)

Program Objectives

The primary aim of the program is to allow IT professionals an opportunity for professional upgrading or an extension of their qualifications and experience in order to develop to their full intellectual potential. It is a professional degree program, designed to provide candidates with appropriate practical understanding, life-long learning skills and knowledge for IT use, research, development and management and turn into competent and morally responsible professional individual to better serve the community. Having this knowledge, skills and practical understanding, graduates will be able to assume careers in research, development, operations and management of medium and large organizations, in all sectors, where IT is vital.

Program Learning Outcomes

The MS-IT program is designed to prepare professionals and recent graduates for work in the IT sector at the highest levels in today's thoroughly globalized and networked environment. It will provide the individual with the knowledge, understanding and skills to deal effectively with advanced applied and research issues in IT. Graduates of the course will possess a solid foundation that will allow them to maintain their skills as their specialized fields evolve.

Upon completion of the MS-IT program, graduates will be able to:

- Apply cutting edge technologies to real life business problems.
- Demonstrate teamwork abilities and outcome oriented deliverables.
- Explain and apply the core aspects of IT principles and tools, and manage their implementation in a business context.

- Understand and facilitate the strategic and operational aspects of business and technology applications.
- Manage complex IT projects with consideration of the human factors, business requirements, environmental aspects, risk management processes, and operational and policy implications.
- Understand the strengths and limitations of current technologies and apply them intelligently to meet the needs of each application.
- Apply their practical skills in IT projects developed for real world applications.
- Utilize high level interpersonal skills to negotiate and communicate effectively with both technical and non-technical stakeholders verbally and in writing.
- Possess advanced knowledge of the state of the art in research in specialist areas related to Information Technology.
- Have an understanding of research methodologies at a level that enables students to conduct research in the areas of information technology.

Program Graduate Attributes

- Practice life-long, self-dependent learning skills.
- Demonstrate the ability to act independently and creatively in analyzing problems.
- Demonstrate their knowledge and skills in the investigation of problems and development of solutions.
- Be able to make sound judgments on complex issues and communicate their conclusions effectively to specialist and non-specialist audiences.
- Own the responsibility for their own learning and future professional development.
- Be able to collaboratively work in identifying issues and resolving problems.
- Develop the culture of doing appropriate literature review before the start of any research project.

Teaching and Learning Strategies

The teaching and learning strategies designed to satisfy the graduate attributes of the program are:

- Students are expected to participate actively in class discussions and out-of-class assignments (i.e. via Forum on Moodle), and to contribute to the process of constructing knowledge.
- Students are expected to do independent reading, especially before the class period. They are encouraged to apply Students are expected to participate actively in class discussions and out-of-class assignments (i.e. via Forum on Moodle), and to contribute to the process of constructing knowledge.
- Students are expected to do independent reading, especially before the class period. They are encouraged to apply the SQ3R (Survey, Question, Read, Recite, Review) method and to reflect on the readings by writing a short report of what they have read.
- Students are encouraged to engage in critical thinking and to challenge ideas of others tactfully.

- Students will be required to analyze problems or write reports, and present their findings/work in class, workshops or seminars.
- Students are encouraged to visit instructors during office hours to ask questions, give feedback, or just chat about ideas related to the class.
- Faculty members are expected to provide real-life examples and application areas of the delivered concepts. Students are then provided problem sets the solution to which requires additional reading and analytical skills.
- Students are expected to be engaged in individual and group projects whereby each student will be expected to contribute his own findings about a specific problem.
- Faculty members are expected to create opportunities in classrooms for students to demonstrate problem solving abilities through assignments, home works and projects.
- Students are expected to be engaged in appropriate literature review prior to commencement of any project assignment.

Admission Criteria

Applicants must have completed a Bachelor's degree in Computer Science, IT or a related discipline from a university recognized by the Ministry of Higher Education in Oman. Students with other majors are also eligible for admission subject to successful completion of a number of pre-requisite courses that will be determined by the department.

The student must have achieved a score not less than 75%, which is equivalent to a GPA of 2.4 out of 4.0 or a cumulative grade letter of C+. Graduates from other majors will be expected to have successfully completed introductory courses in the areas shown below, with a grade not less than B in each course. If not, they will have to complete at least 12 credit hours (4 courses), before they can be officially enrolled in the program. The exact entry requirements can only be determined after the qualifications of the student are observed and analyzed.

Graduates from other majors will be expected to have successfully completed introductory courses in the following areas:

- Data Structures
- Databases
- Networks and Security
- Programming
- Software Engineering

Enrollment Documents

Every applicant is required to submit the following documents:

- A completed application form
- A certified copy of the General Education Certificate or its equivalent
- Four recent photographs
- A photocopy of identity card or passport
- A non-refundable application fee of RO 50 for master Program.

Please note that any certificate originated from a foreign country must be authenticated by the Omani Ministry of Education before it is accepted.

Program Curriculum Plan

The MS-IT program is a 2-year thesis based program. The University does not follow the notion of yearly education. The students are awarded the degrees on the basis of completion 36 credit hours with an overall GPA not less than 65%. The passing grade in a graduate course is 60%. However, the University has put forward a regulation that a student must complete minimum of 18 credit hours to be eligible for Master's thesis registration process.

The duration of the program is considered to be 24 months for full-time students. However, the students can extend the period of study up to a maximum of 4 years in order to acquire 36 credits. Additionally, a residency requirement of no less than 2 years and a maximum residency of 4 are also embedded in the regulations.

The courses are designed in accordance with the American system of higher education. A graduate course is worth 3 credit hours. Such a class would generally meet for 3 contact hours per week over a 15-week semester, totaling roughly 45 hours of "contact" with the instructor(s) per course. Such classes may meet 3x1 hour weekly (for example Sundays, Tuesdays and Thursdays from 0900-1000), or 2x1.5 hours weekly (for example Mondays and Wednesdays from 0800-0930).

The contact hours of a typical 3 credit course would comprise of lectures and/or class discussion and/or lab works/applications or other options. In addition to lectures, one or several textbooks would be required reading, and there would often be recommended supplementary reading as well. The students are expected to do 3-2 hours of self-study referring the reference materials available in the library or online resources to meet the learning outcomes of the course. Students shall also be expected to complete a number of homework assignments including problem solving, programming, course projects, course papers and theoretical issues. They are required to perform these tasks at their own time. The university is equipped with latest computers and software tools but many students may work from home. As a general rule, students are expected to work at least 3 hours of homework against each contact hour in the class, however, detailed work-load guidelines shall be provided in each course outline.

Graduation Requirements

There are three exit routes from this program which are:

- successful completion of the program with scores not less than 65% and award of Master degree
- successful completion of 15 credit hours of core courses and 3 credit hours of elective course (thereby acquiring 18 credits in total) with scores not less than 60% and award of a Postgraduate Diploma or
- unsuccessful completion of the program and award of transcript showing a set of completed/attempted courses.

The breakdown of 36 credits is given below:

- 15 credits of core courses
- 15 credits of technical electives, of which at least 6 credits must be chosen from level 600 or higher courses
- 6 credits of Master's Thesis

Important Note

- A student, who successfully completes 18 credits, shall be considered for the Master's Thesis option. The final decision shall be made by the department based on the student's grades and his/her ability to do research.
- A student shall be given up to three semesters to finish his/her thesis work. In case the student does not finish the thesis work on time, he/she must re-register for the thesis course CMPS 690.
- The thesis should be presented following the report guidelines provided by the department and need to be defended in front of a panel of experts.

List of Core Courses

- CMPS 500 Advanced Software Engineering
- CMPS 510 Computer Networks and Security
- CMPS 520 Research Methodology
- CMPS 530 Advanced Database Systems
- CMPS 540 Information Technology Project Management

List of Elective Courses

- CMPS 550 Advanced Artificial Intelligence
- CMPS 551 Intelligent Systems
- CMPS 552 Information Technology Entrepreneurship
- CMPS 553 Mobile Computing
- CMPS 554 Advance Programming Languages and Techniques
- CMPS 555 Strategic Information Systems Planning
- CMPS 556 Analysis and Design of Algorithms
- CMPS 557 Security in Networks
- CMPS 558 Advanced Web Development
- CMPS 559 Multimedia Applications
- CMPS 560 Object Oriented Software Development
- CMPS 600 Emerging Trends in Information Technology
- CMPS 601 Research Topics in Information Technology
- CMPS 602 Information Technology Auditing and Assurance
- CMPS 603 Knowledge Management

Study Plan

Year I		
Semester 1 (Fall) 09 Credits		
Course Code	Course Title	Credit Hours
CMPS 500	Advanced Software Engineering	3
CMPS 510	Computer Networks and Security	3
CMPS 520	Research Methodology	3
Semester 2 (Spring) 09 Credits		
Course Code	Course Title	Credit Hours
CMPS 530	Advanced Database Systems	3
CMPS 540	Information Technology Project Management	3
CMPS 5XX	Elective*	3
*Elective courses ranging from CMPS 550 to CMPS 599		

Year II		
Semester 3 (Fall) 09 Credits		
Course Code	Course Title	Credit Hours
CMPS 5XX	Elective*	3
CMPS 6XX	Elective**	3
CMPS 6XX	Elective**	3
*Elective course ranging from CMPS 550 to CMPS 599		
**Elective courses ranging from CMPS 600 to CMPS 689		

Semester 4 (Spring) 09 Credits		
Course Code	Course Title	Credit Hours
CMPS 6XX	Elective**	3
CMPS 690	Master Thesis***	6
*** Subject to successful completion of 18 credit hours and CMPS 520 (Research Methodology) if deemed necessary by the advisor, followed by approval of the department.		
Completion of the “Master of Science in Information Technology (MS-IT)” program -		
Total Credits 36		

Transfer from Another Recognized College/University

A student can apply from another college/university that is recognized by the Ministry of Higher Education to transfer to DU only after meeting the English admission requirements of DU. The Admission Committee of the chosen college studies the applications of transferring students and forwards its recommendations to the dean, who in turn sends her/his decision to the University’s Director of Admission and Registration.

Grading System

At Dhofar University, the grading system used and its equivalence to the Letter Grade system and the Grade Points Average (GPA) system are shown below:

Numerical Grade	Grade Type	Equivalent Letter Grade	Equivalent Grade Points
95-100	Excellent	A	4
90-94		A-	3.7
87-89	Very Good	B+	3.3
83-86		B	3
80 -82		B-	2.7
77-79	Good	C+	2.3
73-76		C	2

70-72		C-	1.7
65-69	Pass	D+	1.3
60-64		D	1
Below 60	Fail	F	0.0

I	Incomplete
P	Pass
PR	In progress
W	Withdraw
WA	Withdrawn for Excessive Absence
X	No Grade Reported

Academic Load

- A full-time student is expected to register for 9 credits in any regular (fall and spring) semester.
- The duration of the program is considered to be 24 months for full-time students. However, the students can extend the period of study up to a maximum of 4 years in order to acquire 36 credits. Additionally, a residency requirement of no less than 2 years and a maximum residency of 4 are also embedded in the regulations.

Drop and Add

After selecting a course schedule, a student has the opportunity to make changes during the Drop and Add period, which is usually the first week of the semester, after which no changes are possible without the permission of the academic advisor and the approval of Dean or the Administrative Committee of the college. A student should take care not to change all the courses s/he has previously chosen, but only one or two courses, if change is a must.

Attendance System

Attendance of all classes and course-related activities is obligatory. A student is not allowed to miss more than 25 % of the course sessions. So that, starting from the second semester of the academic year 2012 - 2013 attendance policy has been applied for the absenteeism warnings and procedures as follows:

The first warning @ 5 % absences:

When the student absences reach 5%, an initial warning will be sent by the attendance manager system to student's Emile, as the student will be informed orally by the teacher or academic advisor.

The second warning @15 % absences:

When the student absences reach 15%, an initial warning will be sent by the attendance manager system to student's Emile, as the student will be informed orally by the teacher or academic advisor. The student will also be obliged to sign a pledge not to his absence in the future and will be responsible for it if his absence exceeds 25%.

The third warning @ 25 % absences:

The third warning 25% will lead to dismissal from the course (sent to the student via e-mail and inform the student orally so by a teacher or academic advisor) as to his/her parents.

Withdrawal from Courses

- Students who withdraw or are forced to drop a course will receive a grade of "W."
- Students cannot withdraw or be withdrawn from a course after the announced Deadline (not later than 14 weeks from the start of the semester or six weeks in the summer term) unless approved by the College Administrative Committee.
- Students can withdraw from only one required course per semester. Students who wish to withdraw from more than one required course must petition the College Administrative Committee for permission to do so.

Postponing Studies

A student may apply to postpone his/her studies for one semester or more, but the period of absence from the University cannot exceed four semesters consecutively or in total, including the semester in which the application was made and approved.

The duration of the program is considered to be 24 months for full-time students. However, the students can extend the period of study up to a maximum of 4 years in order to acquire 36 credits. Additionally, a residency requirement of no less than 2 years and a maximum residency of 4 are also embedded in the regulations.

Withdrawal from University

A student may apply to withdraw from the University by filling out a form available at the Office of Admission and Registration. When a student returns to the University after dropping one semester or more, s/he should fill a form for this purpose. The absence from the University cannot exceed the total of six semesters, after which a student must reapply to be admitted to the University as a new student.

Re-Admissions

A student will normally be considered for readmission to the University and the same college only if, after spending a year at another recognized institution of higher education during which the student took at least 24 credit hours, the student is able to present a satisfactory record and recommendation. Exceptions may be made for students who leave the University for Personal or Health reasons. Transfer credits will be considered after evaluation of a student's course work. The student must achieve a grade equivalent to the grade of 70 at DU in each of the courses for which Transfer credits may be granted

Tuition Fees

Tuition fees are as follows:

- 150 Omani Rials per Credit hour (Total = $36 * 150 = 5400$ Omani Rials)

The above fees do not include books, transportation, or housing expenses.

Tuition Refund Policy

A student may withdraw from a semester after registration, but the refund rate of tuition depends on the timing of the withdrawal:

- Full tuition will be refunded only to students who withdraw from the semester before the end of the first week of classes.
- 50% of tuition fees will be refunded to students who withdraw before the end of the second week of classes.

NO REFUND will be made to students who withdraw from the semester from the beginning of the third week of classes and onward

Incomplete Course Work

Instructors may give a student a grade of Incomplete "I" in a course in special circumstances. The Incomplete must be arranged in advance according to the following:

- For securing permission to complete the work for a course, a student must submit a valid excuse to the instructor of the course and to the College Administrative Committee within two weeks from the date of the scheduled final exam for the course. For that purpose, Form “I” must be completed in advance for approval of the instructor, the head of the department and the College Administrative Committee. Students should be aware that approval is not automatically granted. Forms for “Incomplete” are available on the University’s website and the Office of Admission and Registration.
- Incomplete course work will be reported as an “I” followed by a numerical grade reflecting the evaluation of the student’s work available at the end of the semester. This evaluation is to be based on a grade of zero on all missed work and reported in units of five; thus, a grade could be “I 55” for example.
- Students permitted to complete work for a course must do so within four weeks of the start of the next regular semester. In exceptional circumstances, the College Administrative Committee may decide to give the student additional time to complete a course.
- After the incomplete work is done and evaluated, the course instructor should complete a change of grade form and submit it to the College Administrative Committee for approval, as stated above.
- If no valid excuse is presented and the work is not complete within the time limits specified above, the “I” will be dropped and the numeric grade available will become the final grade in the course.
- For the purpose of averaging, the numeric grade will be used, until changed through the procedure described above.

Request for Review of Grades

The course instructor is the authority that decides on the student’s grade. However, if a student has strong evidence of unfairness, s/he has the right to submit a petition of grievance to the course instructor. If the student is not satisfied with the instructor’s ruling, s/he may appeal to the department head who will give a final ruling on the issue after consulting with the faculty members of the department.

Academic Advisors

Each student is assigned an academic advisor from day one at DU. The academic advisor is a faculty member in the academic division in which the student is enrolled. The role of the advisor is to assist the advisee in preparing course schedule during registration, support and guide him/her during his/her university studies, monitors his/her academic progress, and offers him/her counseling on any academic difficulties or problems he/she may experience.

Assessments and Examinations

A student’s academic performance is assessed throughout the semester using various instruments:

- Homework, exams, projects, practical work, etc.
- All courses normally have final examinations that students must take. The instructor will announce at the beginning of the semester the policy that s/he intends to follow as indicated in the course syllabus in the matter of missed examinations and quizzes, so that the students are fully aware of this policy and its consequences.

Thesis Selection, Specifications, Procedures, Supervision and Evaluations

Registration of Thesis

Once registered, the student is responsible to talk about his/her research interest with any of the available lecturers and to choose any of them as his/her thesis supervisor. The supervisor has to be a professor, an associate professor or an assistant professor rank from the faculty members only. Please note that students are given 3 semesters to complete the thesis. Should the student failed to complete within the timeframe given, he/she must register the course again in the 4th semester.

Proposal

- The student will submit the thesis proposal to the Chair of MSIT.
- The Chair of MSIT will set a date for the discussion of the proposal which could be attended by the supervisor, the faculty members in the Department of Computer Science and the student within one week from the date of submission.
- The committee will approve the proposal after discussion in the presence of the supervisor to ensure that modifications required in the discussion have been complied with.
- The Chair will approve, return or propose changes to the thesis or the project proposal within two weeks of receiving it.

Language

The thesis must be in English. The submission of a linguistically correct thesis is the responsibility of the student. Ask friends or colleagues to proofread your thesis.

Progress Report

The student shall submit a detailed progress report to the Chair of MSIT at the end of each semester and a copy of the report, signed by both the student and the supervisor.

Defense of the Thesis

- The supervisor shall submit a recommendation to the Chair of MSIT when the student completes the thesis.

- The thesis will be check with (TURNITIN) for similarity purposes. The maximum percentage of similarity is 20% for forming a defense committee.
- The defense committee shall be appointed and a date for it to convene shall be designated upon a proposal from the supervisor.
- The student must submit the thesis to the defense committee members not less than two weeks before the defense date.
- The number of the committee members in forming the defense committee shall be as follows:
 - The defense committee shall comprise of three members as follows:
 - one - the supervisor
 - two - one expert from the department
 - three - an expert from outside the college/university
 - conditions for supervision must apply to them
 - the chair of committee shall be appointed by the Dean of the college
- The committee decision shall be taken by the majority Votes

Procedure for Thesis Discussion

- The committee chair will moderate the discussions and introduce both the committee members and the student.
- The student will introduce/make presentation in brief of the thesis or the research project for 10 minutes.
- The chairman will give the floor to the committee members to examine the student.
- The committee will withdraw to take its decision privately.
- The committee will make one of the following decisions:
 - Pass without modifications.
 - Pass with minor modifications stated in the committee report and the student will be given a time-frame of about two weeks to submit the modifications.
 - Pass with major modifications stated in the committee report and the student will be given a time-frame of about three months to submit the modifications.
 - Repeat the thesis defense due to major modifications as stated in the committee report within a period of 6 months.
 - Fail and the committee will write a report explaining the reasons for failure. In this case, the students will take a chance to write a new thesis within a period next two semesters, but within the time limit for completion of the entire program.
- The committee will announce its decision publicly and in the presence of the student. The original report will be submitted to the MSIT Coordinator who will forward it to the Dean for approval within two days of the defense date, and a copy of the report will be sent to the Office of Admissions and Registration.
- After the student completes the modifications required by the committee, the modifications will be submitted to the committee so that they can sign the report in accordance with the special form prepared by the Committee. The report will be approved by the Chair of the Department and the Dean; will furnish the Office of Admissions and Registration with a copy thereof in order to complete the grade of the thesis or the project.

- If the student fails to complete the thesis or the project in accordance with the committee's report and within the time limit set thereby, he/she will be considered to have failed and a decision to expel him/her from the program shall be issued by the Dean and communicated to the Office of Admissions and Registration, the student's College and the Program. Regulations governing the award of the postgraduate diploma may apply in this case.

Technical Specifications

Pages

The number of pages is around 100-120 pages for the thesis and 75-100 for project. Two abstracts, one in Arabic and the other in English, each around 350 words, must be attached to each thesis.

Paper

- The thesis should be printed on a good quality paper of A4 size of minimum weight 80mg. Three copies are to be provided to the Department for distribution to examiners 'soft bound'.
- For final thesis submission, the paper must be acid-free (neutral pH) bond paper, A4. Three bound copies to be submitted to the MSIT Chairperson (one will go together with a letter to the Department, and hence to the library, one is for the Dean of the College, and one is given to the supervisor). These copies shall be blue in color with gold lettering on the spine and cover page.

Margins

The top, bottom and right margins should be 1", while the left (binding side) margin should be of 1.5 inches to allow binding. Headers and/or footers must be placed within the 1" margin.

Typeface and Font Size

- The entire text of the thesis, including headings and page numbers must be produced using 12-point font size in Times New Roman.
- Fonts used in tables, illustrations and drawings shall not be less than 10-points. Use consistent fonts on all figures and tables.
- Footnotes should be 10-point.
- Bold print shall be used for headings.
- Underlining of text, titles or headings shall be avoided.
- Print must be letter quality or near letter quality with dark black characters that are consistently clear, crisp and easy to read. Accent marks and hand annotations must be done neatly in black ink (if they can only be done by hand).

Spacing

- The line spacing in the main body of text should be 1.5. However, single line space should be used in footnotes, indented quotations, tables etc.
- The spacing between the chapter number and the title, and between the title and the first line of a text shall be 3 (3 = 2 x 1.5) line spacing.
- The spacing between paragraphs shall be 3 (3 = 2 x 1.5) line spacing.

Pagination

- For the preliminary pages, use small Roman numerals (i, ii, iii, iv, etc.). The title page does not have a number but counts as page i; the following page is ii.
- For the body of the thesis including text, chapter title pages, section dividing pages, illustrations, appendices, and bibliography, use Arabic numerals (1, 2, 3, etc.). The numbering begins with the page 1, and runs consecutively to the final page. Do not use suffixes to the Arabic numerals, such as 12a.
- All page numbers are placed in the center at the bottom of the page. Page numbers must be at least two single spaces below the nearest line of text. All page numbers must be in the same font and size as the text.

Figures, Tables, Maps and Diskettes

- Figures must have scales and symbols defined on them or in the figure legend and not in the text.
- Figure captions must appear on the same page below the figure, while table captions must appear above the table.
- Both figure and table captions must be single spaced.
- Maps, figures, diagrams, etc, should be inserted in the appropriate place in the text.
- Illustrative material which cannot be bounded, diskettes or CD ROMS, should be held in a protective pocket inside the back cover.
- Photographs and-or maps are to be scanned or photocopied in color and included in the text. They are not to be attached using adhesive materials.
- Other supplementary materials, such as audio or video tapes, should be submitted in an appropriate binder.

Paragraphs

- All paragraphs in the main text shall be justified between margins.
- The number and the title of subsection shall be aligned with the left margin.
- A paragraph spanning between two pages shall leave at least two lines of text on both the pages.
- A heading or sub-heading cannot appear alone at the bottom of a page. It must be followed by at least two lines of text of the following paragraph.

Landscape

For text, illustrations, charts, graphs etc., printed in landscape form, the orientation should be facing away from the bound edge of the paper.

Binding

Before making the required number of copies and binding the thesis, ensure that all the department requirement of a thesis have been met. Check that all pages are in correct order and the thesis conforms to the format.

- Soft binding is required for the thesis examination
- Full/hard binding is required for the final submission. Please refer to Appendix A.

Thesis Format

The following describes the format for a thesis. Every thesis is composed of three physical content divisions:

- Preliminary pages
- Text pages or main body, divided into chapters and sections
- The ending pages

Each content division has several sections, which shall be arranged in the following sequence:

Preliminary Pages

Title Page

This page shall include the following information:

- Full title of thesis (in uppercase);
- Full name of author (in uppercase);
- Degree for which the thesis is submitted
- College of the program
- Dhofar University; and
- Month and year of final submission
- For final submission - center on the back of the title page:
 - © Copyright by <Student ID & Student Name> <Year>
 - All Rights Reserved

Declaration Form

This page contains the signed declaration from the student on the authenticity of the thesis/project. The wordings of the declaration shall conform to the required standard format.

Abstract

An abstract is a digest of the entire thesis. It shall not exceed one page in a single paragraph. Do not include equations or references to other literature in an abstract. Abbreviations or acronyms must be preceded by the full term at the first use.

Preface and/or Acknowledgements

Preface or acknowledgements usually contains written expressions of appreciation for guidance and assistance from individuals and institutions. It shall not exceed one page.

Table of Contents

This page serves as a guide to the content of the thesis. Every heading and subheading within the text of the thesis shall be listed as in the Table of Contents which is limited to 4 subsections only (e.g. 4.3.2.1).

List of Tables

This list shows the exact titles or captions of all tables in the text and appendices, together with the beginning page number of each table.

List of Figures

The exact title of figures and its corresponding page number shall be listed. Figures shall be numbered consecutively throughout the thesis.

Main Body

The main text of thesis shall consist of introduction, literature review, methodology, results and discussions, conclusions and future works.

Chapter Layout

The student can add any other chapter(s) as advised by the supervisor. A chapter may be divided into major sections and subsections. Major section and subsection of a chapter shall be identified by numbers. Major section is numbered first level (e.g. 1, 2, 3) and subsection is level numbered (e.g. 1.1, 1.1.1, 1.2.3, 1.2.3.4). This shall be consistent throughout the thesis and is limited to 4 levels.

Numbering the Chapters and Sub-sections

All chapters and subsections must be numbered and followed by a label. The chapters are numbered using Arabic numeric, i.e. Chapter 1, Chapter 2, Chapter 3, and so on. The

subsections shall not be indented but arranged in a structured manner up to 4 levels. Subsections beyond level four shall be labeled using characters.

Tables

Tables are numbered consecutively with Arabic numerals throughout the thesis (including text and appendices). The numbering shall be by chapter (e.g. Table 1.1, 1.2, 1.3, in Chapter 1, and 2.1, 2.2 in Chapter 2 and so on). All tables are to be listed under List of Tables in the preliminary pages (including tables appearing in the appendices). Tables shall be placed after their first mention in the text. Table number, title and caption are placed above the table. Table sources and notes shall be placed directly below the caption.

Figures

Each of the figures is numbered consecutively according to the chapter throughout the thesis. The numbering shall be by chapter (e.g. Figure 1.1, 1.2, 1.3 in Chapter 1, and 2.1, 2.2 in Chapter 2 and so on). All figures are to be listed under the List of Figures in the preliminary pages (including figures appearing in the appendices). Figures shall be inserted after their first mention in the text. Figure number, title and caption are placed below the figure. Figure sources and notes shall be placed directly below the caption. Figures shall conform to standard margin requirements. Figures shall be referred in text as Figure 4.5 (first letter capitalized and not preceded by 'the').

The following format and quality of figures shall be observed:

- Figures shall be in electronic format. Hand-drawn figures are not acceptable
- If photographs are used, they must be of high resolution. Both color (min. 400 dpi, 8 bit per pixel, uncompressed) and grayscale images (min 220 dpi, 8 bit pixel) may be used.
- Graphs shall not use any colored or shaded background. Only major gridlines can be used when they are absolutely necessary.
- Technical drawings shall follow the appropriate standards.
- Large size drawings shall be placed in the appendix.

Equations

All mathematical equations shall not be considered as text. They shall be typed on separate lines using an equation editor found in word processing programs. Equations shall be numbered consecutively following chapter number, and placed within bracket at the end of the line, for example:

$$f(x) = a_0 + \sum_{n=1}^{\infty} \left(a_n \cos \frac{n\pi x}{L} + b_n \sin \frac{n\pi x}{L} \right) \quad (\text{Equation 4.24})$$

Detailed derivation, if suitable, shall be placed in the appendix. Within body of text, an equation is referred to as for example, Equation 4.1. If there is more than one equation referred, list all of the equations in a single reference, for example Equation 4.1, 4.3 - 4.5.

Footnotes

Footnotes are not encouraged because they tend to distract the reader from the main argument of the text. If footnotes are necessary, the indicators (the reference numbers in the text) are usually superscript (e.g. 1). Footnotes are numbered consecutively for each page separately. All footnotes shall be single-spaced, typed in 8-point font and left aligned.

Quotations/Citations

A quotation which is inserted in a sentence must not be more than 40-words long and must always be written within inverted commas.

For example,

According to [4], “Ethical axioms are found and tested not very differently from the axioms of science. Truth is what stands the test of experience.”

Quotations which are more than 40-words in length must be typed separately in a new paragraph and italicized.

NOTE: Direct quotations must be minimized.

The Ending Pages

References/Bibliography

Any thesis that makes use of other works, either in direct quotation or by reference, must contain a reference listing of these sources. List only the sources which have been cited in the text. The citation format shall follow the American Psychological Association (APA).

Appendices

Appendices contain those materials which are very important to help understand materials of the thesis, but are too detailed to be accommodated in the body of the main text. Appendices include original data, summary, preliminary tests, tables that contain data of lesser importance, very lengthy quotations, supporting decisions, forms and documents, computer printouts, detailed drawings and other pertinent documents. Appendix materials shall be grouped by type, e.g. Appendix A: Questionnaire, Appendix B: Original Data, Appendix C: Results Tables.

Any other relevant materials (optional)

Tables and figures in the appendices shall be numbered consecutively following the appendix number; captioned and listed in the List of Tables and List of Figures. For example, the figures or tables in the appendices shall be numbered as A.1, C.1, B.5, etc.

Use of Editorial Service

Some candidates employ professional editors to “polish” their thesis presentation. This shall be done before the thesis is sent for examination. The Department of Computer Science does not insist that all theses be sent to professional editor (who charge a fee for their services). However, candidates shall know that the department accepts only theses that are reasonably free of errors. The supervisor(s) cannot be held responsible for errors in the thesis and the candidate cannot expect supervisor(s) to be the editor(s). The supervisor may recommend the candidate to engage a professional editorial service to “polish” the thesis presentation.

Policy of Plagiarism

- Plagiarism is defined as the unauthorized use of the work of another person, as one’s own, whether or not such work has been published.
- A student at Dhofar University shall not engage in plagiarism nor employ nor seek to employ any other unfair means for an examination or in other form of work submitted for assessment as part of any university course.

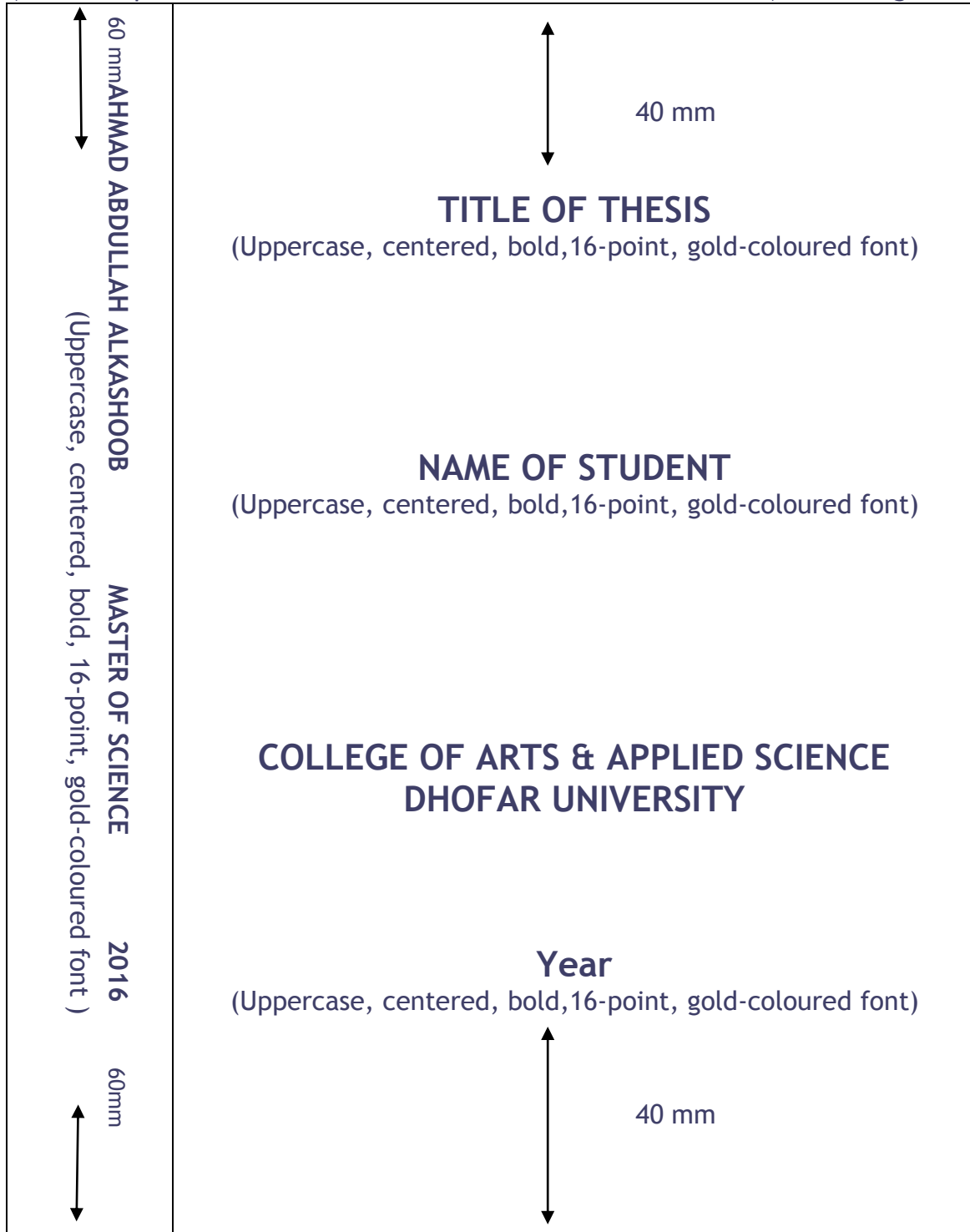
The instructor, at the beginning of the semester, shall explain to students the meaning of the term “plagiarism” and the consequences of committing such an act.

The sample of the Thesis format is provided in the following pages.

Sample of Thesis Spine and Cover Page

a) Thesis Spine

b) Cover Page



Title Page

TITLE OF THESIS

(Uppercase, centered, bold, 12-point)

By

NAME OF STUDENT

(Uppercase, centered, bold, 12-point)

**Thesis Submitted to the College of Arts and Applied Sciences, Dhofar University, in
Fulfilment of the Requirement for the Degree of
Master of Science in Information Technology**

Month and Year of Viva Voce

Declaration Form

DECLARATION

I hereby declare that the thesis (or project) is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently submitted for any other degree at Dhofar University or at any other institutions. This thesis (or project) may be made available within the university library and may be photocopied and loaned to other libraries for the purpose of consultation.

(Signature)

NAME OF STUDENT

Date:

Table of Contents

TABLE OF CONTENTS

	Page
ABSTRACT	i
ACKNOWLEDGEMENT	ii
DECLARATION	iii
LIST OF TABLES	iv
LIST OF FIGURES	v
LIST OF ABBREVIATIONS	vi
CHAPTER 1 INTRODUCTION	1
CHAPTER 2 LITERATURE REVIEW	5
2.1 Sub-heading 1	7
2.1.1 Sub-subheading 1	8
2.1.2 Sub-subheading 2	12
CHAPTER 3 METHODOLOGY	25
3.1 Sub-heading 1	34
3.1.1 Sub-subheading 1	37
3.1.2 Sub-subheading 2	49
CHAPTER 4 RESULTS AND DISCUSSION	52
4.1 Sub-heading 1	54
4.1.1 Sub-subheading 1	57
4.1.2 Sub-subheading 2	69
CHAPTER 5 CONCLUSION AND RECOMMENDATIONS FOR FUTURE WORK	100
REFERENCES	112
APPENDICES	125

List of Tables

LIST OF TABLES

Table 1.1	The effect of Postgraduate Studies	31
Table 2.1	Students-Supervisors Relationship	42

List of Figures

LIST OF FIGURES

Figure 3.1	A schematic representation of the Decision Support system	38
Figure 5.2	Flowchart of Experimental Method	67

Samples of Tables

Table 1. Number of Postgraduate Students according to region in 2014.

Country	Numbers
Middle East	100
Europe*	34
South East Asia	250
Australasia	5
North and South America	3

*Excluding Russia and Ukraine

Table 3.8. Interactions around interfaces by each group

Interactions	Group 1		Group 2		Group 3		Group 4	
	Table	PC	Table	PC	Table	PC	Table	PC

Eye contact	35	20	34	15	30	19	33	17
Nodding	71	57	60	49	52	40	57	41
Small noises	23	2	7	2	13	15	19	2
Ask question	9	10	4	3	9	7	2	1
Give reply	10	1	8	2	3	4	2	2

Samples of Figures

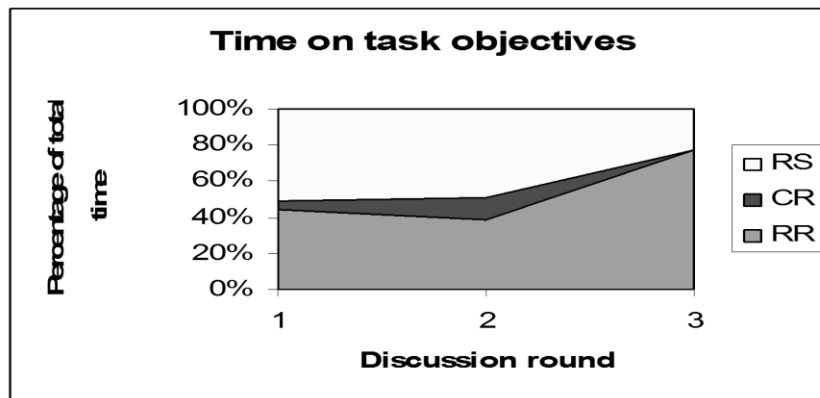


Figure 5.10: Average proportion of time spent during discussions

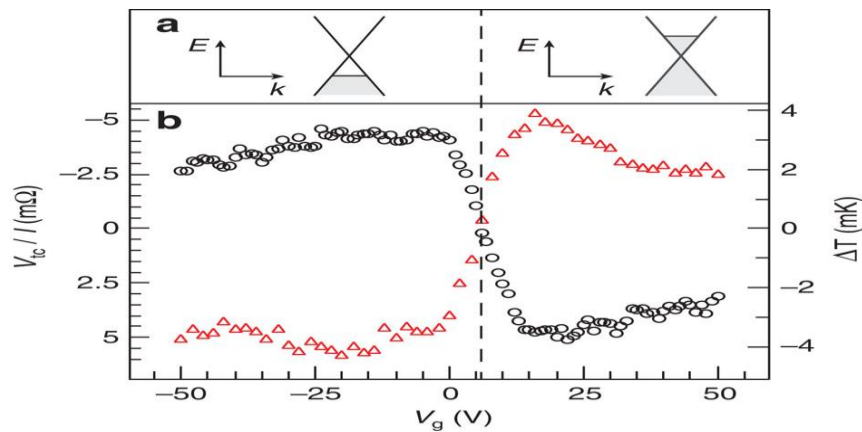


Figure 4.3: Direct electronic measurement

Samples of American Psychological Association (APA) Reference Format

(from the 3rd edition of the Publication Manual of the American Psychological Association, 1983)

Brown, M. W. (1982). This is the title of a book (2nd ed.). City: Publisher.

Chin, Y. (1998). This is the title of a part of a book. In A.R. Finley, S.R. Taft, & M.N. Piper (Eds.), This the book title. (pp.25-37). City: Publisher.

Clark, B. W. (1988). *This is the title of a paper appearing in a published proceedings.* In A.B. Cook (Ed.), Proceedings of the 100th Annual Meeting of the Society of Experimental Results (pp. 49-77). City: Publisher.

Fourney, T.T. & Heller, R. N. (January, 1991). *This is the title of an unpublished Paper presented at a meeting.* Paper presented at the 103rd annual meeting of the Society of Experimental Results, City of Meeting, ST.

Goff, A. M. (1987). *This is the title of a journal articles.* Journal of Experimental Results, 1 (3), 1-22.

Green, M. (1988, January). *This is the title of a magazine articles.* Magazine of Today, pp. 6-12.

Johnson, R.S. (1989, October 1). *This is the title of a newspaper article.* The Daily News, pp. 1, 6-8.

Jones, M. J., & Smith, A.R. (1990). *This is the title of a report.* (Report No. 90-1428). City:Publisher.

Miller, G.M. (1988). *This is the title of a master's thesis*. Unpublished master's Thesis, Any State University, City, ST.

Simmons, M.T. (1987). *This is the title of a doctoral dissertation (Doctoral dissertation, Any State University, 1986)*. Dissertation Abstracts International, 47, 1202

Course Description

Core Courses

CMPS 500 Advanced Software Engineering (3 credits)

This course focuses on latest trends in architecture, process, framework, methodologies and tools used in software development. It emphasizes software metrics, quality, management, reliability, testing, integration, verification, validation, deployment, testing and maintenance.

CMPS 510 Computer Networks and Security (3 credits)

The course covers theory and practice of computer security, focusing in particular on the security aspects of the web and Internet. It surveys cryptographic tools used to provide security, such as shared key encryption (DES, 3DES, RC-4/5/6, etc.); public key encryption, key exchange, and digital signature (Diffie-Hellmann, RSA, DSS, etc.). It then reviews how these tools are utilized in the internet protocols and applications such as SSL/TLS, IPSEC, Kerberos, PGP, S/MIME, SET, and others (including wireless). System security issues, such as viruses, intrusion, and firewalls, will also be covered.

CMPS 520 Research Methodology (3 credits)

This course is designed to support postgraduate students in developing their research project and to assist them in defining their mode of enquiry. The course has been constructed to guide students through a range of issues and considerations which should inform their general approach to research. It will give students a general introduction to postgraduate research, its methodologies, its challenges and its organization, including in creative practice. Students will be introduced to a range of research tools and will be equipped to plan and organize their research, as well as to communicate their findings.

CMPS 530 Advanced Database Systems (3 credits)

This course covers design principles and techniques for medium to very large databases. Topics include user database issues, concurrency control and recovery, query processing and optimization, transaction processing, object-relational databases, and data mining. Design and implementation issues related to multi-database systems are also discussed.

CMPS 540 Information Technology Project Management (3 credits)

This course is designed to prepare students with project management skills needed to better manage IT projects. It covers detailed topics of the basic concepts of IT project management, including initiating, planning, controlling, executing, and closing projects. The course also shows how IT projects should be managed, from inception to post implementation review. The students who take this course will likely improve their management skills and abilities to define the project scope, create a workable project plan, and manage within the budget and schedule.

Prerequisite or Co-requisite: CMPS 500

Elective Courses

CMPS 550 Advanced Artificial Intelligence (3 credits)

In this course we will start with the question like "What is intelligence", "What is not intelligent", "Can a machine mimic intelligent behavior". We will look at the history and philosophy behind different notions of intelligence developed so far. We will have an overview of streams of development leading to modern intelligent systems, knowledge based tools, expert systems, fuzzy logic, probabilistic methods, neural networks, and genetic algorithms.

CMPS 551 Intelligent Systems (3 credits)

In this course we will study the design of computer systems that exhibit traits we normally associate with intelligence in human behavior, such as the ability to search and solve problems, the ability to understand natural language or to reason about the visual environment.

CMPS 552 Information Technology Entrepreneurship (3 credits)

This course is designed to introduce students to the nature and different forms of IT entrepreneurship and entrepreneurial behavior. Taking an opportunity-based approach to entrepreneurship, the course covers the key areas of entrepreneurial process, including entrepreneurial motivation, new venture creation process, opportunity identification and development, environmental analysis, business planning, leadership and management of an enterprise, and sustainability and growth of an IT business.

CMPS 553 Mobile Computing (3 credits)

This course discusses a balance mixed of topics related to mobile computing. Topics include mobile and wireless networking, operating systems and middleware, reliable

distributed file systems, location discovery, wireless routing, and location management and prediction.

Prerequisite: CMPS510

CMPS 554 **Advanced Programming Languages and Techniques** **(3 credits)**

This course focuses on comparative study of programming languages from both theoretical and applied viewpoints. Typical issues include syntax and semantics, scope and binding times, storage allocation, parameter-passing techniques, control structures, run-time representation of programs and data. Detailed examples are from the imperative, functional, parallel, object-oriented and logical programming paradigms.

CMPS 555 **Strategic Information Systems Planning** **(3 credits)**

The course builds on both the Management and Information Systems skills. It ties the study of management and computing together at the top level and focuses on issues that bring competitive advantage into modern and partially automated organizations.

CMPS 556 **Analysis and Design of Algorithms** **(3 credits)**

The course will cover some of the core topics already studied in DU's undergraduate course on algorithms (or in some equivalent course at another university), but with more details and rigor. In addition, we will present a selection of advanced topics, mainly the theory of NP-completeness, the theory of fixed-parameter tractability, approximation algorithms, and algorithms for parallel computers.

CMPS 557 **Security in Networks** **(3 credits)**

This course focuses on network security infrastructure technologies such as firewalls, Virtual Private Networks (VPN), Intrusion Detection and Prevention Systems (IDS/IPS), vulnerability assessment tools, as well as overall security infrastructure engineering and design.

Prerequisite: CMPS 510

CMPS 558 **Advanced Web Development** **(3 credits)**

This course focuses on the design, development and implementation of Internet technologies. Students will design, build and place online a web site for a live client.

Web server implementation, administration and ongoing support will also be discussed.

CMPS 559 Multimedia Applications (3 credits)

This course provides students with the opportunity to train for a career in Multimedia and Web Development sector. It will focus on 3D animation, Digital Video processing, Game Design and Web Development.

CMPS 560 Object Oriented Software Development (3 credits)

This course provides broad and coherent coverage of object-oriented technology, teaching object oriented design and development to the students. The course focuses on design and programming through the use of UML, design patterns and frameworks. Aspect and Extreme Programming, Reuse, and Refactoring of components in object-oriented technology will be the highlights of this course. The Class libraries and illustration of incremental software development is also covered.

Prerequisite: CMPS 500

CMPS 600 Emerging Trends in Information Technology (3 credits)

This course focuses on new and emerging applications in information technology. Topics may include but not limited to such as platform architectures, social platforms, cloud computing, data privacy and security, user experience, and analytics. In addition, it focuses on the new trends and disruptive technologies in IT. Emphasis will be given to the way technologies create a competitive edge and generate business value. There will be a broad range of views presented by different guest speakers, including entrepreneurs, analysts, and IT executives.

Prerequisite: Instructor's consent

CMPS 601 Research Topics in Information Technology (3 credits)

This course offers the student the entry to self-directed scientific work. The student chooses a topic, does the literature review and presents his/her work in a written report along with a presentation. Topics would be chosen based on a literature review focused on emerging technologies in the field of IT not limited to such as Artificial Intelligence; Machine Learning; Human-Computer Interaction; Medical Informatics; Games; Networks & Communications; Image Processing; Simulation; Evolutionary Computation; Energy Informatics; Knowledge Management.

Prerequisite: Instructor's consent

CMPS 602 Information Technology Auditing and Assurance (3 credits)

This course introduces the fundamentals of IT auditing and assurance services, core reasons why IT auditing is a specialized area of auditing, evolution of IT assurance, and the principle objectives of IT auditing and assurance services.

CMPS 603 Knowledge Management (3 credits)

This course covers the latest theory and practice of Knowledge Management (KM), with an integrated interdisciplinary presentation that makes sense of the confusingly wide variety of computer science and business KM perspectives arising simultaneously from artificial intelligence, information systems, and organizational behavior. It solidly covers the "hard" technical components of computer tools and technology for managing knowledge, without losing sight of the "soft" management needs and challenges in leveraging knowledge effectively within an organization. The course also critically evaluates the nature, computer representation, access, and utilization of knowledge versus information within a human context.

CMPS 690 Master Thesis (6 credits)

This course addresses research question(s) of interest to the student. It consists of an integrated piece of work, with critical analyses of approaches and results, a software implementation of the proposed system (if applicable), and a discussion of further works. Prerequisite: Successful completion of 18 credit hours and CMPS 520 (Research Methodology) if deemed necessary by the advisor, followed by approval of the department.

Recommended Links

MSIT Program

<http://caas.du.edu.om/master-in-it/>

Download MSIT Program Info. (PDF format)

http://www.du.edu.om/images/Download_Section/Master_Programs/MS_in_Information_Technology.pdf

Department of Computer Science (CS)

http://caas.du.edu.om/computer_science/

College of Arts and Applied Sciences (CAAS)

<http://caas.du.edu.om/>

Dhofar University (DU)

<http://www.du.edu.om/>
