University of Macau
Faculty of Science and Technology
Department of Computer and Information Science
CISB359 Information Systems Analysis and Design
Syllabus
2nd Semester 2014/2015
Part A – Course Outline

Elective course in Computer Science

Course description:
(3-2) 3 credits. This course introduces systematic and structured methodologies of information system analysis and design, and covers system analysis fundamentals, information gathering techniques, information requirements analysis, data flow diagram, data dictionary, input and output design and system proposals.

Course type:
Theoretical with substantial laboratory/practice content

Prerequisites:
- None

Textbook(s) and other required material:
- Jeffrey A. Hoffer, Joey George, Joe Valacich, *Modern Systems Analysis and Design*, 7th ed., 2014, Prentice Hall (Required)

References:
- Kenneth E. Kendall and Julie E. Kendall, *Systems Analysis and Design*, 9th ed., 2014, Prentice Hall

Course objectives:
- Introduce students to system concepts and different types of information systems. [a, b]
- Present the system development life cycle as a foundation for managing and controlling application development. [a, b]
- Examine methods and techniques to determine the requirements of an information system. [c]
- Apply data flow diagrams for system design and documentation. [b]

Topics covered:
- Assuming the role of the systems analyst (3 hours): types of systems, integrating technologies for systems, roles of the systems analyst, system development life cycle, using CASE tools.
- Understanding organizational style and its impact on information systems (3 hours): organizations as systems, depicting systems graphically, levels of management, organizational culture.
- Information gathering: interactive methods (3 hours): interviewing, using questionnaires.
- Information gathering: unobtrusive methods (3 hours): sampling, investigation, observation.
- Using data flow diagrams (4 hours): data flow approach, developing data flow diagrams, logical and physical data flow diagrams, creating a physical data flow diagram, partitioning web sites, communicating using data flow diagrams.
- Analyzing systems using data dictionaries (3 hours): data dictionary, data repository, creating the data dictionary, using the data dictionary.
- Describing process specifications and structured decisions (3 hours): structured English, decision tables, decision trees, choosing a structured decision analysis technique, physical and logical process specifications.
- Preparing the systems proposal (3 hours): ascertaining hardware and software needs, identifying and forecasting costs and benefits, comparing costs and benefits, the systems proposal.
- Designing effective input and output (3 hours): output design objectives, relating output content to output method, good display and web forms design, intranet and internet page design.

Class/laboratory schedule:

Timetabled work in hours per week			No of teaching weeks	Total hours	Total credits	No/Duration of exam papers
Lecture	Tutorial	Practice				
2	2	Nil	14	56	3	2 / 2 hours

Student study effort required:

Class contact:	
Lecture	28 hours
Tutorial	28 hours
Other study effort	
Self-study	30 hours
Homework assignment	10 hours
Project / Case study	30 hours
Total student study effort	126 hours

Student assessment:
Final assessment will be determined on the basis of:

Homework	15%	Project	25%
Mid-term	20%	Final exam	40%

Course assessment:
The assessment of course objectives will be determined on the basis of:

- Homework, project and exams
- Course evaluation

Course outline:

Weeks	Topic	Course work
1-3	**Foundations for systems development** Systems development environment Origins of software Managing the information systems project	Assignment 1
4-6	**Planning** Identifying and selecting systems development projects Initiating and planning systems development projects	Project 1
7-10	**Analysis** Determining system requirements Structuring system process requirements Structuring system data requirements	Assignment 2 Mid-term test
11-13	**Design** Designing databases, forms and reports, interfaces and dialogues, distributed and internet systems	Assignment 3 Project 2
14	**Implementation and maintenance** System implementation	

Contribution of course to meet the professional component:
This course prepares students to work professionally in the area of system analysis and design.

Relationship to CS program objectives and outcomes:
This course primarily contributes to Computer Science program outcomes that develop students to have:
(a) An ability to apply knowledge of computing and mathematics appropriate to the programme outcomes and to the discipline.
(b)An ability to apply knowledge of a computing specialisation, and domain knowledge appropriate for the computing specialisation to the abstraction and conceptualisation of computing models.
(c) An ability to analyse a problem, and identify and define the computing requirements appropriate to its solution.

Relationship to CS program criteria:

Criterion	DS	PF	AL	AR	OS	NC	PL	HC	GV	IS	IM	SP	SE	CN
Scale: 1 (highest) to 4 (lowest)													1	

Discrete Structures (DS), Programming Fundamentals (PF), Algorithms and Complexity (AL), Architecture and Organization (AR), Operating Systems (OS), Net-Centric Computing (NC), Programming Languages (PL), Human-Computer Interaction (HC), Graphics and Visual Computing (GV), Intelligent Systems (IS), Information Management (IM), Social and Professional Issues (SP), Software Engineering (SE), Computational Science (CN).

Course content distribution:

Percentage content for			
Mathematics	Science and engineering subjects	Complementary electives	**Total**
0%	100%	0%	100%

Coordinator:
Dr. Leong Hou U

Persons who prepared this description:
Dr. Leong Hou U, Prof. Yiu Kwok Tham, Mr. Miguel Gomes da Costa Junior, Dr. Shirley Siu

Part B – General Course Information and Policies

2nd Semester 2013/2014

Instructor:	Dr. Shirley W. I. Siu	Office:	N327B
Office hour:	14:30-16:30 *Tuesday & Thursday*	Phone:	8397 4378
Email:	shirleysiu@umac.mo		

Time/Venue: *(Lecture) Every Tuesday 11:30-13:20 at JM08*
(Tutorial) Thursday 11:00-12:50 at J308, announce every week

Grading distribution:

Percentage Grade	Final Grade	Percentage Grade	Final Grade
100 - 93	A	92 - 88	A–
87 - 83	B+	82 - 78	B
77 - 73	B–	72 - 68	C+
67 - 63	C	62 - 58	C–
57 - 53	D+	52 - 50	D
below 50	F		

Comment:
The objectives of the lectures are to explain and to supplement the text material. Students are responsible for the assigned material whether or not it is covered in the lecture. Students who wish to succeed in this course should read the textbook prior to the lecture and should work all homework and project assignments. You are encouraged to look at other sources (other texts, etc.) to complement the lectures and text.

Homework policy:
The completion and correction of homework is a powerful learning experience; therefore:
- There will be 3-4 homework assignments.
- Homework is due one week after assignment unless otherwise noted, no late homework is accepted.
- The course grade will be based on the average of the homework grades.

Course project:
The project is probably the most exciting part of this course and provides students with meaningful experience in system analysis and design:
- You will work with group of up to 4 students for the course project.
- The requirements will be announced and discussed in class.

Exam:
One 2-hour mid-term exam will be held during the semester and one 3-hour final exam at the end of the semester. Both the mid-term and final exam are closed book examinations.

Note:
- Check UMMoodle (https://ummoodle.umac.mo/) for announcement, homework and lectures. Report any mistake on your grades within one week after posting.
- No make-up exam is given except for CLEAR medical proof.
- Cheating is absolutely prohibited by the university.

STUDENT DISABILITIES SUPPORT SERVICE
The University of Macau is committed to providing an equal opportunity in education to persons with disabilities. If you are a student with a physical, visual, hearing, speech, learning or psychological impairment(s) which substantially limit your learning and/or activities of daily living, you are encouraged to communicate with your instructors about your impairment(s) and the accommodations you need in your studies. You are also encouraged to contact the Student Disability Support Service of the Student Counselling and Development Section (SCD) in Student Affairs Office, which provides appropriate resources and accommodations to allow each student with a disability to have an equal opportunity in education, university life activities and services at the University of Macau. To learn more about the service,

please contact SCD at scd.disability@umac.mo, or 8822 4901 or visit the following website: http://www.umac.mo/sao/scd/sds/aboutus/en/scd_mission.php.

Appendix - Measurement Dimensions and Rubric for Program Outcomes (a), (b), and (c)

(a) An ability to apply knowledge of computing and mathematics appropriate to the programme outcomes and to the discipline

Measurement Dimension	Excellent (80-100%)	Average (60-79%)	Poor (<60%)
1. An ability to apply knowledge of computing to the solution of complex computing problems.	Students understand the computing principles, and their limitations in the respective applications. Use the computing principles to formulate and solve complex computing problems.	Students understand the computing principles, and their limitations in the respective applications. But they have trouble in applying these computing principles to formulate and solve complex computing problems.	Students do not understand the computing principles, and their limitations in the respective applications. Do not know how to apply the appropriate computing principles to formulate and solve complex computing problems.

(b) An ability to apply knowledge of a computing specialisation, and domain knowledge appropriate for the computing specialisation to the abstraction and conceptualisation of computing models

Measurement Dimension	Excellent (80-100%)	Average (60-79%)	Poor (<60%)
1. An ability to apply knowledge of a computing specialization, and domain knowledge to analyse and abstract complex computing models	Students understand the computing specialisation, and domain knowledge. They can also analyze and abstract complex computing models.	Students understand the computing specialisation, and domain knowledge. But they have trouble in analyzing and abstracting complex computing models.	Students have trouble in understanding the computing specialisation, and domain knowledge, and do not know how to analyze and abstract complex computing models.

(c) An ability to analyse a problem, and identify and define the computing requirements appropriate to its solution

Measurement Dimension	Excellent (80-100%)	Average (60-79%)	Poor (<60%)
1. An ability to understand problem and identify the fundamental formulation	Students understand problem correctly and can identify the fundamental formulation	Student understand problem correctly, but have trouble in identifying the fundamental formulation	Students cannot understand problem correctly, and they do not know how to identify the fundamental formulation