FORM VERSION: 5/95
DATE REVISED:12/14/99

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

_X_ Transfer course _X_ A.A. degree applicable course (check all that apply)

COURSE NUMBER AND TITLE: Math 146/CSIS 146 - FORTRAN-90 for Mathematics and Science

UNIT VALUE: 3

MINIMUM NUMBER OF SEMESTER HOURS: 80

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills.

ENTRANCE REQUIREMENTS

PREREQUISITE: A minimum grade of "C" in Math 135 or Math 110 and M115, or a passing grade on the appropriate placement test.

COREQUISITE: None

RECOMMENDED PREPARATION: None

SCOPE OF COURSE: Programming in FORTRAN-90 to solve typical problems in mathematics, computer science, physical sciences, and engineering. Programming is done on a PC.

SPECIFIC COURSE OBJECTIVES: The successful student will be able to:
1. Program using FORTRAN-90 language.
2. Use the text editor for creating FORTRAN source files and data files.
3. Analyze mathematics, science, and engineering problems, and then design and implement in FORTRAN language to solve the problems.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE: At least the following topics will be covered:
1. Introduction to computer and programming concepts.
2. Problem-solving process:
   a. Problem analysis.
   b. Data organization and algorithm design using flowcharts.
   c. Program coding.
   d. Debugging and testing.
3. Syntax and semantics of FORTRAN-90:
   a. Data types, constant, and variables.
   b. Arithmetic operations, relation operations, logical operations.
4. Structures in FORTRAN-90
   a. Sequential: Data declarations, initializations, assignments.
   b. Selection: If – endif, if-else-endif, case structures.

c. Iteration: Counted loops, conditional loops.

5. File processing:
   a. Opening and closing data files.
   b. Reading from and writing to data files.
6. Input/output:
   a. Formatted output.
   b. Formatted input.
7. Subprograms:
   a. Intrinsic functions.
   b. User-defined functions.
   c. Subroutines.
   d. Recursive functions and subroutines. (optional)
8. Arrays:
   One-dimensional arrays.
   Two-dimensional arrays.
9. Problems in mathematics, computer science, and engineering: Examples include finite summations, statistical, sorting, matrix operations, and at least one problem that student selects.

REQUIRED READING: Nyhoff, Larry and Sanford C. Leestma. FORTRAN 90 For Engineers and Scientists. New Jersey: Prentice Hall, 1997.

SUGGESTED READING: None

REQUIRED WRITING: Problem-solving exercises and programming skills demonstration in FORTRAN-90 program assignments, lab assignments and quizzes are more appropriate.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short term classes.

Students will write and run five labs and at lease six FORTRAN programs. At least one is a problem selected by the student in either mathematics, science or engineering.

The outside assignments will include reading the textbook, reviewing lecture material, and completing assigned problem sets, as deemed necessary by the instructor.

INSTRUCTIONAL METHODOLOGY:
Check all that apply:
_X_ lecture
_X_ laboratory
___ lecture-laboratory combination
___ directed study

This course may be offered as a distance education course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.
Yes ___ No _X_

If yes, check all that apply. (See guidelines for preparation for definitions.)
____ telecourse
____ mediated instruction
____ computer assisted instruction

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

Labs and quizzes:	10 – 15%
Programming assignments:	50 – 60%
Midterm exam:	10 – 15%
Final exam:	20 – 25%

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?
Yes __ No _X_ Number of times course may be taken for credit: _1_

If yes, identify specific provision of Title 5 Division 2 section(s) 55761-55763 and 58161 which qualifies course as repeatable:

CONTACT PERSON: Cynthia Anfinson **EXTENSION:** 2963

SIGNATURES:

SIGNATURES ON FILE