San Bernardino Valley College
Curriculum Approved: SPRING 2000
Last Updated: April 10, 2002

I. **CATALOG DESCRIPTION:**

A. Department Information:

Division:	Science and Math
Department:	Computer Science
Course ID:	CS 165
Course Title:	Pascal Programming
Units:	4
Lecture:	3 Hours
Laboratory:	2 Hours
Prerequisite:	None

B. Catalog and Schedule Description:
An introduction to the structured language, Pascal. Topics include pseudocoding, top down design, control logic, arrays, sets, records, pointers, functions, procedures, parameters, and recursion.

II. **NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT:** One

III. **EXPECTED OUTCOMES FOR STUDENTS:**

Upon completion of the course the student should be able to:

A. Define and design programming solutions using:
   1. A structural approach
   2. HIPO analysis
   3. Top-down approach
   4. Psuedocoding

B. Construct components of a Pascal program
C. Use procedures and functions in modular programming
D. Compare and contrast the use of different types of loops
E. Distinguish and use selective logic
   1. If/Then statement
   2. If/Then/Else statement
   3. Case statement

F. Organize data using arrays and records
G. Create and process different types of files
H. Define and use SET types
I. Construct linked lists using pointers
J. Understand and follow the rules in software engineering

IV. **COURSE CONTENT:**

A. Problem solving
   1. A structured approach
   2. HIPO analysis
   3. Top-down approach
   4. Pseudocoding

B. Components of a simple Pascal program
   1. VAR and CONST
   2. READ/READLN/WRITE/WRITELN
   3. Arithmetic operations
   4. Compound statements

C. Procedures and functions
   1. Modular programming
   2. Stepwise refinement
   3. Scope identifiers
   4. Parameters

D. Loops
   1. FOR loops
   2. While loops
   3. Repeat/Until loops
   4. Recursive programming methods

E. Selection
   1. If/Then statement
   2. If/Then Else statement
   3. Case statement
   4. Boolean variables and expressions

F. Arrays and records
   1. TYPE statement
   2. Strings in Pascal
   3. Records with variants

G. File Processing
   1. Using files under Turbo Pascal
   2. Text files for disk I/O
   3. EOF and EOLN
   4. Sorting, searching, and matching

H. Using SET types
   1. Set definitions
   2. Set operations
   3. Advantage of using SET types

I. Pointers
   1. Linked lists
   2. Stacks
   3. Binary trees

J. Software engineering
   1. Algorithm efficiency
   2. Error handling
   3. Requirements specification
   4. Maintenance and evolution

V. METHODS OF INSTRUCTION:

A. Lecture
B. Discussion
C. Multi-media
D. Projects

VI. TYPICAL ASSIGNMENTS:

A. Read assigned textbook(s) and manual(s)
B. Analyze programming problems and design algorithims
C. Write Pascal problem in lab
   1. Sample lab projects
      a) Write a program to compute x and the square root of x for x=1 to 20
      b) Write a program to sort a group numbers of numbers using the selection sort
      c) Write a program to send the output to both the screen and a text file on disk
D. Discuss special Pascal programming techniques in class

VII. EVALUATION(S):

A. Programming projects: One per week
B. Examinations and quizzes
   1. Two exams: midterm and final

2. Weekly quizzes on reading assignments
    a) Sample test questions
    b) What is the difference between WRITE and WRITELN?
    c) How does a FOR loop work in a program?
    d) Give a function subprogram to compute x to the n-th power
3. Write a procedure to validate input of a number between 1 to 100.

VIII. TYPICAL TEXT(S):
Hennefield, J. Using Turbo Pascal. PWS Publishing Co., 1996

IX. OTHER SUPPLIES REQUIRED OF STUDENTS: Computer disks