MATH 36 Course Outline as of Spring 2008

CATALOG INFORMATION

Dept and Nbr: MATH 36 Title: FORTRAN PROGRAM-SCI
Full Title: FORTRAN Programming for Science
Last Reviewed: 2/25/1999

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	4.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	4.00	Lab Scheduled	0	17.5	Lab Scheduled	0
		Contact DHR	3.00		Contact DHR	52.50
		Contact Total	6.00		Contact Total	105.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 210.00

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	MATH 17

Catalog Description:
The solution of mathematical, scientific and engineering problems using the FORTRAN language. Emphasis on structured programming, including documentation, formatted input/output, control statements, arrays and subprograms.

Prerequisites/Corequisites:
MATH 27 (formerly MATH 57).

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Recommended: Previous programming course or experience. Programming in the FORTRAN language for mathematics, science and engineering. (Grade Only)
Prerequisites/Corequisites: MATH 27 (formerly MATH 57).
Recommended:
Limits on Enrollment:
Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		Effective:	Inactive:
	B	Communication and Analytical Thinking	Fall 1981	Spring 2008
CSU GE:	**Transfer Area**		Effective:	Inactive:
	B4	Math/Quantitative Reasoning	Fall 1981	Spring 2008
IGETC:	**Transfer Area**		Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Not Certificate/Major Applicable

COURSE CONTENT

Outcomes and Objectives:
To be successful, students should be able to:
1. Use FORTRAN arithmetic statements, including integer, real, complex, character and logical variables and expressions.
2. Perform FORTRAN arithmetic with intrinsic functions, operations, precedence and mixed modes
3. Use control statements: DO, IF, WHILE, and CASE.
4. Use input and output statements to create and access data files.
5. Use subscripted variables, arrays, with single and multiple subscripts.
6. Create and use subprograms which include parameter passing and the COMMON statement.
7. Write computer programs in FORTRAN to solve problems in mathematics and science. Program topics may be drawn from: algebraic and transcendental equation solutions, analytic geometry, statics, empirical probability simulation, and computations of numerical sequences and series.

Topics and Scope:

1. The Fortran Language.
   Some history, hierarchy of languages, programming techniques (including sequencing, selection, and repetition), internal and external documentation.
2. Arithmetic Statements.
   Integer, real, complex, character, and logical variables and expressions, intrinsic functions, operations, precedence, and mixed modes.
3. Control Statements.

DO, IF, WHILE, and CASE.

4. Input and Output.
   Formatted and unformatted I/O (including field descriptors, I, F, E, and A.), implied DO and DATA statements, creating and accessing files.
5. Subprograms.
   Functions and subroutines (including parameter passing and the COMMON statement).
6. Subscripted Variables.
   Arrays, single and multiple subscripts.
7. Problem Solving.
   Programs selected from mathematics, science, and engineering applications utilizing the techniques of soring, searching, simulation, recursion, and iteration.

Assignment:

1. The student will have daily outside reading, programming assignments, problem set assignments from required text(s), or instructor chosen supplementary materials.
2. Instructional methodology may include, but not limited to: lecture, demonstrations, oral recitation, discussion, supervised practice, independent study, outside project or other assignments.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Lab reports, Exams	Problem solving 50 - 75%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Performance exams	Skill Demonstrations 10 - 25%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice	Exams 5 - 25%

Other: Includes any assessment tools that do not logically fit into the above categories.

WRITING ASSIGNMENTS	Other Category 0 - 15%

Representative Textbooks and Materials:
Text(s) required of each student will be selected by the department, a committee of the department, or the responsible instructor from the books currently available. Choices in the past have included:
An Introduction to Fortran 90 for Scientific Computing (2nd) by Ortega Saunders Publishing, 1998.
Introduction to Computing for Engineers,(3rd) by Mayo/Cwiakawa, McGraw Hill, 1997.