

COMPUTER SCIENCE 5014
RESEARCH METHODS IN COMPUTER SCIENCE
(ADP TITLE: RESEARCH METH IN CS)

I. CATALOG DESCRIPTION:

5014 RESEARCH METHODS IN COMPUTER SCIENCE

Preparation for research in computer science. Technical communication skills. Design and evaluation of experiments. The research process.

Pre: Graduate Standing; (3H,3C). I.

II. LEARNING OBJECTIVES:

Having successfully completed this course, the student will be able to write well-organized and well-reasoned technical prose, present technical material orally, design experiments for comparing the efficiency of two or more programs, evaluate the experimental results statistically, and be able to construct the components of a research proposal.

III. JUSTIFICATION:

This course introduces computer science students to the world of research and develops skills needed to enter that world. Adequate technical communication skills are essential to a successful career. Proper design and evaluation of computer experiments is needed to make reasoned arguments concerning the relative merits of different approaches to a computer solution to a problem. Because of the importance of preparing students for research, this course is a required foundational course for the graduate curricula in computer science leading to the M.S. and Ph.D. degrees.

IV. PREREQUISITES AND COREQUISITES:

Graduate standing is required in order to insure that students have the educational maturity and the discipline-specific background necessary for this course.

V. TEXTS AND SPECIAL TEACHING AIDS:

Required text:

Mancuso, Joseph C. MASTERING TECHNICAL WRITING. First edition. Reading, Massachusetts: Addison-Wesley Publishing Company, 1990. xxi, 250.

Supplemental texts:

Higham, Nicholas J. HANDBOOK OF WRITING FOR THE MATHEMATICAL SCIENCES. First edition. Philadelphia, Pennsylvania: Society for Industrial and Applied Mathematics, 1993. xii, 241.

Jain, Raj. THE ART OF COMPUTER SYSTEMS PERFORMANCE ANALYSIS. First edition. New York: John Wiley & Sons, Inc., 1991. xxx, 685.

Knuth, Donald E., Tracy Larrabee, and Paul M. Roberts. MATHEMATICAL WRITING. First edition. Washington, D.C.: Mathematical Association of America, 1989. vi, 115.

VI. SYLLABUS:

	Percent of Course
1. Technical communication	45%
a. Organization	
b. Proofreading	
c. Rewriting	
d. Critical reading	
e. Oral presentation	
f. Approaches to instruction	
2. Experimental computer science	40%
a. Design of computational experiments	
b. Statistics for evaluating experimental results	
3. The process of research	15%
a. Use of library and research materials	
b. Funding opportunities and proposals	
c. Careers in research	
d. Creative thinking	
	<hr/> 100%

VII. OLD (CURRENT) SYLLABUS:

NA

VIII. CORE CURRICULUM GUIDELINES:

NA