

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
Department of Computing and Mathematics
COURSE OUTLINE FOR

Course No.: CS118
Cr Hrs: 3

Title: Fundamentals of Computer Programming

Lecture Hours: 3

Laboratory Hours: 0

COURSE DESCRIPTION:

This is an entry level programming course designed to foster an understanding of computers, computer science concepts, and computer programming skills using a block-structured high-level language. Topics include algorithm development, pseudo-code, data representation, and programming methods.

GOALS:

This course will provide students with an introduction to the concepts of computer science and computer programming. An in-depth understanding of how computers can be used to solve specific problems and carry out certain tasks will be emphasized.

PERFORMANCE OBJECTIVES:

1. Explain what a computer does, define what computer science is, and describe the historical development of both.
2. Define computer programming, and explain the difference between programming methods, programming languages and programming tools.
3. Describe the parts of an algorithm and recognize certain widely used algorithms and problem solving patterns.
4. Hand trace the execution of an algorithm.
5. Code an algorithm as a sequence of high level statements.
6. Explain how to detect and correct syntax and logic errors when compiling a program and explain the importance of good coding style in programming.
7. Explain how abstractions such as new data types, subprograms, and defined constants can simplify a program.

**Department of Computing and Mathematics
COURSE OUTLINE FOR CS118, Continued**

TEXTBOOK:

Schwartz & Christiansen "Learning Perl 2nd edition" O'Reilly& Assoc.

SUGGESTED SUPPLEMENTAL MATERIALS:

**David Medinets "Perl 5 by Example" Que
Andrew L. Johnson "Elements of Programming with Perl" Manning
<http://www.perl.com>**

PREREQUISITE KNOWLEDGE BY TOPIC:

1. A competency in the basic mathematical topics of arithmetic, algebra, elementary functions, summation, basic differentiation and integration.

	TOPIC	CLASS HOURS	COURSE OBJECTIVES
1.	Introduction to Computers and the Environment	6	Describe the functional units of a computer and create, edit and execute a program.
2.	Algorithms and Program Development	9	Learn and utilize how to describe the solution to a problem in a sequence of instructions that produce a result in a finite amount of time.
3.	Software Engineering	10	Learn and utilize a systematic process that will make the student a good problem solver.
4.	Modularity and Subprograms	6	Apply a top-down design methodology to problems of intermediate complexity, using functions.
5.	Program Design and Style	3	Learn and utilize the techniques to recognize and define a problem carefully and completely.
6.	Looping and Selection	3	Design solutions to problems requiring the control structures: looping and selection
7.	Abstract Data Types	3	Learn and utilize the combining of basic types that allows one to create a unified concept that describes the specific situation.

LABORATORY:

There will be 7-9 laboratory assignments, mainly programs. Examples of these assignments are as follows:

1. Convert 24-hour notation time to 12-hour notation time.
2. Determine the initial design of a support timber. Assuring that the timber will pass the Buckling, Compression Stress, and Slenderness Limits tests.
3. Convert numbers to words. The need to display the value of a number in words arises from time to time, for example in writing checks.

COMPUTER USAGE:

The chief resources are a laboratory of IBM PC's (or equivalent machines) running DOS and Windows with appropriate programming software. In addition, the classroom used for the courses must be equipped with an IBM PC (or equivalent) running the laboratory software and equipped with an appropriate classroom big screen display.

GRADING SYSTEM:

There will be periodic homework assignments, to be completed out of class, and announced and unannounced quizzes. Two full period exams, and a final exam will be used to measure the mastery of the material by the students. Class evaluation will include quizzes, full-period tests, and a two-hour comprehensive final exam. The items are prorated as follows:

Tests	65%
Homework	25%
Quiz	10%

ESTIMATED CONTENT:

Skills:	50 %
Content:	50%