University of Macau
Faculty of Science and Technology
Department of Computer and Information Science
SFTW120 – Programming Science
Syllabus
1st Semester 2011/2012
Part A – Course Outline

Required course in Computer Science

Catalog description:
(2.5-1) 3 credits. This course introduces the notion of algorithms and teaches principles of problem solving. It also introduces fundamental concepts of programming, such as scalar data types, variables, functions, choice, iteration, recursion, arrays, strings, enumerations, record types, and file processing. These concepts are introduced through the C programming language.

Prerequisites:
none

Textbook(s) and other required material:
- Jeri R. Hanly and Elliot B. Koffman, *Problem Solving and Program Design in C*, 6th ed., 2009, Addison-Wesley. (Required)

References:
none

Major prerequisites by topic:
none

Course objectives*:
1. Introduce students to fundamental principles of problem solving. [a, e]
2. Introduce students to fundamental concepts related to programming. [a, k]
3. Introduce students to principles and use of the C programming language. [a, k]
4. Foster students' ability to translate informal requirements into correct and efficient programs. [c, e]
5. Learning to apply course material to improve analytical thinking and problem solving. [a, e, k, l]

Topics covered:
1. Problem solving and algorithms.
2. Overview of the C programming language.
3. Data types, variables and operators.
4. Modular program design and functions.
5. Selection and iteration.
6. Arrays, strings, pointers, and user-defined types.
7. Terminal and file input/output.
8. Recursion.

Class/laboratory schedule:
One 50-minute lecture and one 75-minute lecture per week (14 weeks)
One 50-minute laboratory per week (14 weeks)

Contribution of course to meet the professional component:
This course prepares students to work professionally in the area of software development.

Relationship to CS program objectives and outcomes:
This course primarily contributes to the Computer Science program outcomes that develop these student abilities: (a) an ability to apply knowledge of computing, mathematics, science, and engineering.

(c) an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
(e) an ability to analyze a problem, and identify, formulate and use the appropriate application requirements for obtaining its computing solution.

The course secondarily contributes to the Computer Science program outcomes that develop these student abilities:
(k) an ability to use the techniques, skills, and modern computer tools necessary for engineering practice.
(l) an ability to use the computer/IT tools relevant to the discipline along with an understanding of their processes and limitations.

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					4						4	

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).

Coordinator:

Robert P. Biuk-Aghai, Assistant Professor of Computing Sciences

Persons who prepared this description:

Robert P. Biuk-Aghai, 5 November 2010.

Part B General Course Information and Policies

1st semester 2011/2012

Instructor: Dr. Robert P. Biuk-Aghai — Office: N325
Office Hour: Mon, Tue & Fri 10:30 am – 12:30 pm, or by appointment — Phone: 8397 4375
Email: robertb@umac.mo

Time/Venue: Mon 2:30 – 4:00 pm, Tue 1:30am - 2:30pm, J218 (lectures)
Tue 4:00-5:00pm, T108 (laboratory)

Assessment:

Final assessment will be determined on the basis of:

Homework Assignments	20%	In–class Quizzes	20%
Mid-term Exam	20%	Final Exam	40%

Grading Distribution:

Percentage Grade	Final Grade	Percentage Grade	Final Grade	Percentage Grade	Final Grade
100 – 88	A	87 – 73	B	below 50	F
72 – 58	C	57 – 50	D		

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 lectures. Students who wish to succeed in this course should read the lecture notes prior to the lecture and should do all homework assignments and lab exercises. You are encouraged to look at other sources (other texts, etc.) to complement the lectures and primary text.

Homework Policy:

The completion and correction of homework is a powerful learning experience; therefore:

- There will be 4 homework assignments.
- Homework is due one week after assignment unless otherwise noted, and no late homework is accepted.
- Possible revision of homework grades may be discussed with the grader within one week from the return of the marked homework.
- The course grade will be based on the average of the homework grades.

Quizzes

There will be two quizzes, after about ¼ and ¾ of the semester. One mid-term exam will be held at about the middle of the semester.

Note

- The lecture session is an important part of this course and attendance is compulsory. At most 20% absence without leave is allowed.
- Check UMMoodle (ummoodle.umac.mo) for announcements, homework assignments and lecture notes. Report any mistakes on your grades within one week after posting.
- No make-up exam is given except for CLEAR medical proof.
- No exam is given if you are 30 minutes late in the midterm exam, or 45 minutes late in the final exam. Even if you are late in the exam, you must turn in at the due time.
- Cheating is strictly prohibited by the university and will be severely punished.