University of Macau
Faculty of Science and Technology
Department of Computer and Information Science
SFTW351 Information Systems Analysis and Design
Syllabus
1st Semester 2012/2013
Part A – Course Outline

Compulsory course in Computer Science

Course description:
(3-2) 4 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*, 6th ed., 2011, Prentice Hall (Required)

References:
- Kenneth E. Kendall and Julie E. Kendall, *Systems Analysis and Design*, 8th ed., 2011, Prentice Hall

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

Topics covered:
- Assuming the role of the systems analyst (4 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 (4 hours): organizations as systems, depicting systems graphically, levels of management, organizational culture.
- Information gathering: interactive methods (4 hours): interviewing, using questionnaires.
- Information gathering: unobtrusive methods (4 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 (4 hours): data dictionary, data repository, creating the data dictionary, using the data dictionary.
- Describing process specifications and structured decisions (4 hours): structured English, decision tables, decision trees, choosing a structured decision analysis technique, physical and logical process specifications.
- Preparing the systems proposal (4 hours): ascertaining hardware and software needs, identifying and forecasting costs and benefits, comparing costs and benefits, the systems proposal.
- Designing effective output (4 hours): output design objectives, relating output content to output method, realizing how output bias affects users, designing output for displays, designing a web site, output production and XML.
- Designing effective input (4 hours): good form design, 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				
3	2	Nil	14	70	4	1 / 3 hours

Student study effort required:

Class contact:	
Lecture	42 hours
Tutorial	28 hours
Other study effort	
Self-study	42 hours
Homework assignment	8 hours
Project / Case study	20 hours
Total student study effort	140 hours

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

Homework	20%	Project	25%
Mid-term	20%	Final exam	35%

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 for structured analysis Structuring system data requirements	Mid-term test Assignment 2 Project 2
11-13	**Design** Designing databases, forms and reports, interfaces and dialogues, distributed and internet systems	Assignment 3
14	**Implementation and maintenance** System implementation	Project 3

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, mathematics, science, and engineering.
(e) an ability to analyze a problem, and identify, formulate and use the appropriate application requirements for obtaining its computing solution.
(k) an ability to use the techniques, skills, and modern computer tools necessary for engineering practice.

The course secondarily contributes to Computer Science program outcomes that develop students to have:
(g) an ability to communicate effectively.

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

Part B – General Course Information and Policies

1st Semester 2012/2013

Instructor: Dr. Ryan L.H. U
Office: B1-A704
Office hour: *To be announced*
Phone: 8397 8469
Email: ryanlhu@umac.mo

Time/Venue: *To be announced*

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 approximately 3 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 HW grades.

Course project:
The project is probably the most exciting part of this course and provides students with meaningful experience to extend and enhance an existing compiler and interpreter:
- You will work with group of up to 4 students for the course project.
- The requirements will be announced and discussed in class.
- The project will be presented at the end of semester.

Exam:
One 2-hour mid-term exam will be held during the semester. Both the mid-term and final exams are closed book examinations. There will be occasional in-class assignment.

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.

Appendix:

Rubric for Program Outcomes

Rubric for (a)	5 (Excellent)	3 (Average)	1 (Poor)
Understand the theoretic background	Students understand theoretic background and the limitations of the respective applications.	Students have some confusion on some background or do not understand theoretic background completely.	Students do not understand the background or do not study at all.

Rubric for (e)	5 (Excellent)	3 (Average)	1 (Poor)
Modeling, problem formulation and problem solving	Students choose and properly apply the correct techniques.	Students model correctly but cannot select proper technique or model incorrectly but solve correctly accordingly.	Students at loss as to how to solve a problem.

Rubric for (g)	5 (Excellent)	3 (Average)	1 (Poor)
Professional impact	Student's/Team's/Group's document(s)/presentation(s) is/are considered to be of professional quality.	Student's/Team's/Group's document(s)/presentation(s) is/are considered acceptable for college level work.	Student's/Team's/Group's document(s)/presentation(s) is/are considered unacceptable for college level work.
Written component	Document is nearly error free with sophisticated use of vocabulary, formatted properly, with well-developed concise sentences and paragraphs.	Document contains some errors with a somewhat colloquial vocabulary, minor formatting issues, with some organizational issues that do not interfere with communication.	Document contains many errors, very colloquial vocabulary, with severe organizational issues that interfere with communication. Document would be considered unacceptable.

Rubric for (k)	5 (Excellent)	3 (Average)	1 (Poor)
Use modern principles, skills, and tools in engineering practice	Student applies the principles, skills and tools to correctly model and analyze engineering problems, and understands the limitations.	Student applies the principles, skills and tools to analyze and implement engineering problems.	Student does not apply principles and tools correctly and/or does not correctly interpret the results.