Technical Report

CMU/SEI-91-TR-9
ESD-TR-91-9

(2)

Carnegie-Mellon University
Software Engineering Institute

Software Engineering Education Directory

Software Engineering Curriculum Project

May 1991

Technical Report
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Software Engineering Education Directory

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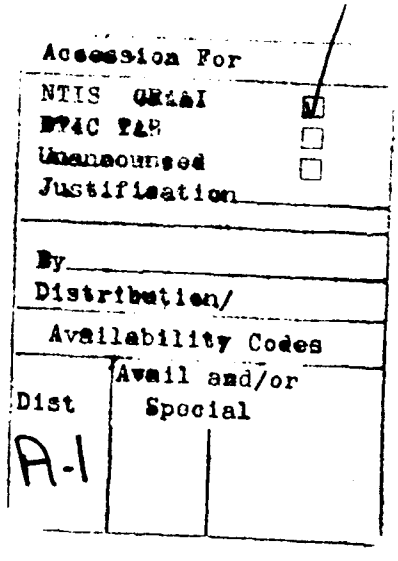
Education Program



Software Engineering Institute
Carnegie Mellon University
Pittsburgh, Pennsylvania 15213

This technical report was prepared for the

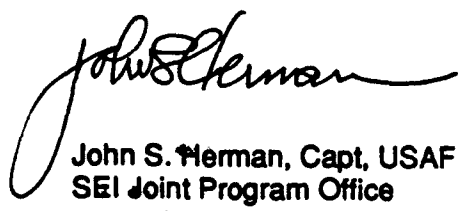
SEI Joint Program Office
ESD/AVS
Hanscom AFB, MA 01731

The ideas and findings in this report should not be construed as an official DoD position. It is published in the interest of scientific and technical information exchange.

Review and Approval

This report has been reviewed and is approved for publication.

FOR THE COMMANDER



John S. Herman, Capt, USAF
SEI Joint Program Office

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Table of Contents

Foreword

In each of the last four years, the SEI Education Program has published the *SEI Software Engineering Education Directory*, which summarizes undergraduate and graduate courses in software engineering taught at colleges and universities, primarily those in the United States. This survey, the only one of its kind, serves as a directory for potential students seeking information about where they might study software engineering. The survey is also useful to industry and government recruiters in evaluating the background of job candidates.

The teamwork and energy of Brian Gottier, William Beaver, and Mary Rose Serafini, along with Lucy Piccolino and Linda Pesante, were responsible for the successful completion of this edition. Mark Ardis, Senior Computer Scientist, assumed responsibility of the directory for the Software Engineering Curriculum Project.

Nancy Mead
Manager, Software Engineering Education Program
Software Engineering Institute
Carnegie Mellon University

Software Engineering Education Directory

Abstract: This directory provides information about software engineering courses and software engineering degree programs offered by colleges and universities, primarily in the United States.

Introduction

The Software Engineering Institute (SEI) is a federally funded research and development center, sponsored by the Department of Defense and operated by Carnegie Mellon University. The mission of the SEI is to serve the public interest by establishing the standard of excellence for the art and practice of software engineering and by accelerating the transition of software technology.

This directory has been compiled to provide information that will help students and their advisors make appropriate educational choices. It contains a detailed listing of available software engineering courses and software engineering degree programs.

Compilation of entries for this directory began in the summer of 1986 with a questionnaire mailed to schools selected from Peterson's *Graduate Programs in Engineering and Applied Sciences 1986*. We contacted schools offering graduate degrees in computer engineering, computer science, information science, software engineering, and systems engineering because they seemed most likely to offer courses involving software engineering concepts. The first *Software Engineering Education Directory* was then published, listing information provided by the schools that returned the questionnaire.

Since 1986 the directory has been published annually. Coverage has been expanded to include software engineering courses at the undergraduate level as these courses have become more common. In 1990, we added a section profiling institutions that are currently offering master's degrees in software engineering. Each year we have attempted to collect updated information from institutions previously represented in the directory. We have also attempted to contact institutions not previously included in the directory to make the publication more complete.

To discuss any issues related to this report, please contact:

Education Program
Software Engineering Institute
Carnegie Mellon University
Pittsburgh, PA 15213-3890
Internet: education@sei.cmu.edu

Part I: Schools and Courses

This year, as in the past, we contacted those institutions appearing in the last publication of the directory and requested that they revise their entries. We have edited the directory entries of those who responded, for accuracy, completeness, and relevance to software engineering. We are limited in our ability to edit responses, however, and might have included courses in the listings that do not seem to be closely related to software engineering study. However, all such courses were cited as part of a software engineering sequence in the responses that we received. In addition, please be aware that some "Textbook" entries actually contain articles, reports, or other published papers. In such cases, the papers shown are consistently used and considered to be required course reading.

How to Use This Section

This portion of the directory is organized by state (in the U.S.), province (in Canada), or country (in other regions). Within each section, the directory entries are alphabetized by institution name. Each entry lists the following:

- **Degrees.** These are the degree programs that have software engineering courses as electives or requirements. (Note to past readers: we have simplified the "Degrees" field to represent the degrees offered as opposed to titles of degree programs offered.)
- **Contact.** This is the person you may contact for more information about the software engineering courses offered at the institution.
- **Update.** The month and year that a directory entry was last updated appear here.
- **Courses.** Software engineering and related (co-requisite, laboratory, or advanced elective) courses are listed under this title. Each **Course** has three sub-titles: **Codes**, **Textbooks**, and **Tools**. The **Codes** represent characteristics of the course and are explained in detail later in this section. **Textbooks** contains a listing of texts used for the course, and **Tools** contains a listing of software and hardware used.

Abbreviations of Degrees

Below is a list of abbreviations for degree names. Each entry has one or two parts. The first part is the degree; and the second part, if present, is the subject. For example, BS EE means Bachelor of Science in Electrical Engineering, MSE is Master of Software Engineering, and MA CE stands for Master of Arts in Computer Engineering.

Degrees		Subjects	
BA	Bachelor of Arts	CIS	Computer and Information Science
BS	Bachelor of Science	CS	Computer Science
		CE	Computer Engineering
MA	Master of Arts	EE	Electrical Engineering
MS	Master of Science	SE	Software Engineering
MCS	Master of Computer Science		
MSE	Master of Software Engineering		
PHD	Doctor of Philosophy		
SCD	Doctor of Science		

Explanation of Course Codes

A complete **Courses** entry has five codes on the second line, arranged in order of course level, prerequisite, status, frequency, and years the course has been taught. The codes are as follows:

Level:

- U Undergraduate
- G Graduate
- B Both
- O Other
- X No information supplied

Prerequisites:

- P The course has at least one prerequisite
- N None
- X No information supplied

Status:

- R Required
- E Elective
- B Both
- O Other
- X No information supplied

Frequency:

- B Biennial
- Y Once a year
- T Once a term
- A Alternate terms
- D On demand
- O Other
- X No information supplied

Years taught:

- 0 New course
- # Number of years

Following are examples of **Courses** entries containing these fields:

Information Systems Analysis, Design, and Evaluation (INF SC 272)
Codes: G P E O 6
Textbooks: *Fundamentals of Systems Analysis, 3rd ed.*
by Fitzgerald, Jerry and Fitzgerald, Arda
Tools: C
IBM PC
Mac
VAX 780
VAX 8650

Software Engineering and Software Tools (INF SC 276)
Codes: G P E O 0
Textbooks: *Software Engineering: A Practitioner's Approach, 2nd ed.*
by Pressman, Roger S.

United States

Alabama

Auburn University
College of Engineering
Department of Computer Science and Engineering
Auburn, AL 36849

Degrees: BS, MS, MCS, PHD

Contact: Dr. James H. Cross II
Assistant Professor
(205) 844-4330
E-mail address: cross@eng.auburn.edu
Network: Internet

Update: April 1991

Courses: **Introduction to Software Engineering** (CSE 422)
Codes: U P R A 5
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: IBM PC
SUN SPARC Stations
Excelerator (InTech)
IDE Software through Pictures (StP)

Software Engineering I (CSE 522)
Codes: B P E Y 4
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: VAX
Pascal

Software Engineering II (CSE 622)
Codes: G P E Y 4
Textbooks: *Input Output Requirements Language (IORL) Reference Manual*
by Teledyne Brown Engineering
Tools: IORL
Apollo

Software Engineering Environments (CSE 625)
Codes: G N E Y 1
Textbooks: *IDE Software though Pictures (StP) : User's Manual*
Tools: IDE Software through Pictures (StP)
SUN SPARC Stations

Jacksonville State University
College of Letters and Sciences
Department of Mathematical, Computing and Information Sciences
Program in Computer Science
Jacksonville, AL 36265

Degrees: BS CS, BS CIS

Contact: Mrs. Martha McCormick
Department Head
(205) 782-5331
E-mail address: FMMC@JSUMUS

Update: March 1990

Courses: **Data Structures** (CS 334)
Codes: U P B T 5
Textbooks: *Mathematical Structures for Computer Science*
by Gerstrings

Computer Systems Programming (CS 441)
Codes: U P R Y 4
Textbooks: *C Through Design*
by Defenbaugh and Smedley
C Programming
by McCormick
A C++ Primer
by Lippman

Special Topics in Computer Science (CS 591)
Codes: G P E D 1
Textbooks: *Software Specification Techniques*
by Gehani and McGettrich

University of Alabama at Birmingham
School of Natural Sciences and Mathematics
Department of Computer and Information Sciences
Birmingham, AL 35294

Degrees: BS, MS, PHD

Contact: Dr. Warren T. Jones
Chairman
(205) 934-2213

Update: February 1988

Courses: **Formal Specifications and Software Development** (CS 520)
Codes: G N R Y 9
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tools: Sequent Balance 21000
VAX 11/750
Ada, Modula-2

Additional Information:
There is some software engineering content or purpose in other courses, especially: CS 522 Formal Semantics of Programming

Languages (Pagan, F., Formal Specifications of Programming Languages, Prentice-Hall, 1981); CS 526 Program Verification (Manna, Z., Mathematical Theory of Computation); CS 531 Computer Design (Hwang, K. and Briggs, F.A., Computer Architecture and Parallel Processing); CS 535 Computer Communications Network (Schwartz, M., Computer Communication Network Design and Analysis); CS 538 Performance Evaluation (Kobayashi, H., Modeling and Analysis). All of these courses are electives.

University of Alabama at Huntsville
College of Science
Department of Computer Science
Huntsville, AL 35899

Degrees: BS, MS, PHD

Contact: Dr. Carl G. Davis
Chairman

Update: April 1991

Courses: **Software Engineering** (CS 650)
Codes: G P E Y 5
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: TAGS, DCDS, MacProject
Pascal, Ada, C

Software Requirements and Design Methodologies (CS 651)
Codes: G P E Y 1
Textbooks: *CASE is Software Automation*
by McClure, Carma
Software Requirements - Analysis & Specifications
by Davis, Alan M.

Software Testing and Reliability (CS 652)
Codes: G N E Y 1
Textbooks: *Software Reliability - Measurement, Prediction, Application*
by Musa, Lannino, and Okumoto
Functional Program Testing and Analysis
by Howden, William

Software Management and Quality Assurance (CS 653)
Codes: G N E Y 0

Advanced Software Engineering (CS 750)
Codes: G P E D 1
Textbooks: *Software Engineering: Design, Reliability, and Management*
by Shooman, Martin L.

Alaska

University of Alaska-Fairbanks
College of Liberal Arts
Department of Mathematical Sciences
Program in Computer Science
Fairbanks, AK 99775-1110

Degrees: BS CS, MS CS

Contact: Prof. Peter J. Knoke
Associate Professor of CS
(907) 474-5107
E-mail address: FFPJK@Alaska
Network: BITNET

Update: April 1991

Courses: **Software Engineering** (CS 401)
Codes: U P E B 0
Textbooks: *Software Engineering - A Practitioner's Approach (2nd ed.)*
by Pressman, Roger
Tools: DEC, Sun or IBM workstations
Ada, C, C++
Various CASE Tools

Senior Project and Professional Practice (CS 402)
Codes: U P R Y 8
Textbooks: *Software Engineering - A Practitioner's Approach, 2nd ed.*
by Pressman, Roger S.
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.
Guide to Effective Software Technical Writing
by Browning, Christine
Tools: various project management software (e.g., MacProject II)
various computers (e.g., PC, Mac, VAX, HP 3000)
various languages (e.g., Pascal, C, FORTRAN, COBOL, SQL, Paradox)

Additional Information:
Senior Project and Professional Practice is a real project course in which teams of 4-5 students work on a project with requirements derived from real software development needs in the community. The project covers a 14-week period during which software engineering concepts and professional practice issues are introduced through lectures. The software development is covered and documented from proposals through customer sell-off. Reviews covering status relative to cost, scheduling functionality, and special problems are conducted approximately weekly during the project.

Arizona

Arizona State University
College of Engineering and Applied Science
Department of Computer Science
Tempe, AZ 85287

Degrees: BS, MS, MCS, PHD

Contact: Dr. James S. Collofello
Associate Professor
(602) 965-3733

Update: November 1990

Courses: **Software Project Management and Development I** (CSC 460)
Codes: U P E T 9
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: VAX (VMS or UNIX)
Pascal, Ada

Software Project Management and Development II (CSC 560)
Codes: G P E T 6
Textbooks: *Selected readings*

Software Requirements (CSC 563)
Codes: G P E Y 6
Textbooks: *Selected readings*

Software Design (CSC 564)
Codes: G P E Y 5
Textbooks: *Selected Readings*

Software Testing (CSC 565)
Codes: G P E Y 6
Textbooks: *Selected readings*

Software Maintenance (CSC 566)
Codes: G P E Y 6
Textbooks: *Selected readings*

Special Topics in Software Engineering (CSC 590)
Codes: G P E D 6
Textbooks: *Selected readings*

Additional Information:
Textbooks for Special Topics in Software Engineering depend on topic. The topics used in the past have been "Software Metrics" and "Software Environments."

University of Arizona
Faculty of Science
Department of Computer Science
Tucson, AZ 85721

Degrees: BS CS, MS CS, PHD CS

Contact: Prof. Gregory R. Andrews
Department Head
(602) 621-6613
E-mail address: greg@cs.arizona.edu
Network: Internet

Update: April 1991

Courses: **Software Design** (Computer Science 430)
Codes: U P R T 5
Textbooks: *A Book on C, 2nd ed.*
by Kelly, A. and Puhl, I.
An Introduction to Berkeley UNIX
by Wang, Paul
Tools: Segment symmetry running Dynix
C

Compilers and Systems Software (Computer Science 453)
Codes: B P R Y 13
Textbooks: *Compilers Principles, Techniques, and Tools*
by Aho, Sethi & Ullman
Tools: Sequent Symmetry running Dynix
C

Software Design (Computer Science 530)
Codes: G P E T 0
Textbooks: *An Introduction to Berkeley UNIX*
by Wang, Paul
A Book on C, 2nd ed.
by Kelly, A. and Puhl, I.
Tools: Segment symmetry running Dynix
C

Principles of Compilation (Computer Science 553)
Codes: G P R Y 0
Textbooks: *Compilers-Principles, Techniques and Tools*
by Aho, Sethi, Ullmann
Tools: Sequent Symmetry running Dynix
C, Lex, Yacc

Advanced Topics in Software Systems (Computer Science 630)
Codes: G P E D 13

Arkansas

University of Arkansas
Fulbright College of Arts and Sciences
Department of Computer Science
Program in Computer Science
Fayetteville, AR 72701

Degrees: BS, MS, BA

Contact: *Prof. Greg Starling*
Chairman
(501) 575-6427
E-mail address: Starling@UAFSYSB.UARK.EDU
Network: BITNET

Update: November 1990

Courses: **Structured Programming II** (CSAS 1033)
Codes: U P R T 5
Textbooks: *Program Design with Pascal*
by Naps and Singh
Tools: Macintosh
Pascal

Software Development (CSAS 4003)
Codes: U P R Y 5
Tools: Mac IIci, IBM 4381
Pascal, SmallTalk

Ada for Software Design (CSAS 4013)
Codes: U P E Y 1
Textbooks: *Programming in Ada*
by Barnes
Tools: IBM 4381/R14, Macintosh IIci, HP 9000/835
VM CMS, MPW, UNIX
Ada (Telesoft, Meridian, ICC)

California

California Institute of Technology
Division of Engineering and Applied Science
Computer Science Option 256-80
Pasadena, CA 91125

Degrees: MS CS, PHD CS

Contact: Prof. K. Mani Chandy
Option Representative
(818) 359-6559
E-mail address: mani@vlsi.cs.caltech.edu
Network: Internet

Update: April 1991

Courses: **Computer Algorithms** (CS 138)
Codes: B P E O 3

Concurrency in Computation (CS 139)
Codes: B P E O 5
Tools: Message-passing concurrent computers
UNIX systems, C

Programming Laboratory (CS 140)
Codes: B P E O 2
Tools: Gnu-Emacs, EmacsLisp, X-windows
C++, Straud
Sun 4
UNIX

Computation, Computers & Programs (CS 20)
Codes: U P E O 3
Tools: UNIX, C or Pascal

Additional Information:
Computations, Computers & Programs and Computer Algorithms are three-term courses. Computing Laboratory and Concurrency in Computation are each two-term courses and are offered each Winter and Spring quarter. Numerous related courses on Functional Programming, Computer Algorithms, Computer Modeling and Data Analysis, Computer Graphics, Design and Implementation of Programming Languages, Simulation, and Computer-Aided Design are also offered.

California Polytechnic State University
School of Engineering
Department of Computer Science
San Luis Obispo, CA 93407

Degrees: BS CS, MS CS

Contact: Prof. Jim Beug
Professor
(805) 546-2824

Update: May 1987

Courses: **Software Tools** (CSC 340)
Codes: U P E O 5
Tools: Pyramid UNIX
C, Mesa

Software Engineering I (CSC 440)
Codes: U P R O 9
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.

Software Engineering II (CSC 441)
Codes: U P R O 1
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: Mac II, Xerox 8010
Mesa, Modula-2

Additional Information:
Software Engineering I, Software Engineering II, and Software Tools are offered quarterly.

California State Polytechnic University, Pomona
School of Science
Department of Computer Science
Pomona, CA 91768-4034

Degrees: BS CS, MS CS

Contact: Dr. Bruce P. Hillam
Chairman
(714) 869-3440

Update: April 1991

Courses: **Software Engineering** (CS 480-CS 481)
Codes: B P E Y 2
Textbooks: *Software Engineering*
by Jones
Tools: VAX ADA, DEC Tools, VAX 6000

Software Engineering Metrics & Models (CS 580)
Codes: G P E B 0
Textbooks: *Software Engineering Metrics & Models*
by Conte, Dunsmore, and Shen
Tools: VAX ADA, DEC Tools
VAX 6000

Additional Information:
Local industry has expressed interest in this course being offered via closed circuit television.

California State University, Chico
College of Engineering, Computer Science and Technology
Department of Computer Science
Chico, CA 95929

Degrees: BS, MS

Contact: Dr. Orlando S. Madrigal
Professor and Chairman
(916) 895-6442

Update: November 1987

Courses: **Software Engineering** (CSCI 210)
Codes: U P E T 3
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.

Advanced Software Practices (CSCI 251)
Codes: U N E T 11
Textbooks: *Programming in Ada*
by Barnes, John Gilbert Presslie
Tools: Ada
IBM AT
Prime 9600

Systems Design (CSCI 270)
Codes: U P R T 11
Textbooks: *Systems Analysis and Design: Traditional and Advanced Concepts and Techniques*
by Wetherbe, James C.

Software Metrics and Control (CSCI 310)
Codes: G P E O 3

Software Design (CSCI 311)
Codes: G P E O 3
Textbooks: *Programming Considered as a Human Activity*
by Dijkstra, E.
Go To Statement Considered Harmful
by Dijkstra, E.
The Humble Programmer
by Dijkstra, E.
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.
Chief Programmer Team Management of Production Programming
by Baker, F.T.
Fundamentals of Design
by Freeman, Peter
Data Design in Structured Systems Analysis
by Gane, C.P.
Concise Notes on Software Engineering
by DeMarco, Tom
A Technique for Software Module Specification with Examples
by Parnas, D.L.

Software Analysis and Testing (CSCI 312)
Codes: G P E O 11

System Design Theory (CSCI 370)
Codes: G P E Y 11
Textbooks: *IEEE Tutorial: Software Management*
by Reifer, Donald
Controlling Software Projects: Management Measurement and Estimation
by DeMarco, Tom

Additional Information:
Software Metrics and Control, Software Design, and Software Analysis and Testing are offered during the fall and spring semesters.

California State University, Northridge
School of Engineering and Computer Science
Department of Computer Science
Northridge, CA 91330

Degrees: BS CS, MS CS

Contact: Richard Lorentz
Graduate Coordinator
(818) 885-3398

Update: April 1991

Courses: **Software Engineering Economics** (COMP 588)
Codes: G P E Y 5
Textbooks: *Software Engineering Economics*
by Boehm, Barry W.
Tools: IBM AT & PS/2 Lab
COCOMO

Software Engineering with Ada (CS 487)
Codes: B P E Y 4
Textbooks: *Software Engineering with Ada*
by Booch, Grady
Course notes
by Barkataki
Tools: VAX Ada compiler, Verdix Ada Compiler on Sun
Meridian Ada compilers on IBM PCs and Macintosh

Program Design Techniques (CS 380)
Codes: U P R T 10
Textbooks: *Software Engineering*
by Pfleeger
Tools: Dec MicroVAXes, IBM PS/2 & AT Labs, Mac Labs, AT&T 3B5,
VAX 80XX
UNIX, VMS
Design-Aid, Excelerator, home-grown CASE Tools
Ada, Pascal, Fortran, C

Software System Development and Laboratory (CS 480)
Codes: B P E T 12
Textbooks: *Software Design and Development*
by Gilbert, Philip
Tools: DEC Micro vax, IBM PS/2 AT Lab, Mac Lab, AT&T 3B5, VAX S0XX
Ada, Pascal, Fortran, C
UNIX, VMS
Design-Aid, Excelerator, homegrown CASE Tools

Software Engineering (CS 580)
Codes: G P R A 5
Textbooks: *Principles of Software Engineering Management*
by Gilb, Tom
Selected Papers from Software Engineering
by Barkataki
Tools: DEC MicroVAX, IBM PS/2 + AT Lab, AT&T 3B5, DEC VAX 80XX, MAC Lab
Ada, Pascal, Fortran, C
UNIX, VMS
Design-Aid, Excelerator

Object Oriented Software Development (CS 596)
Codes: G P E A 0
Textbooks: *Object Oriented Design*
by Brooch
Object Oriented Analysis
by Coad & Yourdan
Tools: IBM AT & PS/2 Lab
C++
Ada

Additional Information:
Four Computer-Aided Software Engineering (CASE) tools are used in the school's computer lab.

California State University, Sacramento
School of Engineering and Computer Science
Department of Computer Science
Concentration in Software Engineering
Sacramento, CA 95819

Degrees: BS CS, MS CS

Contact: Dr. Richard H. Thayer
Professor in Computer Science
(916) 278-6834

Update: September 1988

Courses: **Computer Software Engineering** (CSC 131)
Codes: U P R T 5
Textbooks: *Software Engineering with Systems Analysis and Design*
by Steward, Donald V.
Tools: IBM PCs
CASE Tools

Computer System Analysis (CSC 170)
Codes: U P E T 13
Textbooks: *Introduction to System Analysis and Design: A Structured Design*
by Kendall, Penny A.
Tools: IBM PCs
CASE Tools

Software Engineering Project Management (CSC 171)
Codes: U P E Y 11
Textbooks: *The Mythical Man-Month: Essays on Software Engineering*
by Brooks, Frederick P., Jr.
Project Management: A Managerial Approach
by Merdith, Jack R. and Mantel, Samuel J., Jr.

Documentation Design (CSC 178)
Codes: U N E Y 4
Textbooks: *Writing Handbook for Computer Professionals*
by Skees, William D.
Tools: IBM PCs
Word processors

Senior Project: Part I (CSC 190)
Codes: U P R T 17
Textbooks: *Guide for Senior Project Documents*
by Thayer, Richard H.

Senior Project: Part II (CSC 191)
Codes: U P R T 7
Textbooks: *Guide for Senior Project Documents*
by Thayer, Richard H.

Software Testing and Quality Assurance (CSC 196D)
Codes: U P E Y 2
Textbooks: *Software Testing and Quality Assurance*
by Beizer, Boris

Foundation of Software Engineering (CSC 203)
Codes: G N R Y 5
Textbooks: *Software Engineering: A Practitioner's Approach, 2nd ed.*
by Pressman, Roger S.

Software Requirement Analysis and Design (CSC 210)
Codes: G P E Y 11
Textbooks: *An Integrated Approach to Software Development*
by Abbott, J.R.
Tools: IBM PCs
CASE Tools

Software Engineering Economics (CSC 231)
Codes: G P E Y 15
Textbooks: *Software Engineering Economics*
by Boehm, Barry W.
Tools: IBM PCs
WICOMO or other PC-based cost analysis tools

Advanced Computer System Analysis (CSC 240)
Codes: G P E Y 11
Textbooks: *Structured Development for Real-Time Systems*
by Ward, P.T. and Mellor, S.J.

Introduction to System Engineering (Engr 130)
Codes: U P E Y 3
Textbooks: *Systems Engineering: Methodology and Applications*
by Sage, Andrew P. (ed.)

Additional Information:

Software Engineering Project Management is offered once every 1 or 1.5 years. Software Requirement Analysis and Design, Software Engineering Economics, and Advanced Computer System Analysis are offered once every 3 semesters. Foundation of Software Engineering is required for a MS in Computer Science if the student does not have an undergraduate foundation in software engineering.

Claremont Graduate School, The
Department of Information Science
Claremont, CA 91711

Degrees: MS CIS, PHD

Contact: Prof. Lorne Olfman
Assistant Professor
E-mail address: OLFMANL@CLARGRAD
Network: BITNET

Update: December 1990

Courses: **Information Systems Analysis and Design** (IS 305)
Codes: G P R Y 6
Textbooks: *The Practical Guide to Structured Systems Design, 2nd ed.*
by Page-Jones, Meilir
Modern Structured Analysis
by Yourdon, Edward N.
Multiview: An Exploration in Information Systems Development, 2nd ed.
by Avison, David and Trevor Wood-Harper
Tools: IBM PC/AT
Design/1, Method/1, Excelerator

Systems Planning (IS 328)
Codes: G P B Y 6
Textbooks: *Fundamentals of Business Systems*
by Flaatten, P.O., McCubbrey, D.J., O'Riordan, P.D., Keith, Burgess
Tools: GroupSystems
PRISM
Selected 4GLs

Large Scale Software Development (IS 362)
Codes: G P R Y 6
Textbooks: *Software Engineering: A Practitioner's Approach (2nd ed)*
by Pressman, Roger S.
Tools: IBM PC/AT, Macintosh
Excelerator
selected 4GLs

Additional Information:
We follow the *Communications of the ACM*, November 1982 program for MS degrees in information systems.

National University
School of Engineering and Computer Sciences
Master of Science in Software Engineering
San Diego, CA 92108

Degrees: BS CS, MS SE

Contact: Dr. Justin Abraham
Chair, Dept. of Computer Science
(619) 563-7143

Update: January 1991

Courses: **Principles of Software Engineering** (CS 620)
Codes: G P X T 5
Textbooks: *Software Engineering: Methods and Management* by Von Mayrhauser, Anneliese
Tools: Excelerator, Ada, C, UNIX
IBM 3B2, 386s

Advanced Software Engineering (CS 622)
Codes: G P R T 5
Textbooks: *Software Engineering: Methods and Management* by Von Mayrhouser, Anneliese
Tools: Excelerator, Ada, C, UNIX
IBM 3B2, 386s

Verification and Validation Techniques (CS 626)
Codes: G P R T 5
Textbooks: *Software Testing Techniques* by Beizer
Tools: TeleSoft Ada
IBM 4381 with VM/CMS
CMS

Software Engineering Project I (CS 627a)
Codes: G P R T 5
Tools: Ada, C, UNIX
BM 3B2; 38C

Software Engineering Project II (CS 627b)
Codes: G P R T 5
Tools: Ada, C, UNIX
IBM 3B2, 386
CMS

Software Engineering Project III (CS 627c)
Codes: G P R T 5
Tools: Ada, C, UNIX
IBM 3B2, 386

Additional Information:
This program is offered at all of the National University campuses. Dial-up facilities are offered on all campuses so that a student with a computer and a modem can work on the IBM mainframe from home. All classes are offered in a 1 class per month format, for a total of 48 contact hours in a 4 week period. The last 3 classes (CS 627a, CS 627b, and CS 627c) are capstone senior project classes where a major software package is designed and implemented using all of the software engineering techniques taught in the curriculum. Software engineering techniques are stressed throughout the Bachelor of Science in Computer Science degree program.

Northrop University
Department of Computer and Information Science
Program - BS with specialization in SE
Los Angeles, CA 90069

Degrees: BS CS, MS CS, MS CIS

Contact: Dr. Lynolla Assad
Associate Professor
(213) 337-4413

Update: April 1991

Courses: **Software Engineering I** (CS-471)
Codes: U P E O 3
Textbooks: *Software Engineering: The Production of Quality Software*
by Pfleeger, Shari Lawrence

Advanced Software Design (CS-475)
Codes: U P E Y 3
Textbooks: *Structured Systems Analysis: Tools and Techniques*
by Gane, Chris and Sarson, Trish
Tools: Turbo C, Turbo Pascal, XDB Excelerator CASE Tools
IBM PC
FORTRAN, Gane/Sarson PDLs, SQL

Software Engineering II (CS-476)
Codes: U P E Y 1

San Jose State University
School of Science
Department of Mathematics and Computer Science
Programs in Computer Science and Mathematics
San Jose, CA 95192-0103

Degrees: BA, BS, MA, MS

Contact: Prof. Veril L. Phillips
Chairman
(408) 924-5100

Update: February 1990

Courses: **Graduate Seminar in Computer Science** (Math 295)
Codes: G P R T 8
Tools: Assembly (various), C, Pascal, possibly others (individual projects)

Additional Information:
Graduate Seminar in Computer Science is essentially a software project requirement, emphasizing software engineering principles.

Santa Clara University
School of Engineering
Department of Computer Engineering
Santa Clara, CA 95053

Degrees: BS CE, MS CE, PHD CE

Contact: Dr. Fuyau Lin
Assistant Professor
(408) 554-4499
E-mail address: FLIN@SCU
Network: BITNET

Update: April 1991

Courses: **Structure and Interpretation of Computer Programs** (EECS 172)
Codes: U P B Y 5
Textbooks: *Structure and Interpretation of Computer Programs* by Abelson and Sussman
Tools: IBM PC, HP engineering workstations TLC-LISP, PC-Scheme, Scheme

Introduction to Software Engineering (EECS 174)
Codes: U P B Y 1
Textbooks: *Software Engineering, 3rd ed.* by Sommerville, Ian
Tools: UNIX workstations, 386 PC

Structure and Interpretation of Computer Programs (EECS 561)
Codes: G P B A 5
Textbooks: *Structure and Interpretation of Computer Programs* by Abelson and Sussman
Tools: HP workstations, IBM PC/AT and compatibles Scheme, PC-Scheme

Software Engineering (EECS 585)
Codes: G P B Y 5
Textbooks: *Software Engineering: A Practitioner's Approach* by Pressman, Roger S.
Tools: UNIX workstations, 386 PC

Stanford University
School of Engineering
Department of Computer Science
Stanford, CA 94305

Degrees: BS CS, BS CE, MS, MS CS, PHD

Contact: Roy Jones
(415) 723-6092

Update: January 1989

Courses: **Object-Oriented Design with Ada** (CS 149)
Codes: B P E Y 1
Textbooks: *Software Engineering with Ada* by Booch, Grady
Tools: VAX 8650

Software Engineering Laboratory (CS 247)
Codes: B P E Y 1
Tools: Microcomputer (varies)

University of California, Berkeley
College of Engineering
Department of Electrical Engineering and Computer Science
Program in Computer Science
Berkeley, CA 94720

Degrees: BS, MS, ME, PHD, SCD

Contact: Mrs. Betty Webster
CS Scheduling Assistant
(415) 643-6130

Update: January 1986

Courses:

Introduction to Computer Science is offered in the fall and spring.
Data Structures and Advanced Programming is offered in the fall, spring, and summer.

University of California, Irvine
Department of Information and Computer Science
Program in Computer Science
Irvine, CA 92717

Degrees: BS, MS, PHD

Contact: Prof. Nancy Leveson
Associate Professor
(714) 856-7403
E-mail address: nancy@ics.uci.edu
Network: Internet

Update: July 1987

Courses: **Software Engineering A** (245A)
Codes: G N X Y 1
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tools: Sun UNIX
VAX UNIX

Software Engineering B (245B)
Codes: G N X Y 1
Textbooks: *IEEE Tutorial: Software Testing and Validation Techniques*
by Miller, Edward and Howden, William E.

Project in System Design (ICS 195)
Codes: U N O T 1
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tools: Sun UNIX
VAX UNIX

Additional Information:

Project in System Design is an option to fulfill the project requirement for a B.S.

University of California, Santa Cruz
Natural Sciences
Computer and Information Sciences and Computer Engineering
Santa Cruz, CA 95064

Degrees: BS CS, MS CS, PHD CS, BS CE, MS CE, PHD CE

Contact: Beth Dyer
Administrative Manager
(408) 459-4822
E-mail address: beth@luna.ucsc.edu
Network: Internet

Update: April 1991

Courses: **Software Engineering** (CE 276)
Codes: G P E Y 1
Textbooks: *Selected readings*

Software Methodology (CIS 115)
Codes: U P E Y 4
Textbooks: *Software Engineering, 3rd ed.*
by Sommerville, Ian
Tools: C++
UNIX
make, RCS, curses package (specifically for C++)
data flow diagrams, paper prototyping

University of San Francisco
School of Arts and Sciences
Department of Computer Science
San Francisco, CA 94118

Degrees: BS CS, MS CS

Contact: *Prof. John Gillespie*
Chairman
(415) 666-6539

Update: December 1990

Courses:
Additional Information:
Our first software engineering course began in Spring 87.
It is an upper division elective.

University of Southern California (Entry 1)
School of Engineering
Department of Industrial and Systems Engineering
Program in Human Factors
Los Angeles, CA 90089

Degrees: MS CE, PHD CE

Contact: Dr. Mark H. Chignell
Assistant Professor
(213) 743-2705
E-mail address: chignell%mizar.usc@oberon.usc.edu

Update: October 1988

Courses: **Cognitive Engineering** (ISE 576)
Codes: G P R Y 2
Textbooks: *Readings in Human-Computer Interaction*
by Baecker, R.M. and W.A.S. Buxton
Tools: Macintosh II
HyperCard/Hypertalk

Intelligent Interfaces (ISE 578)
Codes: G P E Y 4
Textbooks: *Expert Systems for Experts*
by Parsaye, K. and M. Chignell
Tools: IBM AT
Macintosh II
HyperCard/Hypertalk, Intelligence/Compiler

Additional Information:
Intelligent Interfaces focuses on the use of machine reasoning and graphics to improve the human interface. It also covers issues relating to the modularity and maintainability of complex software. It stresses a logic programming approach.

University of Southern California (Entry 2)
School of Engineering
Computer Science Department
Los Angeles, CA 90089

Degrees: MS CS, PHD CS

Contact: Dr. Mark H. Chignell
Assistant Professor
(213) 743-2705
E-mail address: chignell%mizar.usc@oberon.usc.edu

Update: November 1988

Courses: **Introduction to Software Engineering** (CS 201L)
Codes: U P R T 1
Textbooks: *The Practical Guide to Structured Systems Design*
by Page-Jones, Meilir
C Programming in the Berkeley UNIX Environment
by Horspool, R.
Tools: Sun 3 Workstations

Design and Construction of Large Software Systems (CS 477L)
Codes: U P E Y 1
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
The C Programming Language
by Kernighan, Brian W. and Richie, Dennis
Writing Efficient Programs
by Bentley, Jon Louis
Tools: Sun 3 Workstations

Management of Computing: Theory and Practice (CS 510)
Codes: G N E Y 1
Tools: Sun 3 and IBM RT Workstations

Design and Construction of Large Software Systems (CS 577a)
Codes: G N E Y 1
Textbooks: *The UNIX Programming Environment*
by Kernighan, Brian W. and Pike, Rob
Software Specification Techniques
by Gehani, N. and McGettrich, A.
Software Engineering: A Practitioner's Approach, 2nd ed.
by Pressman, Roger S.
Tools: Sun 3 Workstations

Design and Construction of Large Software Systems (CS 577b)
Codes: G P E Y 1
Textbooks: *Advanced UNIX Programming*
by Rochkind, Mark J.
C, a Reference Manual
by Harbison, Samuel P. and Steele, Guy L.
C Programming in the Berkeley UNIX Environment
by Horspool, R.
The X Windows System
by Gettys, J. et al.
Tools: Sun 3 Workstations

Colorado

Air Force Academy
Basic Sciences
Department of Computer Science
Program in Computer Science
Colorado Springs, CO 80840

Degrees: BS CS

Contact: Col. William E. Richardson
Professor and Head
(719) 472-3592
E-mail address: billr@usafa.af.mil
Network: DDN

Update: April 1991

Courses: **Fundamentals of Computer Science** (CS 225)
Codes: U P R T 5
Textbooks: *Theory of Computation: Formal Languages, Automata and Complexity*
by Brookshear, J. Glenn
Tools: DG Pascal
DG MV10000

Algorithms and Data Structures (CS 380)
Codes: U P R Y 5
Textbooks: *Data Structures and Algorithms*
by Aho, Hopcroft, Ullman
Theory of Computation: Formal Languages, Automata, and Complexity
by Grookshear, J. Glenn
Ada as a Second Language
by Cohen, Norman H.
Tools: Turbo Pascal 5.0/5.5
Meridian Ada, Dec Ada

Systems Analysis and Design I (CS 453)
Codes: U P R Y 8
Textbooks: *Software Engineering*
by Sommerville, Ian
Modern Structured Analysis
by Yourdon, E.
Tools: Excelerator, Timeline, Demo II

Systems Analysis and Design II (CS 454)
Codes: U P R Y 8
Textbooks: *The Practical Guide to Structured Systems Design*
by Page-Jones, Meilir
Software Engineering
by Sommerville, Ian
Modern Structured Analysis
by Yourdon, E.
Tools: Excelerator, Timeline, Demo II

Additional Information:
Approximately 1/4 of Fundamentals of Computer Science deals with software engineering.

University of Colorado at Colorado Springs
Department of Computer Science
Colorado Springs, CO 80933-7150

Degrees: BS CS, MS CS, PHD

Contact: Dr. Robert W. Sebesta
Chair
(719) 593-3327

Update: April 1991

Courses: **Software Engineering I** (CS 330)
Codes: U P R T 5
Textbooks: *Software Engineering 2nd ed.*
by Pfleeger, Shari Lawrence

Software Engineering II (CS 530)
Codes: G P E A 2

Software Specification and Requirements Analysis (CS 531)
Codes: G P E A 1

Software Design (CS 532)
Codes: G P E A 1

Software Testing (CS 533)
Codes: G P E A 1

Software Maintenance (CS 534)
Codes: G P E A 2

Systems Engineering Management (CS 535)
Codes: G P E A 1

Topics and Readings in Software Engineering (CS 630)
Codes: G P E A 1

Additional Information:
Instructional labs with 3 Suns, 6 MicroVAXen, 2 VAXstations, 1 NeXT, 1 Intel Sugar Cube, 13 HP9000 workstations, 4 DECStations, and 30 HP Vectras.

University of Denver
Department of Mathematics and Computer Science
Program in Computer Science
Denver, CO 80208

Degrees: BS CS, MS CS, PHD

Contact: Prof. Michael S. Martin
(303) 871-3291
E-mail address: mmartin@cs.du.edu

Update: April 1991

Courses: **Software Engineering I, II, III** (COMP 4380, COMP 4381)
Codes: G P E Y 5
Tools: C, Pascal
VAX 11/750

Additional Information:
Software Engineering is required for some degree options.

Connecticut

Central Connecticut State University
School of Arts and Science
Department of Mathematics and Computer Science
Program in Computer Science
New Britain, CT 06050

Degrees: BS

Contact: Prof. George B. Miller
Chairman, Math and Computer Science
(203) 827-7334

Update: November 1987

Courses: **On Line, Real Time, and Time Sharing Systems** (CS 257)
Codes: G P E Y 2
Tools: Pascal

Introduction to Software Engineering (CS 410)
Codes: U P E Y 5
Textbooks: *Software Engineering with MODULA-2 and Ada*
by Wiener, Richard S. and Sincovec, Richard F.
Tools: VAX 8600
Pascal

Software Engineering II (CS 514)
Codes: G P R Y 2
Tools: Pascal

Computer System Software and Architecture I (CS 516)
Codes: G P R Y 2
Tools: Pascal

Computer System Software and Architecture II (CS 517)
Codes: G P R Y 2
Tools: Pascal

Hartford Graduate Center, The
School of Engineering and Science
Department of Computer and Information Science
Program in Computer and Information Science
Hartford, CT 06120

Degrees: MCS

Contact: Dr. Michael Danchak
Dean, School of Engineering and Science
(203) 548-2450

Update: April 1991

Courses: **Software Engineering I** (35677)
Codes: G P B T 5
Tools: Sun, PC, C, C++

Software Engineering II (35678)
Codes: G P E Y 5
Tools: Sun
C
UNIX Tools

Software Engineering Specification (66696)
Codes: G P E Y 0

User Interface Development (66834)
Codes: G P E Y 5
Textbooks: *Readings in Human Computer Interaction*
by Baecker & Buxton
Designing the User Interface
by Schneiderman
Tools: Sun, Macintosh
Sunview, Hypercard, Prototyper
C, Pascal, Hypertalk

District of Columbia

American University, The
Department of Computer Science and Information Systems
Washington, DC 20016

Degrees: BS CS, MA CS

Contact: Dr. Mehdi Owrang
Assistant Professor
(202) 885-3159

Update: January 1990

Courses: **Software Engineering** (40-345)
Codes: U P E Y 2
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: C, Pascal, Teamwork, IBM PC

Software Engineering (40-700)
Codes: G P E D 0
Textbooks: *Software Engineering: The Production of Quality Software*
by Pfleeger, Shari Lawrence

George Washington University, The
School of Engineering and Applied Science
Department of Electrical Engineering and Computer Science
Washington, DC 20052

Degrees: BS CS, BS CE, MS CS, SCD

Contact: Robert Harrington
Chairman
(202) 994-7181

Update: December 1990

Courses: **System Software and Software Engineering** (C.Sci. 151)
Codes: U P R T 6
Textbooks: *Software Engineering, 3rd ed.*
by Sommerville, Ian
Tools: HP Workstations
C, UNIX , CWSES, XDB, LINT

Computer Science 270 (C.Sci. 270)
Codes: G P E Y 2
Textbooks: *The Specification of Complex Systems*
by Cohen, B., W.T. Harwood, and M.I. Jackson
Program Construction and Verification
by Backhouse, R. C.
Tools: PC
Sun
Lex, Lint, Prolog, UNIX, Yacc

Additional Information:
System Software and Software Engineering is offered each fall.

Florida

Barry University
School of Computer Science
Department of Computer Science
Program in Computer Science
Miami, FL 33161

Degrees: BCS, MCS, MA, PHD CS

Contact: Dr. L. O. Stromberg
Chair, Department of Computer Science
(305) 899-3608
E-mail address: LOS@Barry.edu

Update: January 1990

Courses: **Applied Software Development Project** (CIS 512)
Codes: G P R T 4
Textbooks: *Structured Analysis Methods*
by Teague
Tools: Ada, C, Pascal
CASE, Focus
VAX 6310

Software Engineering (CS 640)
Codes: G P R A 2
Textbooks: *Tutorial on Software Design Techniques, 4th ed.*
by Freeman & Wasserman
Tools: Ada, C, Pascal
CASE, Focus
VAX 6310

Florida Atlantic University
College of Engineering
Department of Computer Science
Boca Raton, FL 33431-0991

Degrees: BS CS, MS CS, MCS, PHD

Contact: Dr. Neal S. Coulter
Chairman
(407) 367-3180
E-mail address: Neal@cs.fau.edu.
Network: Internet

Update: December 1990

Courses: **Principles of Software Design** (CIS 4610)
Codes: U P R T 2
Textbooks: *Programming in Ada*
by Barnes, John Gilbert Presslie
Software Engineering: A Programming Approach
by Bell, D., Morrey, I. and Pugh, J.
Tools: DEC Ada
VAX 8800, HP 900V/300 Series
Apollo DN3500, DN4500 Series

Software Engineering (CIS 6610)
Codes: G N R A 9
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: Ada, C++, Pascal
HP 900V/300 Series
PCs
VAX 6230, VAX 8800

Software Specification (COT 6930)
Codes: G P E D 0
Textbooks: *Software Engineering*
by Pressman, R. S.
Software Engineering Concepts
by Fairley, Richard E.
Science of Programming
by Gries, D.
Software System Testing & Quality Assurance
by Beizer, B.
Mythical Man-Month
by Brooks, Frederick P., Jr.
Managing Programming People
by Metzger, P. W.
Software Engineering
by Pressman, R.
Software Evolution
by Arthur, L.
Software Maintenance
by Martin, S., & C. McClure
The Specification of Complex Systems
by Harwood, W. T.

Software Creation and Maintenance (COT 6930)
Codes: G P E D 0
Textbooks: *Software Engineering*
by Pressman, R. S.
Software Engineering Concepts
by Fairley, Richard E.
Science of Programming
by Gries, D.
Software System Testing & Quality Assurance
by Beizer, B.
Mythical Man-Month
by Brooks, Frederick P., Jr.
Managing Programming People
by Metzger, P. W.
Software Engineering
by Pressman, R.
Software Evolution
by Arthur, L.
Software Maintenance
by Martin, S., & C. McClure
The Specification of Complex Systems
by Harwood, W. T.

Software Project Management (COT 6930)
Codes: G P E D 0
Textbooks: *Software Engineering*
by Pressman, R. S.
Software Engineering Concepts
by Fairley, Richard E.
Science of Programming
by Gries, D.

Software System Testing & Quality Assurance
by Beizer, B.
Mythical Man-Month
by Brooks, Frederick P., Jr.
Managing Programming People
by Metzger, P. W.
Software Engineering
by Pressman, R.
Software Evolution
by Arthur, L.
Software Maintenance
by Martin, S., & C. McClure
The Specification of Complex Systems
by Harwood, W. T.

Software Verification & Validation (COT 6930)
Codes: G P E D 0
Textbooks: *Software Engineering*
by Pressman, R. S.
Software Engineering Concepts
by Fairley, Richard E.
Science of Programming
by Gries, D.
Software System Testing & Quality Assurance
by Beizer, B.
Mythical Man-Month
by Brooks, Frederick P., Jr.
Managing Programming People
by Metzger, P. W.
Software Engineering
by Pressman, R.
Software Evolution
by Arthur, L.
Software Maintenance
by Martin, S., & C. McClure
The Specification of Complex Systems
by Harwood, W. T.

Software Design (COT 6930)
Codes: G P E D 0
Textbooks: *Software Engineering*
by Pressman, R. S.
Software Engineering Concepts
by Fairley, Richard E.
Science of Programming
by Gries, D.
Software System Testing & Quality Assurance
by Beizer, B.
Mythical Man-Month
by Brooks, Frederick P., Jr.
Managing Programming People
by Metzger, P. W.
Software Engineering
by Pressman
Software Evolution
by Arthur, L.
Software Maintenance
by Martin, S., & C. McClure
The Specification of Complex Systems
by Harwood, W. T.

Additional Information:

Software Engineering is offered 1-2 times per calendar year.
Principles of Software Design is offered 2-3 times per calendar year.

Nova University

Center for Computer and Information Sciences
Graduate Department of Computer Science
Program in Computer Science
Ft. Lauderdale, FL 33314

Degrees: BS CS, BS CE, BS CIS, MS CS, MS CIS, SCD

Contact: Dr. Edward R. Simco
Dean, Center for C.I.S.
(305) 475-7563
E-mail address: uucp.gatech!uflorida!novavax!ed

Update: January 1991

Courses: **Software Design** (CCS 370)
Codes: U P R X 0
Textbooks: *Software and Its Development*
by Fox, Joseph M.

Software Engineering (CIS 770)
Codes: G P R Y 2
Textbooks: *Software Reliability, Prediction, Application*
by Musa, J.
Tools: Ada, Concurrent C, Pascal, C++
3B2/500 (UNIX)
VAAX 785 (VMS)
VAX 8550 (ULTRIX)

Software Engineering Project (CIS 870)
Codes: G P R Y 2
Textbooks: *Designing the User Interface*
by Shneiderman, Ben
Tools: Ada, Concurrent C, Pascal, C++
3B2/500 (UNIX)
VAX 785 (VMS), VAX 8550 (ULTRIX)

Information and System Analysis (CISC 6040)
Codes: G N R X 0
Textbooks: *Systems Analysis and Design*
by Wetherbe, James C.

System Design Process (CISC 6070)
Codes: G N R X 0
Textbooks: *Decision Support & Expert Systems Management Support Systems*
by Turban, Efraim

Computer-Assisted Software Engineering (CISC 6072)
Codes: G P E X 0

Human Factors in Computing Systems (CISC 6081)
Codes: G N E X 0

Software Engineering (CISC 680)
Codes: G N R Y 4

Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Software Engineering
by Sommerville, Ian
Tools: Ada, Concurrent C, Pascal, C++
3B2/500 (UNIX)
VAX 785 (VMS), VAX 8550 (ULTRIX)

Software Engineering Implementation (CISC 682)
Codes: G P E Y 4
Textbooks: *Software Engineering Metrics and Models*
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.
Practical Handbook for Software Development
by Birrell and Ould
Tools: Ada, Concurrent C, Pascal, C++
3B2/500 (UNIX)
VAX 785 (VMS), VAX 8550 (ULTRIX)

Additional Information:
Software Engineering is offered twice a year.

University of Central Florida (Entry 1)
Department of Computer Engineering (CEBA 207)
Program in Computer Engineering
Orlando, FL 32816

Degrees: BS CE, MS, MS CE, PHD

Contact: Dr. Darrell G. Linton
Associate Professor of Engineering
(407) 275-2236

Update: September 1988

Courses: **Software Engineering I** (ECM 5806)
Codes: B P B Y 1
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Ada: An Introduction
by Saib, S.
Ada Language Reference Manual
(ANSI MIL-STD-1815A)
Tools: Gould 32/6780 (ISCS Ada translator)
IBM 4381 (Telesoft Ada compiler)
VAX 11/750 (Ada compiler)

Software Engineering II (ECM 6807)
Codes: G P E Y 1
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Ada: An Introduction
by Saib, S.
Ada Language Reference Manual
(ANSI MIL-STD-1815A)
Tools: Gould 32/6780 (ISCS Ada translator)
IBM 4381 (Telesoft Ada compiler)
VAX 11/750 (Ada compiler)

University of Central Florida (Entry 2)
College of Arts and Sciences
Department of Computer Science
Orlando, FL 32816

Degrees: MS CS, PHD CS

Contact: Dr. Darrell G. Linton
Associate Professor of Engineering
(407) 275-2236

Update: January 1986

Courses: **Software Engineering** (COP 5632)
Codes: G N E X 1

Software Tools (COP 5682)
Codes: G P E X 1

Additional Information:
A student's plan of study can be designated to emphasize any number of areas within Computer Science. Some sample plans of study are Architecture Emphasis, Operating Systems Emphasis, Artificial Intelligence Emphasis, Data Base Management Emphasis, and Software Tools Emphasis. These do not include all areas of emphasis, but show the flexibility of the Master of Science Program.

University of South Florida
College of Engineering
Department of Computer Science and Engineering
Tampa, FL 33620

Degrees: MS, PHD

Contact: Dr. M. R. Varanasi
Graduate Program Coordinator
(813) 974-3033

Update: January 1986

Courses: **Software Engineering I - Basic Principles and Formal Methods** (COP 6630)
Codes: G N E B 1

Software Engineering II - Tools and Applied Techniques (COP 6634)
Codes: G P E B 1

University of West Florida
Division of Computer Science
Pensacola, FL 32514-2542

Degrees: MS CS

Contact: Theodore F. Elbert
Professor and Division Head

Update: July 1990

Courses: **Embedded Programming in Ada**
Codes: G X X X 0

Computer Aided Software Engineering
Codes: G X X X 0

Software Engineering Management
Codes: G X X X 0

Software Engineering Project
Codes: G X X X 0

Software Engineering Economics
Codes: G X X X 0

Additional Information:
See the entry in Part II of this directory.

Georgia

Georgia Institute of Technology
Atlanta, GA

Degrees: MS SE

Contact: not yet designated

Update: November 1990

Courses: **Principles and Applications of Software Design**
Codes: G X X X 0

Specification of Software Systems
Codes: G X X X 0

Human Computer Interface
Codes: G X X X 0

Programming Language Design
Codes: G X X X 0

Foundations of Software Engineering
Codes: G X X X 0

Introduction to Software Engineering
Codes: X X X X 0

Software Generation, Test, and Maintenance
Codes: G X X X 0

Software Engineering Project I, II, and III
Codes: G X X X 0

Requirements Analysis and Prototyping
Codes: G X X X 0

Project Management
Codes: G X X X 0

Additional information:
For additional information, see the entry in Part II of this directory.

Hawaii

University of Hawaii at Hilo
Natural Sciences
Department of Computer Science and Engineering
Hilo, HI 96720

Degrees: BCS

Contact: Dr. Bill Chen
Professor
(808) 933-3388
E-mail address: chen@UHCCUX.UHCC.Hawaii.EDU
Network: Internet

Update: December 1990

Courses: **Systems Analysis and Design** (CS 360)
Codes: U P R Y 6
Textbooks: *Software Engineering: An Industrial Approach*
by Radice, R. and Phillips, R.
Software Engineering: A Beginners Guide
by Pressman, Roger S.
Software Engineering
by Sommerville, Ian
Software Engineering: A Practitioner's Approach
by Pressman, Roger S.
Modern Structured Analysis
by Yourdon, Edward N.
Systems Analysis and Design
by Kendall, J. and Kendall, K.
Selected readings
Tools: Excelerator
IBM PC
Macintosh
Turbo Pascal
MacBubbles

Database Management System Design (CS 425)
Codes: U P E D 1
Textbooks: *Understanding Database Management Systems*
by Vasta, J.
Principles of Database Systems
by Ullman, J.
Teaching a Project-Intensive Introduction to Software Engineering
by Tomayko, James
Tools: IBM PC
Turbo Pascal

Compiler Theory (CS 435)
Codes: U P E B 5
Textbooks: *Crafting a Compiler*
by Fischer, C. and LeBlanc, R., Jr.
Tools: IBM PC
Janus/Ada
Ada/CS
Turbo Pascal

Software Engineering Methodologies (CS 465)

Codes: U P E Y 1

Textbooks: *Software Engineering*
by Sommerville, Ian
Software Engineering: A Practitioner's Approach
by Pressman, Roger S.
Modern Structured Analysis
by Yourdon, Edward N.
Teaching a Project-Intensive Introduction to Software Engineering
by Tomayko, James

Tools: Excelerator
IBM PC
Macintosh

Idaho

University of Idaho
College of Engineering
Department of Computer Science
Moscow, ID 83843

Degrees: BS CS, MS CS

Contact: Dr. John Dickinson
Chairman
(208) 885-6589
E-mail address: JOHND@cs.uidaho.edu
Network: Internet

Update: April 1991

Courses: **Foundation of Modern Programming** (CS 404/504)
Codes: B P E B 0
Textbooks: *Milestones in Software Evolution*
by Owens, P. W. and Lewis, T. G.

Software Quality Assurance (CS 484/584)
Codes: B P E Y 4
Textbooks: *Software Quality Engineering*
by Deutsch and Willis
Software Testing Techniques
by Beizer
Tools: Turbo Pascal
IBM PC

Software Engineering (CS 410/510)
Codes: B P E Y 7
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: HP workstations
IEW, TEAMWORK

CS Design I (CS 480)
Codes: U P R T 7
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: HP workstations, IBM 4381
IBM PC

CS Design II (CS 481)
Codes: U P R T 7
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: HP workstations, IBM 4381
IBM PC

Software Metrics (CS 582)
Codes: G P R B 4
Textbooks: *Software Engineering Metrics and Models*
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.
Controlling Software Projects
by DeMarco
Tools: Metric extraction tools, Cost estimation tools

Software Process Management (CS 404/504)
Codes: B P E Y 1
Textbooks: *Software Process Management*
by Humphrey, Watts S.

Additional Information:
CS Design I is an individual project with full documentation.
CS Design II is a team project with full documentation.

Illinois

Bradley University
College of Liberal Arts and Sciences
Department of Computer Science
Peoria, IL 61625

Degrees: BS, MS

Contact: Prof. John Fendrich
Chairman
(309) 677-2460
E-mail address: jwf@bradley.edu

Update: January 1991

Courses: **Structured Programming Using C** (CS 221)
Codes: U P E O 5
Textbooks: *Learning to Program in C*
by Plum, Thomas
Efficient C
by Plum, Thomas and Brodie, Jim
Reliable Data Structures in C
by Plum, Thomas
Tools: C
AT&T 3B series
VAX

Systems Analysis and Design (System Specification and Development) (CS 403)
Codes: U P E O 8
Textbooks: *Structured Analysis and System Specification*
by DeMarco, Tom
Tools: Personal computers
Text processing system, Word processing system

Introduction to Software Engineering (CS 406)
Codes: U P E Y 2

Programming Methodology (CS 503)
Codes: B P E O 6
Textbooks: *The Science of Programming*
by Gries, David
Discipline of Programming
by Dijkstra, Edsger Wybe

Systems Analysis and Design (System Specification and Development) (CS 608)
Codes: G P E O 8
Textbooks: *Structured Analysis and System Specification*
by DeMarco, Tom
Tools: Personal computers
Text processing system, Word processing system

Software Engineering I (CS 615)
Codes: G P E Y 5
Textbooks: *Software Engineering Metrics and Models*
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.
Tools: SPSS
Cyber

Software Engineering II (CS 616)
Codes: G P E Y 5
Textbooks: *Handbook of Walkthroughs, Inspections, and Technical Reviews*
by Freedman, Daniel P. and Weinberg, Gerald M.
Software Testing Techniques
by Beizer, Boris

Additional Information:
Systems Analysis and Design (System Specification and Development), CS 403 and CS 608, is offered at least twice a year. Programming Methodology and Structured Programming Using C are offered twice a year. Plans call for a course in Ada-based system design as well as a course in Ada-based software engineering. A course is planned in parallel processing and software engineering.

Sangamon State University
School of Liberal Arts and Sciences
Department of Mathematical Systems
Springfield, IL 62708

Degrees: BA CS, MS CS

Contact: Prof. Gary Lasby
Convener
(217) 786-6770

Update: January 1986

Courses: **Introduction to Software Engineering** (MSY 478)
Codes: U P E Y 1

Software Engineering (MSY 578)
Codes: G P E Y 1

Additional Information:
Concepts of software engineering as embodied in good programming styles are stressed in all our courses.

University of Illinois at Chicago
College of Engineering
Department of Electrical Engineering and Computer Science
Program in Software Engineering
Chicago, IL 60680

Degrees: BS EE, BS CE, MS EE, MS CS, PHD EE, PHD CS

Contact: Dr. Carl K. Chang
Associate Professor
(312) 996-4860
E-mail address: ckchang@uicbert.eecs.uic.edu
Network: CSNET

Update: April 1991

Courses: **Introduction to Software Engineering** (EECS 274)
Codes: U P R O 8
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: UNIX BSD 4.2 C
VAX 11/750

Advanced Topics in Software Engineering (EECS 481)
Codes: G P E Y 5
Textbooks: *Software Specification and Techniques*
by Gehani, N. and McGettrick, A.D.
Tools: Sun 3 and Sun SPARC Workstations
UNIX BSD 4.2 C
Petri Net Tools

Software Engineering Environments (EECS 482)
Codes: G P E Y 5
Textbooks: *Software Engineering Environments*
by Charette, Robert
Tools: Sun 3 and Sun SPARC Workstations
UNIX BSD 4.2 C
Eiffel Environment

Additional Information:
Introduction to Software Engineering is offered twice a year.
Dr. Carl Chang is currently in charge of the Software Engineering Laboratory for this department.

DePaul University
School of Liberal Arts and Sciences
Department of Computer Science and Information Systems
Chicago, IL 60604

Degrees: BS CS, MS CS, PHD

Contact: Dr. Helmut P. Epp
Department Chairman
(312) 341-8366

Update: April 1991

Courses: **Programming in Ada** (230)
Codes: U N E Y 3
Textbooks: *Software Engineering with Ada*
by Booch, Grady
Tools: TeleSoft
VAX 6410
Ada

Software Engineering I (365)
Codes: U P R O 3
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: TeleSoft
VAX 6410
Ada

Software Engineering II (366)
Codes: U P X Y 1

Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: TeleSoft
VAX 6410
Ada

Software Measurement (368)
Codes: U P E Y 2
Textbooks: *Software Engineering Metrics and Models*
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.

Software Projects (394)
Codes: U P R O 6
Tools: DEC
VAX 6410
C

Software Engineering I (465)
Codes: G P R O 3
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: TeleSoft
VAX 6410
Ada

Software Engineering II (466)
Codes: G P X Y 1
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: TeleSoft
VAX 6410
Ada

Software Reliability (467)
Codes: G P E Y 1
Textbooks: *Software Reliability*
by Musa, Iannino, and Okumoto

Software Measurement (468)
Codes: G P E Y 2
Textbooks: *Software Engineering Metrics and Models*
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.

Additional Information:
Software Engineering is offered twice a year
and Software Projects is offered three times a year.

Southern Illinois University at Edwardsville
School of Sciences
Department of Computer Science
Edwardsville, IL 62026

Degrees: BA, BS CS

Contact: Dr. J. R. Hattemer
Chair
(618) 692-2386

Update: September 1988

Courses: **Software Design and Development** (CS 424)
Codes: B P E Y 5
Textbooks: *Software Engineering: Planning for Change*
by Lamb, David

Topics in Software Engineering (CS 524)
Codes: G N E O 2
Tools: Ada
MicroVAX 2

Additional Information:
Topics in Software Engineering is offered occasionally.

University of Illinois at Urbana-Champaign
Department of Computer Science
Urbana, IL 61801

Degrees: MS CS, MCS, PHD

Contact: Dr. Samuel N. Kamin
Associate Professor
(217) 333-6769
E-mail address: kamin@a.CS.UIUC.EDU

Update: January 1989

Courses: **Operating Systems** (CS 323)
Codes: B P E O 16
Textbooks: *An Introduction to Operating Systems*
by Deitel, H. M.
Tools: Path Pascal
IBM 9000

Software Engineering (CS 327)
Codes: B P E Y 6
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Software Engineering Concepts
by Fairley, Richard E.
Tools: C, Lisp, Pascal
IBM PC/RT

Additional Information:
Operating Systems is offered twice a year.

Indiana

Ball State University
College of Sciences and Humanities
Department of Computer Science
Program in Computer Science
Muncie, IN 47306

Degrees: BS, MA, MS

Contact: Dr. Wayne M. Zage
Professor
(317) 285-8664

Update: May 1991

Courses: **Software Engineering I (Systems Analysis)** (497)
Codes: U P R O 11
Textbooks: *Software Engineering: The Production of Quality Software, 2nd ed.*
by Pfleeger, Shari Lawrence
The Practical Guide to Structured Systems Design
by Meilir Page-Jones
Standards Manual for Software Engineering I
by Zage, W.M.
Tools: cost estimation , documentation, and presentation graphic tools
CASE (Design Aid, Digital's CASE environment)
project management and UNIX tools
networked DEC, Sun, and Tektronix graphic workstations
IBM PC and Macintosh laboratories
VAX 8650/6350

Software Engineering II (Design and Development) (498)
Codes: U P R O 5
Textbooks: *The Practical Guide to Structured System Design*
by Meilir Page-Jones
Software Engineering: The Production of Quality Software
by Pfleeger, Shari Lawrence
Standards Manual for Software Engineering II
by Zage, W.M.
Selected readings
Tools: GUI development, software metric, cost estimation , documentation, presentation graphic ,CASE (Design Aid, Digital's CASE environment), project management ,and UNIX tools.
networked DEC, Sun, and Tektronix graphic workstations
IBM PC and Macintosh laboratories
VAX 8650/6350
expert systems shells

Principles of Software Engineering (680)
Codes: G N R Y 4
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tools: GUI development, software metric, cost estimation, documentation. presentation graphic, CASE (Design Aid, Digital's CASE environment), project management, and UNIX tools, networked DEC, Sun, and Tektronix graphic workstations, IBM PC and Macintosh laboratories, VAX 8650/6350, expert systems shells

Additional Information:

Software Engineering I (Systems Analysis) and Software Engineering II (Design and Development) are offered once per year. Seminars on current software engineering topics are regularly offered. Recent topics such as object-oriented software development, a survey of CASE Tools and Software Metrics have been offered. The software projects from CS 497-498 are actual projects developed for a client partner in industry. Each is approved by the professor.

Indiana University
College of Arts and Sciences
Computer Science Department
Bloomington, IN 47405

Degrees: BA, BS, MS, PHD

Contact: Prof. Edward L. Robertson
Professor
(812) 335-4954
E-mail address: elr@iuvax.cs.indiana.edu

Update: September 1988

Courses: **Information Systems I** (C445)
Codes: B P O Y 7
Textbooks: *An Introduction to Database Systems*
by Date, Chris J.
Database System Concepts
by Korth, Henry F. and Silberschatz, Abraham
Tools and Techniques for Structured Systems Analysis and Design
by Davis, William S.
Software Engineering
by Sommerville, Ian
Tools: VAX (ULTRIX)
Xerox workstations
C, FORTRAN, Ingres, Modula-2, dBase III plus, rBase 5000

Information Systems II (C446)
Codes: B P O Y 7
Textbooks: *An Introduction to Database Systems*
by Date, Chris J.
Database System Concepts
by Korth, Henry F. and Silberschatz, Abraham
Tools and Techniques for Structured Systems Analysis and Design
by Davis, William S.
Software Engineering
by Sommerville, Ian
Tools: VAX (ULTRIX)
Xerox workstations
C, FORTRAN, Ingres, Modula-2, dBase III plus, rBase 5000

Software Engineering Management (C607)
Codes: G P E Y 5
Textbooks: *Software Configuration Management*
by Babich, Wayne A.
Advanced Course on Software Engineering
by Bauer, Friedrich Ludwig
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.

Software Engineering Economics
by Boehm, Barry W.
Tools and Techniques for Structured Systems Analysis and Design
by Davis, William S.
Concise Notes on Software Engineering
by DeMarco, Tom
Software Engineering Concepts
by Fairley, Richard E.
Current Practices in Software Development: A Guide to Successful Systems
by King, David
Software Reliability
by Kopetz, H.
Managing a Programming Project
by Metzger, Philip W.
In Search of Excellence: Lessons From America's Best-Run Companies
by Peters, Thomas and Waterman, Robert
Software Engineering: Design, Reliability, and Management
by Shooman, Martin L.
Software Engineering
by Sommerville, Ian
The Psychology of Computer Programming
by Weinberg, G.M.
Software Psychology: Human Factors in Computer and Information Systems
by Shneiderman, Ben

Software Engineering Management (C608)
Codes: G P E Y 5
Textbooks: *Software Configuration Management*
by Babich, Wayne A.
Advanced Course on Software Engineering
by Bauer, Friedrich Ludwig
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.
Software Engineering Economics
by Boehm, Barry W.
Tools and Techniques for Structured Systems Analysis and Design
by Davis, William S.
Concise Notes on Software Engineering
by DeMarco, Tom
Software Engineering Concepts
by Fairley, Richard E.
Current Practices in Software Development: A Guide to Successful Systems
by King, David
Software Reliability
by Kopetz, H.
Managing a Programming Project
by Metzger, Philip W.
In Search of Excellence: Lessons From America's Best-Run Companies
by Peters, Thomas and Waterman, Robert
Software Psychology: Human Factors in Computer and Information Systems
by Shneiderman, Ben
Software Engineering: Design, Reliability, and Management
by Shooman, Martin L.
Software Engineering
by Sommerville, Ian
The Psychology of Computer Programming
by Weinberg, G.M.

Additional Information:
Information Systems I and II are one of several choices for BA/BS.
A "Professional Practice" course may satisfy the BA/BS requirement with suitable individual project and paper.

University of Evansville
School of Engineering and Computer Science
Department of Computing Science
Evansville, IN 47714

Degrees: BA, BS, MS CS, MS CIS

Contact: Dr. William Mitchell
Chairman
(812) 479-2650

Update: January 1986

Courses: **Software Engineering** (CS 325)
Codes: U P R O 1

Software Engineering Project (CS 494/495/497)
Codes: U P R T 1

Software Engineering (CS 521)
Codes: G N B O 1
Textbooks: *Software Engineering: Design, Reliability, and Management*
by Shooman, Martin L.

Additional Information:
Software Engineering (undergraduate) and Software Engineering (graduate) are offered twice a year.

Purdue University
School of Science
Department of Computer Science
West Lafayette, IN 47907

Degrees: BS, MS, PHD

Contact: Dr. H. E. Dunsmore
Associate Professor
(317) 494-1996
E-mail address: bxd@purdue.edu

Update: January 1989

Courses: **Software Engineering** (CS 404)
Codes: U P E T 1
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: DEC VAX 11/780 (UNIX OS)

Information Systems (CS 442)
Codes: U P E T 1
Textbooks: *Management Info. Systems: Conceptual Foundations, Structure, and Development*
by Davis, Gordon Bitter and Olson, Margrethe H.
Tools: DEC VAX 11/780 (UNIX OS)

Software Metrics (CS 510)
Codes: G P E Y 1
Textbooks: *Software Engineering Metrics and Models*
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.
Tools: DEC VAX 11/780 (UNIX OS)

Rose-Hulman Institute of Technology
Department of Computer Science
Terre Haute, IN 47803

Degrees: BS CS

Contact: Prof. Frank H. Young
Chairman
(812) 877-8401
E-mail address: young@rosevc.rose-hulman.edu
Network: BITNET

Update: April 1991

Courses: **Software Systems Documentation** (CS 405)
Codes: U P R Y 5

Software Engineering (CS 414)
Codes: U P R Y 6
Textbooks: *The Mythical Man-Month: Essays on Software Engineering*
by Brooks, Frederick P., Jr.
Software Engineering, 2nd ed.
by Pressman, Roger S.
Tools: Ada, Pascal, C
DEC VAX 6320 (VMS), Sun Workstations, NEXT Workstations

Senior Computer Science Project I & II (CS 497/CS 498)
Codes: U P R Y 3

Iowa

Iowa State University
School of Sciences and Humanities
Department of Computer Science
Program in Computer Science
Ames, IA 50011

Degrees: BS, MS, PHD

Contact: Prof. Arthur E. Oldehoeft
Chair
(515) 254-4377

Update: October 1988

Courses: **Software Engineering** (CS 411)
Codes: U N E O 6
Textbooks: *Software Engineering: Design, Reliability, and Management*
by Shooman, Martin L.
Tools: HP 9000 Model 350
Ada

Software Engineering (CS 512)
Codes: G N E Y 3

Additional Information:
Software Engineering is offered twice a year.

University of Iowa
College of Liberal Arts
Department of Computer Science
Iowa City, IA 52242

Degrees: BA CS, BS CS, MA CS, PHD CS

Contact: William F. Decker
Asst. Research Scientist
(319) 335-0747
E-mail address: decker@cs.uiowa.edu
Network: Internet

Update: March 1990

Courses: **Software Engineering** (22c:115)
Codes: G P E T 6
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: Students' choice
Encore Multimax
IBM PC
Macintosh

Kansas

Wichita State University, The
College of Liberal Arts and Sciences
Department of Computer Science
Wichita, KS 67208

Degrees: BA, BS, MS, MCS

Contact: Mary Edgington
Chair

Update: December 1989

Courses: **Introduction to Software Engineering** (CS 580)
Codes: B P E T 8
Textbooks: *Software Engineering, 3rd ed.*
by Sommerville, I.
Tools: Ada, Pascal
IBM 3031D
VAX 750

Ada and Software Engineering (CS 611)
Codes: G P E Y 4
Textbooks: *Software Engineering with Ada*
by Booch, Grady
Tools: ALSYS
IBM at CLONE
Ada

Applications Systems Analysis (CS 684)
Codes: G P E B 7

Requirements Specification and Design (CS 881)
Codes: G P R B 1
Textbooks: *Selected readings*
Tools: VAX 8300

Software Testing and Reliability (CS 882)
Codes: G P R Y 7
Tools: Ada, Pascal
AX

Software Project Management (CS 886)
Codes: G P E B 2
Textbooks: *The Mythical Man-Month: Essays on Software Engineering*
by Brooks, Frederick P., Jr.
Selected readings
Managing Programming People
by Metzger, P.W.

Topics in Software Engineering (CS 889)
Codes: G P E Y 2
Textbooks: *Varies by topic*
Tools: Varies by topic

Additional Information:

Software Engineering MCS emphasis was established in 1988. Its requirements are: CS 580, 881, 882, internship, and practicum. Electives are CS 611, 684, 886, and special topics. The special topics offered in 1987-88 are: Software Configuration Management and Software Project Management. The special topic in 1989-90 was Software Reuse.

Kentucky

Northern Kentucky University
Department of Mathematics and Computer Science
Highland Heights, KY 41076

Degrees: BS CS

Contact: Dr. Charles E. Frank
Coordinator
(606) 572-5320
E-mail address: frank@nkuvax
Network: BITNET

Update: February 1990

Courses: **Software Engineering** (CSC 440)
Codes: U P R T 5
Textbooks: *Software Engineering: A Beginner's Guide*
by Pressman, Roger S.
Tools: C, Modula-2, dBASE III+
Sun, PC

University of Louisville
J.B. Speed Scientific School
Information Science & Data Processing
Louisville, KY 40292

Degrees: BS CIS

Contact: Dr. Ronald A. Mann
Professor and Chair
(502) 588-7520
E-mail address: RAMANN02@ULKYVX
Network: BITNET

Update: February 1990

Courses: **Special Topics: Programming in the Large** (ISDP 500)
Codes: U P E B 2
Textbooks: *Software Components with Ada*
by Booch, Grady
Programming in Ada
by Barnes, John Gilbert Presslie
Software Engineering with Ada
by Booch, Grady
Tools: IBM PS/2 Model 50, VAX, Ada

Analysis & Design of Informations Systems (ISDP 510)
Codes: U P R Y 4
Textbooks: *Systems Analysis & Design, 2nd ed.*
by Whitten and Bentley
Structured Techniques
by Martin and McClure
Tools: Excelerator, IBM PS/2 Model 50

Western Kentucky University
Ogden College of Science, Technology and Health
Department of Computer Science
Bowling Green, KY 42101

Degrees: BS CS, MS CS

Contact: Dr. Kenneth Modesitt
Professor and Department Head
(502) 745-4642

Update: April 1991

Courses: **Programming Languages Sciences: Ada** (CS 245)
Codes: U P E Y 3
Textbooks: *Ada: An Introduction*
by Saib, S.
Tools: Ada
C, Fortran
VAX, PCs

Software Engineering I (CS 360)
Codes: U P R T 0
Textbooks: *Software Engineering: A Practitioner's Approach, 2nd ed.*
by Pressman, Roger S.
Tools: CASE Tools, Excelerator, DesignAid, MacBubbles, Anatool
VAX, IBM PCs, Macintosh
1st Class

Software Engineering II (CS 460)
Codes: B P E B 0
Textbooks: *Software Engineering: Concepts and Management*
by Macro, A.
Tools: VAX, IBM PCs, Macintosh
CASE Tools
Software metrics
Profile Analyzers

Louisiana

Louisiana State University at Shreveport
College of Science
Department of Computer Science
Shreveport, LA 71115

Degrees: BS CS, MS CE

Contact: Dr. Dave Foley
Associate Professor of Computer Science
(318) 797-5184

Update: February 1990

Courses: **Software Engineering Project** (CSC 480/481)
Codes: U P R T 5
Textbooks: *Software Engineering, 3rd ed.*
by Sommerville, Ian

Louisiana Tech University
Department of Computer Science
Ruston, LA 71272

Degrees: BS, MS

Contact: *Prof. Margaret Schaar*
Assistant Professor
(318) 257-2298

Update: September 1988

Courses: **Structured Design** (CS 203)
Codes: U P R O 4
Textbooks: *Software Engineering: The Production of Quality Software*
by Pfleeger, Shari Lawrence
Tools: Sun, IBM PC
Ada, C

Software Methodology (CS 460)
Codes: U P E Y 5
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: Sun, IBM PC
Ada, C

System Design (CS 540)
Codes: G P E Y 4
Tools: Sun, IBM PC
Ada, C

Additional Information:
Structured Design is offered twice a year.

Northeast Louisiana University
Department of Computer Science
Monroe, LA 71209-0575

Degrees: BS CS

Contact: Dr. Alan Yaung
Assistant Professor
(318) 342-2186
E-mail address: CNYAUNG@NLU.EDU
Network: CSNET

Update: February 1990

Courses: **Software Engineering** (CS 460)
Codes: U P R Y 4
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tools: PC, VAX 11/780, Macintosh
Pascal

University of Southwestern Louisiana
The Center for Advanced Computer Studies
Programs in Computer Science and Engineering
Lafayette, LA 70504-4330

Degrees: BS CS, MA CS, PHD CS

Contact: Dr. Steve Landry
Associate Director
(318) 231-6768
E-mail address: spl@cacs-usl.edu
Network: Internet

Update: February 1990

Courses: **Introduction to Software Methodology** (CMPS 453)
Codes: B P E Y 4
Textbooks: *Software Engineering - A Practitioner's Approach*
by Pressman, Roger S.
Elements of Programming Style
by Keringhan, Brian W. & Plaugher
Tools: UNIX, make, RCS, shell-script, awk, profile

Software Methodology (CMPS 553)
Codes: G P E Y 5
Textbooks: *Software Engineering*
by Sommerville, Ian
Software Engineering
by Sommerville, Ian
The Practical Guide to Structured Systems Design
by Meiler
Software Engineering, 2nd Ed.
by Pressman, Roger S.

Advanced Software Methodology (CMPS 653)
Codes: G P E D 5
Textbooks: *Selected readings*

Maryland

University of Maryland
Division of Computer, Mathematical, and Physical Sciences
Department of Computer Science
College Park, MD 20742

Degrees: BS, MS, PHD

Contact: Dr. H. Dieter Rombach
Assistant Professor
(301) 405-2707
E-mail address: dieter@cs.umd.edu
Network: Internet

Update: November 1990

Courses:

Computer Science I (CMSC 112)
Codes: U N R T 6
Textbooks: *PascAlgorithms*
by Reingold and Reingold
Tools: VAX/UNIX
VAX Pascal Compiler

Computer Science II (CMSC 113)
Codes: U P R T 6
Tools: UNIX workstations
Pascal

Introduction to AI Programming (CMSC 421)
Codes: U N E Y 6
Textbooks: *Artificial Intelligence Programming*
by Charniak, Riesbeck, McDemott, and Meehan
Programming in Prolog
by Clocksin, W. F. and Mellish, C. S.
Tools: MicroVAX
LISP, Prolog

Software Design and Development (CMSC 435)
Codes: G P E T 7
Textbooks: *Software Engineering: Methods and Management*
by Von Mayrhauser, Anneliese
Software Engineering: Planning for Change
by Lamb, David
Programming in Ada
by Barnes, John Gilbert Presslie
Tools: VAX/UNIX
C, Pascal
Verdix Ada
IDE's Software Through Pictures

A Quantitative Approach to Software Management and Engineering (CMSC 735)
Codes: G P E Y 2
Textbooks: *IEEE Tutorial on Models and Metrics for Software Management and Engineering*
by Basili, Victor R.
Software Engineering Metrics and Models
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.

Additional Information:

The department offers other software engineering related courses, among them: Language Translation (CMSC 430), Theory of Programming Languages (CMSC 630), as well as a variety of software engineering related seminars.

Massachusetts

Boston University
College of Engineering
Department of Electrical, Computer, and Systems Engineering
Programs in Systems Engineering, Computer Engineering, Electrical Engineering
Boston, MA 02215

Degrees: MS EE, MS CE, PHD CE

Contact: Dr. John W. Brackett
Coordinator, Soft. Eng. Graduate Program
(617) 353-5898
E-mail address: jwb@buenga.bu.edu

Update: April 1991

Courses: **Advanced Data Structures** (SC 504)
Codes: B N B Y 2
Textbooks: *Selected readings*
Tools: DEC VAX Ada

Software System Design (SC 511)
Codes: U P R Y 5
Textbooks: *Strategies for Real-Time System Specification*
by Hatley, Derek
Software Engineering: A Practitioner's Approach
by Pressman, Roger S.
Tools: DEC VAX Ada
Workstations and PC using analysis and design support tools

Applications of Formal Methods (SC 517)
Codes: G N R Y 2
Textbooks: *The Science of Programming*
by Gries, David
Software Specification Techniques
by Gehani, Narain and McGettrick, Andrew D.

Software Project Management (SC 518)
Codes: G P R Y 3
Textbooks: *IEEE Tutorial on Software Project Management, 3rd ed.*
by Thayer, R., Editor
Software Engineering Economics
by Boehm, Barry W.
Tools: IBM PC

The Computer as a System Component (SC 714)
Codes: G P R Y 2
Textbooks: *Selected readings*
Tools: DEC VAX Ada

Software Engineering Project (SC 912)
Codes: G P R Y 5
Tools: DEC VAX Ada
IBM PC
Workstations
Ada predominantly, but depends on project

Additional Information:

We also teach two undergraduate courses, SC 465 and EK 215, that use the Ada programming language to teach software engineering concepts. All new courses (SC 504, SC 517, SC 518) were effective as of January 1988. The master's program in software engineering is MS SYSE with a Software Engineering option. The PHD with research specialization in Software Engineering is offered, but the degree is officially called "PHD in Engineering." In Software Project Management (SC 518), we use Super Project on IBM PC, COSTAR (a cost estimation tool on the IBM PC).

Massachusetts Institute of Technology

School of Engineering
Department of Electrical Engineering and Computer Science
Program in Computer Science
Cambridge, MA 02139

Degrees: BS, MS, PHD

Contact: Prof. F. J. Corbato
Associate Head for Comp. Sci. and Eng.
(617) 253-6001

Update: September 1988

Courses: **Computer Language Engineering** (6.035)

Codes: U P O Y 6
Textbooks: *Compilers, Principles, Techniques, and Tools*
by Aho, Alfred V., Sethi, Ravi, and Ullman, Jeffrey D.
Tools: CLU
DEC 20

Laboratory in Software Engineering (6.170)

Codes: U P R T 1
Textbooks: *Abstraction and Specification in Program Development*
by Liskov, Barbara and Guttag, John
Tools: CLU
DEC 20

Additional Information:

Students must take either Computer Language Engineering or an operating systems course.

Northeastern University (Entry 1)

College of Computer Science
Industrial Engineering and Information Systems
Boston, MA 02115

Degrees: BS, BA, MS, PHD

Contact: Prof. Richard Rasala
Director Underg. Studies
(617) 437-2462
E-mail address: rasala@corwin.ccs.northeastern.edu

Update: December 1990

Courses: **Software Design and Development** (COM 1205)
Codes: U P R A 7
Textbooks: *Software Engineering*
by Schach, Stephen R.
Tools: Think Pascal, Think C, or Sun C
Macintosh SE and Sun workstations
Hypercard
Software Through Pictures

The Software Life Cycle (COM 3205)
Codes: G N E Y 6
Textbooks: *Software Engineering Concepts and Management*
by Macro, Allen
Software Engineering with Abstractions
by Berzins and Lugi
Tools: Sun workstations, PC, Macintosh SE
C, Lisp, Pascal
Software Through Pictures, Teamwork

Software Specification, Design, & Maintenance (COM 3210)
Codes: G P E Y 1
Textbooks: *Abstraction and Specification in Program Development*
by Liskov and Guttag
Tools: Sun workstations, PC, Macintosh SE
C, Lisp, Pascal
Software Through Pictures, Teamwork

Software Testing, Verification and Validation (COM 3220)
Codes: G P E Y 1
Textbooks: *Software Engineering Metrics and Models*
by Conte, Dunsmore, Shen
Tools: Sun workstations, PC, Macintosh SE
C, Lisp, Pascal
Sun Workstations, C

Northeastern University (Entry 2)
College of Engineering
Department of Industrial Engineering and Information Systems
Program in Engineering Software Design
Boston, MA 02115

Degrees: MS CE

Contact: Prof. Mieczyslaw M. Kokar
Program Coordinator
(617) 437-4849
E-mail address: Kokar@Northeastern.edu

Update: December 1990

Courses: **Engineering Project Management** (IIS 3217)
Codes: G N B B 5
Textbooks: *Project Management*
by Meredith, J.R. and Mantel S.J.
Tools: Project Workbench for the IBM PC

Programming Languages for Software Engineering (IIS 3637)
Codes: G P B A 1
Textbooks: *Programming Languages: Concepts & Constructs*
by Sethi

Tools: Sun Workstations, C compiler, g++
MIT Scheme interpreter, dbx too & gdb (debuggers)

Software Engineering I (IIS 3637)
Codes: G P R B 4
Textbooks: *Software Engineering: A Practitioner's Approach, 2nd ed.*
by Pressman, Roger S.
Software Engineering, 2nd ed.
by Sommerville, Ian
Tools: Excelerator
IBM PC

Software Engineering Project (IIS 3651)
Codes: G P R Y 4
Tools: Sun workstations
UNIX, C
SCCS, Excelerator

University of Massachusetts (Entry 1)
School of Engineering
Department of Electrical and Computer Engineering
Program in Electrical Engineering
Amherst, MA 01003

Degrees: BS CE, BS EE, MS, PHD

Contact: Jan Cuny
(413) 548-9120

Update: October 1988

Courses: **Design and Analysis of Computer Algorithms** (ECE 672)
Codes: G P E D 1
Textbooks: *The Design and Analysis of Computer Algorithms*
by Aho, Alfred V., Hopcroft, John E. and Ullman, Jeffrey D.
Tools: Data General Eagle

Performance Evaluations (ECE 673)
Codes: G P E Y 1

University of Massachusetts (Entry 2)
Department of Computer and Information Sciences (COINS)
Amherst, MA 01003

Degrees: BS CS, MS CS, PHD

Contact: Jack Wileden
Professor
(413) 545-0289
E-mail address: Jack@cs.umass.edu
Network: Internet

Update: April 1991

Courses: **Programming Methodology** (COINS 320)
Codes: U P R T 11
Textbooks: *Software Engineering with Student Project Guidance*
by Mynatt

Programming in Ada
by Barnes
Tools: VAX Ada

Software Engineering (COINS 520)
Codes: B P E Y 6
Textbooks: *Selected readings*
Software Engineering (3rd Ed)
by Sommerville, Ian

Software Engineering Practicum (COINS 620)
Codes: G P E B 5
Textbooks: *Selected Readings*
Tools: students' choice

University of Massachusetts at Boston
Department of Mathematics and Computer Science
M.S. Program in Computer Science
Boston, MA 02125

Degrees: BS, MS

Contact: Dr. Dan Simovici
Director of the Graduate Program
(617) 929-7966

Update: January 1986

Courses: **Software Engineering I** (650)
Codes: G P R Y 1
Tools: UNIX on VAX 750

Software Engineering Laboratory I (651)
Codes: G P R Y 1
Tools: UNIX on VAX 750

Software Engineering II (660)
Codes: G P R Y 1
Tools: UNIX on VAX 750

Software Engineering Laboratory II (661)
Codes: G P R Y 1
Tools: UNIX on VAX 750

Worcester Polytechnic Institute
Department of Computer Science
Program in Computer Science
Worcester, MA 01609

Degrees: BS CS, MS CS, PHD CS, BS EE, MS EE, PHD EE

Contact: Dr. Robert E. Kinicki
Chairman
(508) 831-5357
E-mail address: Kinicki@wpi-cs.wpi.edu
Network: CSNET

Update: December 1990

Courses: **Human Computer Interaction** (CS 3041)
Codes: U P O Y 5
Textbooks: *Designing the User Interface*
by Shneiderman, Ben
An Introduction to Human Computer Interaction
by Booth, Paul
Tools: Pascal or C

Software Engineering (CS 3733)
Codes: U P O Y 5
Textbooks: *Software Engineering - A Practitioner's Approach*
by Pressman, Roger S.
Tools: PC, Sun, Macintosh, Encore
Pascal, C
Teamwork
Software Through Pictures

Database Design (CS 4431)
Codes: U P E B 5
Textbooks: *Fundamentals of Database Systems*
by Elmasvi and Navathe
Tools: SQL, Entity Relational Model

Software Engineering (CS 541)
Codes: G P O Y 5
Textbooks: *Selected readings*
Tools: Mainframes and PCs
Pascal, C, or Ada
Teamwork

Database Management Systems (CS 542)
Codes: G P E Y 5
Textbooks: *Database and Knowledge Based Systems*
by Ullman
Tools: SQL, Entity Relational Model

Michigan

Andrews University
Department of Computer Information Science
Berrien Springs, MI 49104-0360

Degrees: MS SE

Contact: Dr. Daniel R. Bidwell
Graduate Director for Computer Science
(616) 471-3425
E-mail address: bidwell@Andrews.edu

Update: February 1990

Courses: **Operating Systems I** (COSC 461)
Codes: B P R Y 5
Textbooks: *Operating Systems Design and Implementation*
by Tanenbaum, A.S.
Tools: Minix operating system

Computer Architecture (COSC 565)
Codes: G P R Y 5
Textbooks: *Computer Systems Architecture*
by Beck

Data Structures (INSY 472)
Codes: B P R Y 5
Textbooks: *Database Systems for Management*
by Courtney, J.F.
Data Structures: An Advanced Approach Using C
Tools: C, Fortran, Pascal
PC
UNIX

Database Systems (INSY 472)
Codes: B P R Y 5
Textbooks: *Database Systems for Management*
by Courtney, J.F.
Data Structures: An Advanced Approach Using C
Tools: Dbase, Informix for UNIX

Systems Analysis I (INSY 481)
Codes: B P R Y 5
Textbooks: *Systems Analysis and Design Methods*
by Whitten, Bentley, and Ho

Systems Analysis II (INSY 482)
Codes: B P R Y 5

Software Engineering I (INSY 541)
Codes: G P R Y 5
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: Demo II

Software Engineering II (INSY 542)
Codes: G P R Y 5
Textbooks: *Developing Effective User Documentation*
by Simpson and Casey
Writing Better Computer User Documentation
by Brockmann, R. John
Designing User Interfaces for Software
by Dumae

Programming Project Management (INSY 645)
Codes: G P R Y 4
Textbooks: *The Program Development Process: The Programming Team PART II*
by Aron, J.D.
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.
Software Configuration Management: Coordination for Team Productivity
by Babich, W.A.

Grand Valley State University
Science and Mathematics
Department of Mathematics and Computer Science
M.S. Program in Computer Information Systems (emphasis in Software Engineering)
Allendale, MI 49401

Degrees: MS CIS

Contact: Prof. Joseph J. Adamski
Associate Professor
(616) 895-2046
E-mail address: 21874jja@msu.bitnet
Network: BITNET

Update: September 1990

Courses: **Systems Analysis** (650)
Codes: G N R Y 2

Michigan State University
College of Engineering
Computer Science Department
Program in Computer Science
East Lansing, MI 48824-1027

Degrees: BS, MS, PHD

Contact: Prof. John J. Forsyth
Assoc. Professor and Assoc. Chairperson
(317) 355-1646

Update: April 1991

Courses: **Systems Software Development** (CPS 316)
Codes: U P R T 2
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Systems Software
by Beck
Tools: C, UNIX, Sun computers

Design of Language Processors I (CPS 451)
Codes: U P E Y 6
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Theory and Practice of Compiler Writing
by Tremblay and Sorenson
Tools: Sun 3 file server
Workstations on Ethernet
C, UNIX

Design of Language Processors II (CPS 452)
Codes: U P E Y 6
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Theory and Practice of Compiler Writing
by Tremblay and Sorenson
Tools: Sun 3 file server
Workstations on Ethernet
C, UNIX

Design of Language Processors III (CPS 453)
Codes: U P E Y 6
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Theory and Practice of Compiler Writing
by Tremblay and Sorenson
Tools: Sun 3 file server
Workstations on Ethernet
C, UNIX

Design of Database Systems I (CPS 483)
Codes: U P E Y 2
Textbooks: *Files & Databases*
by Smith and Bernes
Software Engineering Concepts
by Fairley, Richard E.
Tools: C, UNIX, LEX

Design of Database Systems II (CPS 484)
Codes: U P E Y 2
Textbooks: *Database Systems and Concepts*
by Silbersatz and Korth
Software Engineering Concepts
by Fairley, Richard E.
Tools: C, UNIX, LEX

Additional Information:
A full academic year sequence is offered every year for Design of Language Processors I, II, and III.

Michigan Technological University
College of Sciences and Arts
Department of Computer Science
Houghton, MI 49931

Degrees: BS CS, MS CS

Contact: Dr. Linda M. Ott
Associate Professor
(906) 487-2187
E-mail address: linda@mtu.edu

Update: October 1988

Courses: **Systems Software Project** (CS 341)
Codes: U P R T 1
Textbooks: *Software Engineering: A Beginner's Guide*
by Pressman, Roger S.
Tools: Pascal
Sequent Balance 8000 running Dynix

Software Engineering (CS 465)
Codes: U P E Y 3
Textbooks: *Software Engineering, 2nd ed.*
by Sommerville, Ian
Tools: CC
Sequent Balance 8000 running Dynix
C

Software Engineering (CS 550)
Codes: G P R Y 8
Textbooks: *Software Engineering: A Practitioner's Approach, 2nd ed.*
by Pressman, Roger S.
Tools: Sequent Balance 8000 running Dynix

University of Michigan-Dearborn
School of Engineering
Department of Industrial and Systems Engineering
Dearborn, MI 48128

Degrees: BS CE, MS CE

Contact: Dr. S. K. Kachhal
Chairman
(313) 593-5272

Update: January 1986

Courses: **Software Engineering** (I&SE 553)
Codes: G P E Y 1
Textbooks: *Software Design and Development*
by Gilbert, Philip
Controlling Software Projects: Management Measurement and Estimation
by DeMarco, Tom
Tools: Michigan Terminal System (Amdahl)

Wayne State University
College of Engineering
Department of Electrical and Computer Engineering
Detroit, MI 48202

Degrees: BS, MS, PHD

Contact: Prof. Jerome Meisel
Acting Chair
(313) 577-3920

Update: January 1986

Courses: **Engineering Software Design** (ECE 660)
Codes: G P X Y 1
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: Amdhal 470 V8
IBM 3081, IBM 4381
MTS (Michigan Terminal System)

Additional Information:
The course ECE 660 has been taught both at campus and at the Ford premises under Ford/WSU Master's program in Electronics and Computer Control System. The students have been using PSL/PSA from ISDOS.

Western Michigan University
College of Arts and Sciences
Department of Computer Science
Kalamazoo, MI 49008-5021

Degrees: BS CS, MS CS

Contact: Dr. Mark Kerstetter
Associate Professor
(616) 387-5658
E-mail address: kerstetter@gw.wmich.edu

Update: November 1990

Courses: **Software Systems Development** (460)
Codes: U P R T 0
Textbooks: *Software Engineering with Student Project Guidance*
by Mynatt, Barbee
Tools: C, COBOL, FORTRAN, Pascal
IBM-PC/XT/AT, IBM PS/2
Sun, Macintosh
VAX/UNIX, VAX/VMS,
MacProject, MacBubbles
dBase

Software Systems Development (544)
Codes: G P E T 9
Textbooks: *Software Engineering: A Practitioner's Approach, 2nd ed.*
by Pressman, Roger S.
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.
Software Engineering with Student Project Guidance
by Mynatt, Barbee
Tools: C, COBOL, FORTRAN, Pascal
IBM-PC/XT/AT, IBM PS/2,
Macintosh, Sun
VAX/UNIX, VAX/VMS
dBase, MacProject, MacBubbles

Additional Information:

Software Systems Development uses real projects and is offered twice per year. Student teams work on a variety of machines and with a variety of languages and compilers. Each team of 4 to 5 students typically works on a different project. Documentation is required, including: abstract, planning document, requirements document, preliminary design document, user's manual, and maintenance manual. Each team must make a one-hour presentation to the instructor, client, classmates, and invited guests during "presentation day," which takes place at the end of the semester.

Minnesota

St. Cloud State University
College of Science and Technology
Department of Computer Science
Program in Computer Science
St. Cloud, MN 56301-4498

Degrees: BS CS

Contact: Dr. Annette D. Schoenberger
Associate Professor
(612) 255-4966
E-mail address: Annette%TIGGER@MSUS1
Network: BITNET

Update: April 1991

Courses: **Software Engineering I** (CSCI 420-520)
Codes: B P E B 2
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger
Writing Readable Ada: A Case Study Approach
by Dorchak, S. and P. Rice
Tools: Ada, Pascal
Design Notations: Jackson, Harel

Software Engineering II (CSCI 421-521)
Codes: B P E B 2
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger
Writing Readable Ada: A Case Study Approach
by Dorchak, S. and P. Rice
Tools: Ada, Pascal
Design Notations: Jackson, Harel

Software Engineering III (CSCI 422-522)
Codes: B P O B 2
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger
Writing Readable Ada: A Case Study Approach
by Dorchak, S. and Rice, P.
Tools: Ada, Pascal
Design Notations: Jackson, Harel

Software Engineering Project (CSCI 430-530, 431-53)
Codes: B P B B 1
Textbooks: *Language reference manuals*
Tools: Ada, Pascal

University of Minnesota
Institute of Technology
Department of Computer Science
Program in Computer Science
Minneapolis, MN 55455

Degrees: BA, BS, MS, PHD

Contact: R. K. Hobbie
Acting Head
(612) 625-0726
E-mail address: hobbie@cs.umn.edu
Network: Internet

Update: April 1991

Courses: **Software Engineering I** (Csci 5180)
Codes: B P E Y 7
Textbooks: *Software Engineering*
by Von Mayrhauser, Anneliese
Object-Oriented in Software Construction
by Meyer
Software Engineering
by Schach, Stephen R.
Tools: Epos, PSL/PSA, DSEE

Software Engineering II (Csci 5181)
Codes: B P E Y 7
Textbooks: *Software Engineering*
by Von Mayrhauser, Anneliese
Software Engineering
by Schach, Stephen R.
Object-Oriented in Software Construction
by Meyer
Tools: EPOS, PSL/PSA, DSEE

Software Engineering III (Csci 5199)
Codes: B P E Y 3
Textbooks: *The Art of Software Testing*
by Myers, Glenford J.
Software Testing and Evaluation
by DeMillo, R.A. et al.
Software Validation: Inspection - Testing - Verification - Alternatives
by Hausen, H.L.
Software Engineering with Ada
by Booch, Grady
Tools: Ada, Sun, MSG

Software Specification (Csci 5199/8199)
Codes: B P E Y 3
Textbooks: *Handbook of Software Engineering*
by Vick, Charles R. and Ramamoorthy, C.V.
Software Design Strategies
by Bergland, Glenn D. and Gordon, Ronald D.
The Art of Software Testing
by Myers, Glenford J.
Software Testing and Evaluation
by DeMillo, R.A. et al.
Software Validation: Inspection - Testing - Verification - Alternatives
by Hausen, H.L.
Software Engineering Metrics and Models
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.
Software Engineering with Ada
by Booch, Grady
Software Specification Techniques
by Gehani, Narain and McGettrick, Andrew D.
IEEE Tutorial: Software Testing and Validation Techniques
by Miller, Edward and Howden, William E.

Software Engineering with Ada (Csci 5199/8199)
Codes: B P E Y 3

Textbooks: *Handbook of Software Engineering*
by Vick, Charles R. and Ramamoorthy, C.V.
Software Design Strategies
by Bergland, Glenn D. and Gordon, Ronald D.
The Art of Software Testing
by Myers, Glenford J.
Software Testing and Evaluation
by DeMillo, R.A. et al.
Software Validation: Inspection - Testing - Verification - Alternatives
by Hausen, H.L.
Software Engineering Metrics and Models
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.
Software Engineering with Ada
by Booch, Grady
Software Specification Techniques
by Gehani, Narain and McGettrick, Andrew D.
IEEE Tutorial: Software Testing and Validation Techniques
by Miller, Edward and Howden, William E.
Tools: Ada, Sun

Software Verification and Validation, Metrics (Csci 5199/8199)
Codes: B P E B 3
Textbooks: *Handbook of Software Engineering*
by Vick, Charles R. and Ramamoorthy, C.V.
Software Design Strategies
by Bergland, Glenn D. and Gordon, Ronald D.
The Art of Software Testing
by Myers, Glenford J.
Software Testing and Evaluation
by DeMillo, R.A. et al.
Software Validation: Inspection - Testing - Verification - Alternatives
by Hausen, H.L.
Software Engineering Metrics and Models
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.
Software Engineering with Ada
by Booch, Grady
Software Specification Techniques
by Gehani, Narain and McGettrick, Andrew D.
IEEE Tutorial: Software Testing and Validation Techniques
by Miller, Edward and Howden, William E.

Software Requirements, Design and Maintenance (Csci 5199/8199)
Codes: B P E B 3
Textbooks: *Handbook of Software Engineering*
by Vick, Charles R. and Ramamoorthy, C.V.
Software Design Strategies
by Bergland, Glenn D. and Gordon, Ronald D.
The Art of Software Testing
by Myers, Glenford J.
Software Testing and Evaluation
by DeMillo, R.A. et al.
Software Validation: Inspection - Testing - Verification - Alternatives
by Hausen, H.L.
Software Engineering Metrics and Models
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.
Software Engineering with Ada
by Booch, Grady
Software Specification Techniques
by Gehani, Narain and McGettrick, Andrew D.
IEEE Tutorial: Software Testing and Validation Techniques
by Miller, Edward and Howden, William E.

Additional Information:
We also have weekly seminars on various aspects of software engineering.

University of St. Thomas
Dept. of Quantitative Methods and Computer Science
Master of Software Design and Development
St. Paul, MN 55105

Degrees: MSE, MS

Contact: Dr. Bernice Folz
Professor and Director
(612) 647-5367

Update: April 1991

Courses: **Technical Communications** (CS 500)
Codes: G N R T 4
Textbooks: *Readings for Technical Writers*
by Journet and Kling
Handbook of Technical Writing
by Brusaw, Alred, and Olin
How to Write a Usable User Manual
by Weiss
Manual for Technical Communications

Software Engineering Methodologies (CS 510)
Codes: G N R T 4
Textbooks: *Software Engineering*
by Schach, Stephen R.
Algorithms + Data Structures = Programs
by Wirth, N.

Software Productivity Tools (CS 520)
Codes: G P R T 4
Textbooks: *CASE - Using Software Development Tools*
by Fisher, Alan S.
Excelerator IS Data Report Guide
INGRES Manuals from Relational Technology
Excelerator IS Application Guide
Excelerator IS Facilities Functions Reference Guide
Tools: IBM - AT, PS/2
DEC VAX/VMS
Excelerator, INGRES + 4GL Components, Analyst Helper,
ORACLE

DBMS and Design (CS 530)
Codes: G P R T 4
Textbooks: *An Introduction to Database Systems*
by Date, C. J.
Tools: DEC VAX/VMS, IBM PS/2
ORACLE, INGRES, Informix

Systems Analysis and Design I (CS 540)
Codes: G P R T 4
Textbooks: *Duplicated materials*
Modern Structured Analysis
by Yourdon, Edward N.

Tools: CONIX, DEFT, Excelerator
IBM - AT, PS/2 , Macs

Data Modeling and Information Analysis (CS 541)
Codes: G N E Y 2
Textbooks: *Smalltalk Manual*
by Digitalk, Inc.
Object-Oriented Analysis
by Coad & Jourdon
Tools: IBM - AT
PRECISE (CDC)

Legal Issues in Technology (CS 550)
Codes: U X X X 0
Textbooks: *Computers, Data Processing & the Law*
by Mardell
Duplicated Materials

Software Project Management (CS 600)
Codes: G P R T 4
Textbooks: *Software Engineering Project Management - Tutorial*
by Thayer, R. H.
Managing the Software Process
by Humphrey, W.
Tools: IBM AT
Timeline, Primevera

Operating Systems Design (UNIX and C) (CS 610)
Codes: G P E Y 4
Textbooks: *Operating Systems Concepts*
by Peterson & Silberschatz
The UNIX Programming Environment
by Kernighan. Brian W. and Pike
Tools: DEC VAX/VMS
C Language

Real-Time Systems and Applications (CS 612)
Codes: G P E Y 1
Textbooks: *Introduction to Real-Time*
by Allworth and Zobel
Tools: Macintosh - ICONIX

Graphics (CS 620)
Codes: G P E Y 4
Textbooks: *Computer Graphics*
by Hill, F.S.
Tools: IBM - PC, VAX/VMS
Turbo Pascal, GK2000, Picsure

Telecommunications (CS 625)
Codes: G P E Y 3
Textbooks: *Computer Networks*
by Tannenbaum

Artificial Intelligence and Knowledge Based Systems (CS 635)
Codes: G P E T 4
Textbooks: *Artificial Intelligence and the Design of Expert Systems*
by Lugert & Stubblefield
Common Lisp Craft
by Wilensky
Prolog Programming for Artificial Intelligence
by Bratko

Tools: DEC VAX/VMS, IBM AT, Macintosh
LISP, Prolog, Allegro

Knowledge Based Systems II (CS 636)
Codes: G P E Y 3
Textbooks: *A Guide to Expert Systems*
by Waterman
Tools: IBM PC, PC+

Additional information:
See the entry in Part II of this directory.

Missouri

Washington University
School of Engineering and Applied Science
Dept. of Computer Science
St. Louis, MO 63130-4899

Degrees: BS, MS, SCD.

Contact: Dr. Gruia-Catalin Roman
Professor
(314) 889-6190
E-mail address: roman@cs.WUSTL.edu

Update: April 1991

Courses: **Software Engineering Workshop** (CS 456)
Codes: U P R T 6
Tools: Macintosh IIcs
Ada, MPW

Modular Programming (CS 545S)
Codes: G P E B 3
Textbooks: *Programming in Ada, 2nd Ed.*
by Barnes, J. G. P.
Programming in Modula-2, 3rd Ed.
by Wirth, N.
Tools: Meridian Ada, MacMeth
Modula-2, Smalltalk

Montana

University of Montana
College of Arts and Sciences
Department of Computer Science
Missoula, MT 59812-1008

Degrees: BS CS, MS CS

Contact: Prof. Alden Wright
Professor of Computer Science
(406) 243-4790
E-mail address: apple.com!umt!cs_ahw
Network: Usenet

Update: February 1990

Courses: **Advanced Programming Languages - Object Oriented Design and Programming** (CS 535)
Codes: G P E B 2
Textbooks: *Object-Oriented Software Construction*
by Meyer
Tools: Eiffel language
VAX 785 running ULTRIX

Formal Semantics and Specification (CS 539)
Codes: G P O B 2
Textbooks: *Program Construction & Verification*
by Backhouse, R. C.
The Science of Programming
by Gries, David

Requirements and Specifications (CS 541)
Codes: G N R Y 4
Textbooks: *Modern Structured Analysis*
by Yourdon, Edward N.
Tools: Excelerator
IBM AT

Design (CS 542)
Codes: G P R Y 4
Textbooks: *Structural Design*
by Yourdon, Edward N. and Constantine, Larry L.

Implementation (CS 543)
Codes: G P R Y 4
Textbooks: *Selected readings*

New Hampshire

Dartmouth College
Department of Mathematics and Computer Science
Hanover, NH 03755

Degrees: BA, MS, PHD

Contact: Samuel W. Bent
Associate Professor
(603) 646-2760
E-mail address: sam.bent@dartmouth.edu

Update: October 1988

Courses: **Software Design and Implementation** (CS 23)

Codes:	U P R O 2
Textbooks:	*Software Engineering Concepts* by Fairley, Richard E.
	Programming Pearls by Bentley, Jon Louis
Tools:	C, Lightspeed Pascal
	CONVEX
	Macintosh
	VAX 11/785
	AWK, LEX

Additional Information:

Software Design and Implementation is offered two terms a year. We previously had one course with data structures and a large programming project. We have subdivided it. Software Design and Implementation will emphasize software tools.

New Jersey

Fairleigh Dickinson University
College of Science and Engineering
Department of Mathematics and Computer Science
Teaneck, NJ 07666

Degrees: BS CS, MS CS

Contact: Dr. Gertrude Levine
Associate Professor
(201) 692-2020

Update: April 1991

Courses: **Advanced Programming Language Concepts Using Ada** (CS 439)
Codes: U P E D 1

Software Engineering (CS 620)
Codes: G P R Y 5
Textbooks: *Software Engineering*
by Pfleeger

Design of Information Systems (CS 727)
Codes: G P E Y 1
Textbooks: *Systems Development*
by Eliason, Alan L.
Case-Book
Tools: Excelerator on IBM AT

Special Topics in Ada (CS 847)
Codes: G P E Y 2
Textbooks: *Software Engineering Concepts with Ada*
by Booch, Grady
Programming in Ada
by Barnes, John Gilbert Presslie
Tools: DEC Ada, DEC debugger, LSE Ada
DEC workstations

Computer Aided Software Engineering (CS 854)
Codes: G P E Y 2
Tools: Excelerator on IBM AT

Monmouth College
Department of Mathematics/Computer Science
West Long Branch, NJ 07764

Degrees: MS SE

Contact: Richard Kuntz

Update: January 1986

Courses: **Software Project Management** (Video Course)
Codes: U X X X 0

Network Design and Protocols I (SE 510)
Codes: G X R X 1

Network Design and Protocols II (SE 511)
Codes: G X R X 1

Operating System Implementation (SE 515)
Codes: G X R X 1

Software Engineering I (SE 516)
Codes: G X R X 1

Software Engineering II (SE 517)
Codes: G X R X 1

System Project Implementation (SE 525)
Codes: G X R X 1

Additional Information:
See also the entry for Monmouth in Part II of this directory.

Montclair State College
School of Mathematics and Computer Science
Department of Mathematics and Computer Science
Upper Montclair, NJ 07043

Degrees: BS, MA CS

Contact: Dr. H. M. Hubey
Assoc. Chair for Computer Science
(201) 893-5132
E-mail address: Hubey@apollo.montclair.edu

Update: December 1990

Courses: **Programming Languages** (Y0701 484)
Codes: U P E B 5
Textbooks: *Programming Languages: Design and Implementation*
by Pratt, Terrence W.
Tools: Ada

Software Engineering and Reliability (Y0701 594)
Codes: G P E B 1
Textbooks: *Software Reliability: Principles and Practices*
by Myers, Glenford J.
Software Engineering: A Practitioner's Approach
by Pressman, Roger S.
Software Engineering : Design, Reliability and Management
by Shooman, Martin L.
Ethnotechnical Review Handbook
by Freedman, Daniel P.

Princeton University
School of Engineering and Applied Science
Department of Electrical Engineering
Princeton, NJ 08544

Degrees: BS CE, MS CE, PHD CE

Contact: Wayne Wolf
Assistant Professor
(609) 258-1424
E-mail address: Wolf@princeton.edu
Network: Internet

Update: December 1990

Courses:
Additional Information:
A program of study in Computer Engineering includes courses in software engineering offered by the Department of Computer Science. Credit is offered for undergraduate independent project work in a wide range of areas including software engineering.

Stockton State College
Professional Studies
Information and Computer Sciences
Pomona, NJ 08240

Degrees: BA CIS, BS CIS, BS CS

Contact: Murray R. Kirch
Professor of Computer Science & Mathematics
(609) 652-4353
E-mail address: kirch@pilot.njin.net
Network: Internet

Update: February 1990

Courses: **Software Engineering with Ada** (INFO 4130)
Codes: U P E Y 1
Textbooks: *Software Engineering with Ada*
by Booch, Grady
Ada as a Second Language
by Cohen, Norman H.
Tools: Briefcase (to be replaced with Excelerator)
VAX/VMS Ada compiler system
VAX 6310
LARCH

New Mexico

New Mexico Institute of Mining and Technology
Department of Computer Science
Program in Computer Science
Socorro, NM 87801

Degrees: BS, MS, PHD

Contact: Prof. Andrew H. Sung
Chairman
(505) 835-5949
E-mail address: sung@nmtvax.nmt.edu

Update: January 1989

Courses: **Software Construction** (CS 328)
Codes: U P E O 6
Textbooks: *The Mythical Man-Month: Essays on Software Engineering* by Brooks, Frederick P., Jr.
Tools: C
VAX 750 under UNIX

Design and Analysis of Software Systems (CS 528)
Codes: G P E D 3
Tools: C
VAX 750 under UNIX

Additional Information:
Software Construction is offered once every year or year and a half.

New Mexico State University
College of Arts and Sciences
Department of Computer Science
Program in Computer Science
Las Cruces, NM 88003

Degrees: BS, MS, PHD

Contact: Prof. Juris Reinfelds
Department Head
(505) 646-3723

Update: April 1991

Courses: **Software Development** (CS 371)
Codes: U P R T 5
Tools: Ada, C, UNIX, Sun

New York

City University of New York
The Graduate School and University Center
Ph.D. Program in Computer Science
New York, NY 10036-8099

Degrees: PHD

Contact: Prof. Frank S. Beckman
Executive Officer
(212) 790-4594

Update: June 1988

Courses: **Topics in Software Systems and Software Engineering** (C.Sc. U813)
Codes: G X X X 1

Clarkson University
School of Science
Department of Mathematics and Computer Science
Potsdam, NY 13676

Degrees: BS, MS, PHD

Contact: Dr. A. S. Fokas
Chairman
(315) 268-2395

Update: December 1990

Courses: **Software Tools** (MA 250)
Codes: U P R Y 3
Tools: Turbo C
Zenith 200

Software Design and Development (MA 450)
Codes: U N E Y 7
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tools: Gould
Z-100 MS DOS, Zenith 200

Columbia University
School of Engineering and Applied Science
Department of Computer Science
New York, NY 10027

Degrees: BA, BS, MS, PHD

Contact: Dr. Gail E. Kaiser
Associate Professor
(212) 854-3856
E-mail address: kaiser@cs.columbia.edu
Network: Internet

Update: April 1991

Courses: **Programming Environments and Software Tools** (E6123)
Codes: G P E B 2
Tools: Maruel

Software Design Laboratory (W3152)
Codes: U P H T 5
Tools: Standard UNIX tools available on SunOS

Special Projects in Computer Science (W3998, E6901, others)
Codes: B P E D 5
Tools: UNIX

Software Engineering (W4156)
Codes: B P B Y 5
Textbooks: *Software Engineering, 3rd ed.*
by Sommerville, Ian

Additional Information:
Various projects in software engineering and other areas can be negotiated between one or more students and a faculty member. Often the projects involve a small piece of a faculty member's research and may be supervised by a Ph.D. student or research staff member. An MS thesis is optional.

Cornell University
School of Engineering
Department of Computer Science
Ithaca, NY 14853

Degrees: BS, MS, PHD

Contact: Prof. Dexter Kozen
Graduate Fields Representative for Computer Science
(607) 255-8593

Update: October 1987

Courses: **Intro. Database Management Systems** (432)
Codes: B P E Y 6
Textbooks: *An Introduction to Database Systems*
by Date, C.J.
The C Programming Language
by Kernighan, Brian W. and Ritchie, Dennis
Tools: CC
VAX
C, Pascal

Iona College
School of Arts and Science
Department of Computer and Information Sciences
Program in Computer Science
New Rochelle, NY 10801

Degrees: BA, BS, MS

Contact: Dr. J. Mallozzi
Chair of Department
(914) 633-2578

Update: September 1988

Courses: **Software Engineering** (CIS 390)
Codes: U P E Y 4
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: PL/I Optimizing, Turbo Pascal, VS Pascal
PC & IBM mainframe
others

Introduction to Software Engineering (CIS 640)
Codes: G P E Y 1
Tools: IBM mainframe

Polytechnic University, Brooklyn Campus
School of Electrical Engineering and Computer Science
Computer Science Department
Program in Computer Science
Brooklyn, NY 11201

Degrees: BS CS, BS EE, BS CE, MS CS, MS CIS, PHD CS,

Contact: Prof. Martin L. Shooman
Professor
(516) 755-4294/4290
E-mail address: shooman@polyof.poly.edu

Update: November 1990

Courses: **Software Design and Engineering** (CS 306)
Codes: U P E Y 3
Tools: Software Engineering Laboratory

Software Engineering I (CS 606)
Codes: G P B O 5
Textbooks: *Software Engineering: Design, Reliability, and Management*
by Shooman, Martin L.
Tools: Software Engineering Laboratory

Software Engineering II (CS 607)
Codes: G P E B 5
Textbooks: *Software Engineering: Design, Reliability, and Management*
by Shooman, Martin L.
Tools: Software Engineering Laboratory

Additional Information:
Formerly Polytechnic Institute of New York, Brooklyn Campus.

Polytechnic University, Farmingdale Campus
School of Electrical Engineering and Computer Science
Computer Science Department
Program in Computer Science
Farmingdale, NY 11735

Degrees: BS CS, BS CE, BS EE, MS CS, MS CIS, PHD CS

Contact: Prof. Martin L. Shooman
Professor
(516) 755-4400

Update: November 1990

Courses: **Software Engineering I** (CS 606)
Codes: U P E Y 1
Textbooks: *Software Engineering: Design, Reliability, and Management*
by Shooman, Martin L.
Tools: Software Engineering Laboratory

Software Engineering II (CS 607)
Codes: G P E B 1
Textbooks: *Software Engineering: Design, Reliability, and Management*
by Shooman, Martin L.
Tools: Software Engineering Laboratory

Additional Information:
Formerly Polytechnic Institute of New York, Farmingdale Campus.

Polytechnic University, Westchester Campus
School of Engineering and Computer Science
Computer Science Department
Program in Computer Science
Hawthorne, NY 10532

Degrees: BS CS, BS EE, MS CS, MS CIS, PHD CS

Contact: Prof. Martin L. Shooman
Professor
(914) 347-6940

Update: November 1990

Courses: **Software Engineering I** (CS 606)
Codes: G P B Y 1
Textbooks: *Software Engineering: Design, Reliability, and Management*
by Shooman, Martin L.
Tools: Software Engineering Laboratory

Additional Information:
Formerly Polytechnic Institute of New York, Westchester Campus.

Rensselaer Polytechnic Institute (Entry 1)
School of Science
Department of Computer Science
Troy, NY 12180

Degrees: BS, MS, PHD

Contact: Prof. Edwin H. Rogers

Update: April 1991

Courses: **Software Design and Documentation** (66.444)
Codes: U P R Y 4
Textbooks: *Object Oriented Modeling and Design*
by Rumbaugh, J. et al.
Software Engineering
by Sommerville, Ian
Software Engineering: Planning for Change
by Lamb, David
Writing Better Computer Documentation
by Brockmann, R. John
Tools: MacIntosh
PC
Sun

Master's Project (66.698)
Codes: G N R O 16

Additional Information:
Design and Documentation and Software Leadership are proposed as part of a revised curriculum. Master's Project is a substantial software design and implementation project done under close faculty supervision. It has a schedule that is individually arranged.

Rensselaer Polytechnic Institute (Entry 2)
School of Engineering
Department of Electrical, Computer, and Systems Engineering
Troy, NY 12180

Degrees: BS, MS, PHD EE, PHD CE, SCD

Contact: Prof. Joseph E. Flaherty
Chairman of CS Department
(518) 276-8326
E-mail address: flaherje@cs.rpi.edu

Update: December 1990

Courses: **Software Engineering I** (35.677)
Codes: G P E Y 1
Textbooks: *Classics in Software Engineering*
by Yourdon, Edward N.
Software Engineering: A Practitioner's Approach
by Pressman, Roger S.

Software Engineering II (35.678)
Codes: G P E Y 1

Textbooks: *Classics in Software Engineering*
by Yourdon, Edward N.
Software Engineering: A Practitioner's Approach
by Pressman, Roger S.

Rochester Institute of Technology
School of Computer Science
Graduate Department of Computer Science
Rochester, NY 14623

Degrees: BS CS, MS CS, MS Software Development & Management

Contact: Dr. Jeffrey A. Larkey

Update: January 1986

Courses: **Principles of Data Management** (ICSA-720)
Codes: G X R X 1

Principles of Distributed Systems (ICSA-725)
Codes: G X R X 1

Software Engineering Concepts (ICSA-820)
Codes: G X R X 1

Analysis & Design Techniques (ICSA-821)
Codes: G X R X 0

Program Design and Implementation (ICSA-823)
Codes: G X R X 0

Software Project Management (ICSA-830)
Codes: G X R X 1

Program Testing and Reliability (ICSA-835)
Codes: G X R X 0

Software Project Laboratory (ICSA-894)
Codes: G X R X 0

Software Engineering Project (ICSA-895)
Codes: G X R X 0

Software Engineering I (ICSS-801)
Codes: G N E T 1
Textbooks: *Software Engineering: Design, Reliability, and Management*
by Shooman, Martin L.

Software Engineering Laboratory (ICSS-802)
Codes: G P E Y 1
Tools: Pyramid UNIX
VAX VMS

Additional Information:
The M.S. in Software Development and Management was first offered in fall 1987. Additional courses are listed in Part II of this directory.

State University of New York at Binghamton
The Thomas J. Watson School of Engineering, Applied Science and Technology
Department of Computer Science
Binghamton, NY 13902-6000

Degrees: BS CS, MS CS, PHD

Contact: Margaret Iwobi
Program Coordinator
(607) 777-4749
E-mail address: miwobi@bingvaxa.bitnet
Network: BITNET

Update: January 1991

Courses: **Software Engineering I** (CS-345; cross listed with CS-545)
Codes: U P E B 5
Textbooks: *Software Engineering with Ada*
by Booch, Grady
Software Engineering
by Sommerville, Ian
Tools: DEC Ada
VAX 6340

Human Computer Interface (CS-348)
Codes: U P E Y 1
Textbooks: *Designing the User Interface*
by Shneiderman, Ben
Tools: Protoscreens
IBM PCs

Software Engineering I (CS-545)
Codes: G P E T 4
Textbooks: *Software Engineering with Ada*
by Booch, Grady
Software Engineering
by Sommerville, Ian
Tools: DEC Ada
VAX 6340

Software Engineering Analysis (CS-546)
Codes: G P E D 2
Textbooks: *Software Engineering: Design, Reliability, and Management*
by Shooman, Martin L.
Tools: ALSYS Ada, DEC Ada
IBM PC/AT
VAX 780

Formal Design and Specification Methods (CS-578)
Codes: G P E B 4
Textbooks: *Selected readings*

Additional Information:
Miscellaneous software engineering projects have been undertaken. For example, a group study produced a lengthy report on how to implement a master's degree in "Software and Computer Systems Engineering." Funded graduate research supports major studies of formal software methodologies, software metrics, and software design as well as the design and implementation of large software projects.

State University of New York at Stony Brook
College of Engineering and Applied Science
Department of Computer Science
Stony Brook, NY 11794

Degrees: BS, MS, PHD

Contact: Prof. Peter B. Henderson
Graduate Program Director
(516) 632-8470

Update: May 1987

Courses: **Techniques of Software Design** (MSC-520)
Codes: G N R Y 11
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
IEEE Tutorial on Software Engineering
by Wasserman, Anthony I. and Freeman, Peter
Tools: Berkeley UNIX,Pascal
VAXes and Sun workstations under UNIX 4.3 BSD
CLU, Modula-2

State University of New York College at Brockport
School of Letters and Sciences
Department of Computer Science
Undergraduate Program in Computer Science
Brockport, NY 14420

Degrees: BS CS

Contact: Prof. Linda M. Northrop
Assistant Professor
(716) 395-2323
E-mail address: NORTHROP@BROCK1P
Network: BITNET

Update: February 1990

Courses: **Software Systems Development** (CSC 427)
Codes: U P R Y 4
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.
Tools: Pascal, Ada, Information
PRIME 9955
IBM PC

Syracuse University
College of Engineering
Department of Electrical and Computer Engineering
Program in Computer Engineering
Syracuse, NY 13244

Degrees: BS CS, BS CE, MS CS, MS CE, PHD CS, PHD CE

Contact: Prof. Edward Stabler
Professor
(315) 443-4370
E-mail address: hlpeps@suvm.acs.syr.edu

Update: April 1991

Courses: **Software Engineering** (CSE 682)
Codes: G N E Y 4
Textbooks: *Selected readings*

Software Engineering Studio (CSE 691)
Codes: G P E Y 0
Textbooks: *Selected readings*

Object Oriented Design (CSE 692)
Codes: G P E Y 0
Textbooks: *Programming in C++*
by Dewhurst and Stark

Models and Metrics in Software Engineering (CSE 782)
Codes: G P E Y 4
Textbooks: *Selected readings*

Union College
Department of Electrical Engineering and Computer Science
Schenectady, NY 12308

Degrees: BS CS, BS EE, MS CS, MS EE

Contact: Prof. David Hannay
Co-Chair EE/CS Department
(518) 370-6270

Update: April 1991

Courses: **Software Engineering** (CSC-260)
Codes: B P X Y 1
Textbooks: *Software Engineering*
by Schach, Stephen R.
Tools: VAX

North Carolina

Lenoir-Rhyne College
Natural Science & Math Division
Department of Computer Science
Hickory, NC 28603

Degrees:

Contact: Dr. Gail Miles
Chair and Associate Professor
(704) 328-7268

Update: April 1990

Courses: **Software Systems Analysis and Design** (CSC 400)
Codes: U P R Y 4
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tools: Excelerator
80386 Microcomputers
Macintosh SE & II

Senior Project - Software Engineering Option (CSC 450)
Codes: U P R Y 1
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Software Engineering: A Practitioner's Approach
by Pressman, Roger S.
Tools: Modula-2, Ada, 4GL
Excelerator
VAX, MicroVAX, Apollo
80386 Microcomputers
Macintosh SE & II

North Carolina State University
Department of Computer Science (Undergraduate)
Program in Computer Studies (Graduate)
Raleigh, NC 27695

Degrees: BS, MS, MCS

Contact: Prof. K. C. Tai
Professor
(919) 737-7862

Update: May 1987

Courses: **Intro to Programming Environments** (CSC 471)
Codes: U P E Y 4
Tools: Verdix C, MicroVAX (ULTRIX), and UNIX Shell

Software Engineering Project (CSC 472)
Codes: U P E Y 4
Tools: Verdix C, MicroVAX (ULTRIX), and UNIX Shell

Software Engineering with Ada (CSC 481)
Codes: U P E Y 4
Textbooks: *Software Engineering with Ada*
by Booch, Grady
Tools: Verdix Ada
MicroVAX (ULTRIX)

Software Engineering (CSE 510)
Codes: G P E Y 10
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Software Engineering: Design, Reliability, and Management
by Shooman, Martin L.
Tools: Pascal/VS, UCSD Pascal
IBM 4381 (VM/CMS)
MicroVAX (ULTRIX)
SAGE (UCSD p system)

University of North Carolina at Chapel Hill
College of Arts and Sciences
Department of Computer Science
Chapel Hill, NC 27599-3175

Degrees: BS CS, MS CS, PHD CS

Contact: Ms. Katrina B. Coble
Admissions and Graduate Secretary
(919) 962-1900
E-mail address: admit@cs.unc.edu
Network: Internet

Update: February 1990

Courses: **Software Engineering Laboratory** (Comp 145)
Codes: B P B Y 53
Textbooks: *The Mythical Man-Month: Essays on Software Engineering*
by Brooks, Frederick P., Jr.
IEEE Tutorial on Software Design Techniques
by Freeman, Peter and Wasserman, Anthony I.
Software Engineering Concepts
by Brooks, Frederick P., Jr.
Tools: C, C++, Smalltalk, Pascal
MacProject, Stellar, Silicon Graphics
VAX and Sun workstations

Software Engineering (Comp 227)
Codes: G P R Y 5
Textbooks: *IEEE Tutorial on Software Design Techniques*
by Freeman, Peter and Wasserman, Anthony I.
Software Engineering Concepts
by Fairley, Richard E.
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.

North Dakota

North Dakota State University
College of Science and Mathematics
Department of Computer Science
Fargo, ND 58105

Degrees: BS, MS, PHD

Contact: Prof. Kenneth Magel
Chair, Computer Science and Operation Research
(701) 237-8189
E-mail address: kmagel@plains.nodak.edu

Update: April 1991

Courses: **Systems Analysis** (CS 213)
Codes: U P R Y 3
Tools: IBM 3090 using CMS

System Testing and Maintenance (CS 313)
Codes: U P R Y 3
Textbooks: *The Art of Software Testing*
by Myers, Glenford J.
Tools: Think Pascal
Macintosh II

Realtime Software Design (CS 413)
Codes: U P R Y 3
Tools: HP Teamwork, Log, Modula-2
Hewlett-Packard 320, 318
IBM PCs and PS/2s

Software Developme. (CS 513)
Codes: G P E Y 5
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: Solbourne 802 running Sun OS
IBM PS/2s running MS-DOS 4.01

Additional Information:
Every undergraduate takes at least four courses that require substantial projects. Every graduate student takes at least two courses that require substantial projects. Several courses at all levels devote 2-3 weeks each to software engineering methodologies, concepts, or practices.

Ohio

Air Force Institute of Technology
Computer Science and Engineering
Electrical & Computer Engineering Department
Program in Graduate Computer Systems & Computer Engineering
Wright-Patterson AFB, OH 45433-6583

Degrees: MS, MS CE, MS EE, PHD

Contact: Dr. Paul D. Bailor
Assistant Professor
(513) 255-3708
E-mail address: pbailor@galaxy@afit.af.mil
Network: Internet

Update: April 1991

Courses: **Software Project Management** (AMGT 553)
Codes: G N R B 4
Textbooks: *Selected readings*
Managing the Software Process
by Humphrey, Watts S.

Software Engineering (CSCE 592)
Codes: G N O B 0
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Selected readings and course handouts
Tools: Ada
Ada PDL
DFD
Structure Charts
Object Diagrams
E-R Diagrams
State-Transition Diagrams

Software Analysis & Design I (CSCE 593)
Codes: G P B Y 6
Textbooks: *Selected readings and course handouts*
Tools: DFD
E-R Diagrams
SADT
Ada
Ada PDL
State-Transition Diagrams

Software Analysis and Design II (CSCE 594)
Codes: G P B Y 5
Textbooks: *Selected readings and course handouts*
Tools: Verdix or VAX Ada
Ada PDL
Concept Maps
Z
Object Diagrams

Software Generation and Maintenance (CSCE 595)
Codes: G P B B 0
Textbooks: *Selected readings and course handouts*

Tools: VAX/VMS, VAXSET of CASE Tools, VAX Ada

Principles of Embedded Software Systems (CSCE 693)
Codes: G P B Y 5
Textbooks: *Real-Time System Design*
by Levi and Agrawala
Selected readings and course handouts
Tools: Verdix Ada
Encore Multimax Concurrent Programming System
Micro-Computer Based Real-Time Laboratory

Advanced Software Environments (CSCE 755)
Codes: G P E Y 6
Textbooks: *Selected readings*
Tools: Verdix Ada

Formal-Based Methods in Software Engineering (CSCE 793)
Codes: G P B Y 1
Textbooks: *Program Derivation*
by Dromey, Geoff
The Z Notation (A Reference Manual)
by Spivey, J.M.
Selected readings and handouts
Tools: Z, REFINE, Ada
Sun Workstations
Verdix or VAX Ada

Additional Information:

In Software Project Management, students run assorted cost estimation programs and project scheduling software.

AFIT has developed and is offering a suite of five Professional Continuing Education courses in software engineering. In general, these courses are available to any software professional who is employed by the U.S. Air Force and who has the required background. Each course is 70 hours in length and typically has a software laboratory associated with it. The course numbers and titles are listed below:

Courses: **Software Engineering Concepts** WCSE 471
Specification of Software Systems WCSE 472
Principles and Application of Software Design WCSE 473
Software Generation and Maintenance WCSE 474
Software Verification and Validation WCSE 475

Over the next three years, we project that 320 people will complete the five course sequence.

Bowling Green State University
School of Arts and Sciences
Department of Computer Science
Bowling Green, OH 43402

Degrees: BS CS, MS CS

Contact: Dr. Barbee Mynatt
Associate Professor
(419) 372-2339

Update: November 1990

Courses: **Software Development** (464)
Codes: B P E Y 9
Textbooks: *Software Engineering with Student Project Guidance*
by Mynatt, Barbee
Tools: Teamwork, Prototyper
VAX Station, IBM PC/AT

Software Engineering (564)
Codes: G P E B 6
Tools: Teamwork

Human Factors in Computing (565)
Codes: G N E B 2
Textbooks: *An Introduction to Human-Computer Interaction*
by Booth, Paul
Tools: Prototyper
Hypercard
Oasis

Cleveland State University
The James J. Nance College of Business Administration
Department of Computer and Information Science
Cleveland, OH 44115

Degrees: BS CIS, MS CIS

Contact: Prof. Thomas S. Heines
Chairman
(216) 687-4760

Update: November 1987

Courses: **Structured Systems Analysis** (CIS 433)
Codes: U P E O 6
Textbooks: *Structured Analysis Methods for Computer Information Systems*
by Teague, Lavette C. and Pidgeon, Christopher

Structured Systems Design (CIS 434)
Codes: U P E O 6
Textbooks: *The Practical Guide to Structured Systems Design*
by Page-Jones, Meilir
Tools: IBM 3081, IBM PC
COBOL, PSL/PSA, Structured Architect, dBase III

Software Engineering (CIS 620)
Codes: G P R O 6
Textbooks: *The C Programming Language*
by Kernighan, Brian W. and Ritchie, Dennis
System-370 Job-Control Language
by Brown, Gary D.
Tools: IBM 3081, VAX 11/750

Systems Analysis and Design (CIS 634)
Codes: G P E O 6
Textbooks: *The Practical Guide to Structured Systems Design*
by Page-Jones, Meilir
Tools: IBM 3081, IBM PC
COBOL, PSL/PSA, Structured Architect, dBase III

Additional Information:
Structured Systems Analysis and Structured Systems Design are offered 2-3 times per year. Software Engineering is offered 3 times per year. Systems Analysis and Design is offered 2 times per year.

Kent State University
School of Arts and Sciences
Department of Mathematical Sciences
Program in Mathematics/Computer Science
Kent, OH 44242

Degrees: BS, MS, PHD

Contact: Prof. Michael Rothstein
Assistant Professor
(216) 672-2430

Update: May 1987

Courses: **Software Engineering Projects** (43107)
Codes: U P E D 3
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: UNIX

Software Engineering (63251)
Codes: G P E Y 6
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: C, Pascal
VAX 750 UNIX

Miami University
Department of Systems Analysis
Oxford, OH 45056

Degrees: MS SE

Contact: Mufit Ozden

Update: January 1990

Courses: **Advanced Software Engineering**
Codes: G X X X 0

Additional Information:
For more details, see the listing in Part II of this directory.

Ohio State University
Department of Computer and Information Science
Columbus, OH 43210

Degrees: BS CIS, MS CIS, PHD CIS

Contact: Dr. Stu Zweben
Associate Professor
(614) 292-9526
E-mail address: ZWEBEN@CIS.OHIO-STATE.EDU
Network: Internet

Update: April 1991

Courses: **Information Systems Analysis and Design** (CIS 516)
Codes: U P B T 4
Textbooks: *Structured Analysis Methods for Computer Information Systems*
by Teague and Pidgeon
Tools: Sun UNIX
IDE STP

Systems Programming (CIS 560)
Codes: U P R T 5
Textbooks: *Systems Software, 2nd ed.*
by Beck
Tools: Sun UNIX
IDE STP
Modula, C

Software Engineering (CIS 757)
Codes: B P E O 5
Textbooks: *Software Engineering, 3rd ed.*
by Sommerville, Ian
Tools: Sun UNIX
IDE STP
C

Software Engineering Project (CIS 758)
Codes: G P E Y 1
Textbooks: *Software Engineering, 3rd ed.*
by Sommerville, Ian
Tools: IDE STP
C
Sun UNIX

User Interface Development (CIS 788.10F)
Codes: B P E B 4
Textbooks: *Support materials (slides) for SEI-CM-17*
Readings in Human Computer Interaction
by Baecker and Buxton
Tools: Sun (X, OSF/Motif, OpenLook, AT&T IFS)
Macintosh (HyperCard, Prototyper, Guide, ArchiText)
PC (Demo, ToolBook, Guide, Hyperties, HyperPad, NaviText)

Software Testing (CIS 788.12D)
Codes: G P E Y 2
Textbooks: *Selected readings*

Hypermedia and User Interfaces (CIS 888.02X)
Codes: G N E T 1
Textbooks: *Selected readings*
Tools: Selected research systems

Reusable Software Research Project (CIS 888.12Z)
Codes: G N E T 4
Textbooks: *Selected readings*
Tools: Sun, UNIX, Ada

Additional Information:
CIS 757 is offered 2 of 3 quarters per academic year.

Wright State University
College of Engineering and Computer Science
Department of Computer Science and Engineering
Programs in Computer Science, Computer Eng., Computer Science and Eng. (Ph.D.)
Dayton, OH 45435

Degrees: BA, BS, BS CE, MS, MS CE, PHD

Contact: Mr. Chris Fickert
Assistant to the Chair
(513) 873-2491
E-mail address: cse_dept@wright.edu
Network: CSNET

Update: April 1991

Courses: **Concurrent Software Design** (Computer Engineering)
Codes: B P R T 1
Textbooks: *Operating Systems Concepts*
by Peterson, James L. and Silberschatz, Abraham
Advanced Programmers Guide to UNIX SYSTEM V
by Thomas, Rebecca and Yates, Jean
The C Programming Language
by Kernighan, Brian W. and Ritchie, Dennis M.
Software Engineering Concepts
by Fairley, Richard E.
Software Engineering with Ada, 2nd ed.
by Booch, Grady
Tools: C
NCR Tower 32/600 running UNIX System V

Introduction to Software Engineering (Computer Engineering)
Codes: B P R T 1
Textbooks: *Operating Systems Concepts*
by Peterson, James L. and Silberschatz, Abraham
Advanced Programmers Guide to UNIX SYSTEM V
by Thomas, Rebecca and Yates, Jean
The C Programming Language
by Kernighan, Brian W. and Ritchie, Dennis M.
Software Engineering Concepts
by Fairley, Richard E.
Software Engineering with Ada, 2nd ed.
by Booch, Grady
Tools: VAX Ada compiler
DEC VAX 11/785 running VMS

Software Engineering II (Software Engineering)
Codes: G P E Y 1
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tutorial: Software Reusability
by Freeman, Peter
Approaches to Prototyping
by Budde, Reinhard
Tools: compiler suitable to project
computer suitable to project
language suitable to project

Software Engineering I (Software Engineering)
Codes: G P E Y 1
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tutorial: Software Reusability
by Freeman, Peter
Approaches to Prototyping
by Budde, Reinhard
Tools: compiler suitable to project
computer suitable to project
language suitable to project

Additional Information:
A local area network of 8 Sun-3 UNIX workstations with high resolution terminals, including 1 color display, were available in 1987 to provide a powerful development environment.

Oregon

Oregon State University
School of Science
Department of Computer Science
Program in Computer Systems
Corvallis, OR 97331-3902

Degrees: BS CS, MS CS, PHD CS

Contact: Prof. Ted Lewis
Professor
(503) 754-5577
E-mail address: lewis@mist.cs.orst.edu

Update: April 1991

Courses: **Fundamentals of Software Engineering** (CS 361)
Codes: U P R A 3
Textbooks: *Software Engineering: A Beginner's Guide*
by Pressman, Roger

Applications Programming (CS 460)
Codes: U P E Y 3
Textbooks: *Professional Software Programming Practice, vol. II*
by Ledgard, Henry
Selected papers
Tools: IBM PC, Macintosh, UNIX
Lightspeed Pascal, Lightspeed C, Microsoft C, Turbo C

Software Systems (CS 561-562)
Codes: G P E Y 5
Textbooks: *CASE: Computer-Aided Software Engineering*
by Lewis, T.G.
Tools: Macintosh
Object Pascal
CASE Tools

Portland State University
School of Engineering and Applied Science
Computer Science Department
Portland, OR 97207

Degrees: BS CS, MS CS

Contact: Prof. Leonard Shapiro
Department Head
(503) 725-4036
E-mail address: len@cs.pdx.edu
Network: Internet

Update: April 1991

Courses: **Elements of Software Engineering** (CS 300)
Codes: U P R A 1

Software Engineering (CS 454)
Codes: B P E Y 5

Software Metrics (CS 510SM)
Codes: G P E Y 3

Testing and Verification (CS 510TV)
Codes: G P E Y 3

University of Oregon
School of Arts and Sciences
Department of Computer and Information Science
Eugene, OR 97403

Degrees: BA, BS, MA, MS, PHD

Contact: Stephen Fickas
Associate Professor
(503) 346-3964
E-mail address: Fickas@cs.uoregon.edu

Update: April 1991

Courses: **Software Methodology I** (CIS 422)
Codes: U P R T 6
Textbooks: *Object-Oriented Modeling and Design*
by Rumbaugh et al.
An Introduction to Object-Oriented Programming & Smalltalk
by Pinson & Wiener
C Programming in a UNIX Environment
by Kay & Kummerfeld
Tools: ParcPlace Smalltalk-80, C, Aranda, DevGuide
Sun SPARC, Macintosh IIex, Teletronix 4300

Software Methodology II (CIS 423)
Codes: U P E O 6
Textbooks: *Programming in C++*
by Dewhurst & Stark
Tools: C, RAPID, Smalltalk
Sun SPARC, Macintosh II, Tektronix 4300
C++

Software Engineering (CIS 510)
Codes: G N R Y 11
Textbooks: *Interactive Programming Environments*
by Barstow, David R., Shrobe, Howard E., and Sandewall, Erik
Software Specification Techniques
by Gehani, Narain and McGettrick, Andrew D.
Tools: Prolog, Scheme, SmallTalk
Sun SPARC, Macintosh II, Tektronix 4300

Additional Information:
Software Methodology II is offered 2 to 3 times a year. Other courses are offered in Expert Systems and Database Management Systems at the graduate level.

Pennsylvania

Allegheny College
Department of Computer Science
Meadville, PA 16335

Degrees: BS CS

Contact: Robert D. Cupper
Professor and Chair
(814) 332-2881
E-mail address: cupp@music.alleg.edu
Network: BITNET

Update: April 1991

Courses: **Introduction to Computer Science I** (CS 101)
Codes: U N R T 1
Textbooks: *Fundamentals of Computing I: Logic, Problem Solving, Programs, and Computers*
by Tucker, Allen, Bradley, W. James, Cupper, Robert, and Garnick, David K.

Introduction to Computer Science II (CS 102)
Codes: U P R T 1
Textbooks: *Introduction to Computer Science: Programming, Problem Solving, and Data Structures*
by Nance, Douglas W. and Naps, Thomas L.

Carnegie Mellon University (Entry 1)
School of Computer Science/SEI
Master of Software Engineering
Pittsburgh, PA 15213

Degrees: MSE

Contact: Dr. Norman E. Gibbs
Professor and Director
(412) 268-7703
E-mail address: gibbs@sei.cmu.edu
Network: Internet

Update: April 1991

Courses: **Software Systems Engineering** (17-711)
Codes: G P R Y 1

Formal Methods in Software Engineering (17-712)
Codes: G P R Y 1

Advanced System Design Principles (17-713)
Codes: G P R Y 1

Software Creation and Maintenance (17-721)
Codes: G P R Y 1

Software Analysis (17-722)
Codes: G P R Y 1

Software Project Management (17-723)
Codes: G P R Y 4

Software Development Studio (17-781, 782, 783)
Codes: G P R Y 2

Software Engineering Seminar (17-791, 792)
Codes: G P R Y 2

Carnegie Mellon University (Entry 2)
Mellon College of Science/School of Computer Science
Pittsburgh, PA 15213

Degrees: BS CS, PHD CS

Contact: Dr. Allan Fisher
Associate Dean for Undergrad. Education
(412) 268-7688
E-mail address: alf@vlsi.cs.cmu.edu
Network: Internet

Update: February 1990

Courses: **Software Engineering** (15-413)
Codes: U P E T 6
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: Andrew workstations
UNIX on VAX
Ada, C, and Lisp

Additional Information:
Software Engineering (15-413) is one of four courses,
any two of which are required for the BS degree in Math/CS.

Cheyney University
Arts & Sciences Division
Department of Computer & Information Sciences
Cheyney, PA 19319

Degrees: BA CIS

Contact: Prof. Jesse Williams
Associate Professor
(215) 399-2348

Update: February 1990

Courses: **Software Engineering Using Ada** (MAS 413/513)
Codes: B P E D 2
Textbooks: *Ada Language and Methodology*
by Watt, Wichmann & Findlay
Tools: Ada
IBM PS/2 Model 70/486

Drexel University
College of Arts and Science
Department of Mathematics and Computer Science
Philadelphia, PA 19104

Degrees: BS CS, MS CS

Contact: Dr. Jeffrey L. Popyack
Program Coordinator for Computer Science
(215) 895-1846
E-mail address: jpopyack@mcs.drexel.edu
Network: Internet

Update: April 1991

Courses: **Software Engineering I** (M745)
Codes: G P E Y 7
Textbooks: *Software Design and Prototyping Using me too*
by Alexander and Jones
Software Development with Modula-2
by Budgen
Tools: THINK's Lightspeed Pascal, Prime C, Sun 2.1 Modula-2, Proxy
Sun, Macintosh, PC/AT

Software Engineering II (M746)
Codes: G P E Y 7
Textbooks: *Software Design and Prototyping Using me too*
by Alexander and Jones
Software Development with Modula-2
by Budgen
Tools: THINK's Lightspeed Pascal, Prime C, Sun 2.1 Modula-2, Proxy
Sun, Macintosh, PC/AT

Topics in Software Engineering (M748)
Codes: G P E D 6

Software Engineering I (N677)
Codes: U P R Y 7
Textbooks: *Software Engineering, A Programming Approach*
by Bell, Morrey, and Pugh
Software Design and Prototyping Using me too
by Alexander and Jones
Tools: THINKS's Lightspeed Pascal, Prime C, Sun 2.1 Modula-2,
Proxy
Sun, Macintosh, PC/AT

Software Engineering II (N678)
Codes: U P E Y 7
Textbooks: *Software Design and Prototyping Using me too*
by Alexander and Jones
Software Engineering, A Programming Approach
by Bell, Morrey, and Pugh
Tools: THINK's Lightspeed Pascal, Prime C, Sun 2.1 Modula-2, Proxy
Sun, Macintosh, PC/AT

Lehigh University
College of Engineering and Physical Sciences
Department of Electrical Engineering
Bethlehem, PA 18015

Degrees: BS CS, BS CE, BS EE, MS CS, MS CE, MS EE, PHD CS, PHD CE, PHD EE

Contact: Dr. Larry Varnerin
Chairman
(215) 758-4823

Update: May 1987

Courses: **Software Engineering** (ECE 116)
Codes: U P R Y 6
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tools: CYBER 180 Model 850
DEC 20 Model 2065
Zenith Z-100 PC series

Pennsylvania State University, The
College of Science
Computer Science Department
Program in Computer Science
University Park, PA 16802

Degrees: BS CS, MS CS, PHD CS

Contact: Dr. Joseph M. Lambert
Department Head
(814) 865-9505
E-mail address: lambert@cs.psu.edu
Network: Internet

Update: April 1991

Courses: **Software Design Methods** (CMPSC 416)
Codes: U P E Y 5
Textbooks: *Software Engineering*
by Sommerville, Ian
Ada as a Second Language
by Cohen, Norman H.
Programming in Ada
by Barnes, J. G.
Tools: IBM Ada
IBM 3090

Shippensburg University
College of Arts and Sciences
Department of Mathematics and Computer Science
Program in Computer Science
Shippensburg, PA 17257

Degrees: BS CS

Contact: Dr. Howard Bell
Department Chairman
(717) 532-1431

Update: April 1991

Courses: **Software Design for Information Systems** (CPS305)
Codes: U P E Y 4
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: UNIX
AT&T 3B2
Microcomputers
Sperry 1100
C, FORTRAN, Pascal, dBase IV, TurboVision
EasyCase
Protracs

Temple University
College of Engineering, Computer Sciences and Architecture
Department of Computer and Information Sciences
Programs in Computer Science and Information Science
Philadelphia, PA 19122

Degrees: BA, BS, MS, MS CIS, PHD, PHD CIS

Contact: Ms. Laurie Shteir
(215) 787-1681

Update: February 1990

Courses: **Information Systems Analysis and Design** (201)
Codes: U P R T 1
Textbooks: *Elements of Systems Analysis*
by Gore, Marvin and Stubbe, John

Project in Information Science (301)
Codes: U P R T 1
Tools: AT&T 3B2
PCs

Software Design (338)
Codes: U P E Y 1
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Structured Design
by Yourdon, Edward N. and Constantine, Larry L.
Reliable Software Through Composite Design
by Myers, Glenford J.
Tools: IBM 4381 PCs

Theorem Proving and Program Verification (675)
Codes: G P E X 1
Textbooks: *The Design of Well-Structured and Correct Programs*
by Alagic, Saud and Arbib, Michael A.
An Introduction to the General Theory of Algorithms
by Machtey, M. and Young, P.

Software Engineering (690)
Codes: G N E X 3

Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: OPS5
Pascal
VMS

Additional Information:
Business Administration programs with concentration in Computer and Information Science are offered.

University of Pittsburgh
School of Library and Information Science
Interdisciplinary Department of Information Science
Pittsburgh, PA 15260

Degrees: BS, MS, PHD

Contact: Dr. James G. Williams
Chairman
(412) 624-9418
E-mail address: JIM%idis.uucp@pitt.csnet
Network: CSNET

Update: June 1987

Courses: **Information Systems Analysis, Design, and Evaluation** (INF SC 272)
Codes: G P E O 6
Textbooks: *Fundamentals of Systems Analysis, 3rd ed.*
by Fitzgerald, Jerry and Fitzgerald, Arda
Tools: C, COBOL, FORTRAN, Pascal
IBM PC, Macintosh, VAX 780, VAX 8650

Software Engineering and Software Tools (INF SC 276)
Codes: G P E O 5
Textbooks: *Software Engineering: A Practitioner's Approach, 2nd ed.*
by Pressman, Roger S.

Additional Information:
Here are the projected schedules for the courses:
Information Systems Analysis, Design, and Evaluation: 1988-89 winter term, 1989-90 fall term, 1990-91 fall term.
Software Engineering and Software Tools 1988-89: fall and spring terms, 1989-90 winter term, 1990-91 spring term.
See also the entry in Part II of this directory.

University of Scranton
Department of Computing Sciences
Scranton, PA 18510-4664

Degrees: MS SE

Contact: Dr. J. Fernando Naveda
Director, Master of Science in Software Engineering

Update: August 1990

Courses: **CASE Tools**
Codes: G X X X 0

Software Generation and Maintenance
Codes: G X X X 0

Software Projects Management
Codes: G X X X 0

Introduction to Software Engineering
Codes: G X X X 0

Principles and Applications of Software Design
Codes: G X X X 0

Engineering of Software Systems
Codes: G X X X 0

Requirements Analysis and Software Specification
Codes: G X X X 0

Additional Information:
See also the entry in Part II of this directory.

Villanova University
College of Liberal Arts and Sciences
Mathematical Sciences Department
Villanova, PA 19085

Degrees: BS CS, MS CS

Contact: Dr. Daniel Joyce
(215) 645-7344
E-mail address: joyce@vuvaxcom
Network: BITNET

Update: April 1991

Courses: **Software Engineering** (CSC 4700)
Codes: U P R Y 4
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tools: Turbo Pascal

Software Engineering (CSC 8540)
Codes: G N E Y 4
Textbooks: *Software Engineering*
by Schach, Stephen R.

Additional Information:
One of the requirements for the master's degree in Computer Science is writing an independent study. This often assumes the form of a major project, sometimes a group project, embodying principles of software engineering.

South Carolina

Clemson University
College of Sciences
Department of Computer Science
Clemson, SC 29634-1906

Degrees: BS CIS, BS CS, BA CS, MS CS, PHD

Contact: Dr. A. Joseph Turner
Professor and Head
(803) 656-3444
E-mail address: turner@cs.clemson.edu
Network: Internet

Update: April 1991

Courses: **Introduction to Software Development** (CpSc 372)
Codes: U P R T 1
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: Sun 4 workstations, VAX cluster with VMS and ULTRIX
Modula -2, Ada, C++, others;
tools such as dbx

Software Development Methodology (CpSc 472/672)
Codes: B P B T 6
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: VAX cluster with VMS & ULTRIX
C, Modula-2, Ada, C++
VAXset, dbx

Design and Programming Methodology (CpSc 872)
Codes: G P E Y 4
Textbooks: *Abstraction & Specification in Program Development*
by Liskov & Guttag
Software Design: Methods and Techniques
by Peters, Lawrence J.
Tools: some tools

Software Verification, Validation, and Measurement (CpSc 873)
Codes: G P E Y 5
Textbooks: *Selected readings*

Additional Information:
Software Development Methodology is offered once or twice per year.
Software Verification, Validation, and Measurement is offered every year.

Tennessee

East Tennessee State University
School of Applied Science and Technology
Department of Computer and Information Sciences
Programs in Computer Science and Information Science
Johnson City, TN 37614

Degrees: MS CS

Contact: Dr. Donald W. Gotterbarn
(615) 929-5332

Update: December 1990

Courses: **Software Engineering** (222-3250)
Codes: U P R A 4
Textbooks: *Structured Systems Development*
by Powers, Cheney, and Crow
Tools: Cadre's Teamwork
IBM PS/2 50, 80 -- OS/2 & MS-DOS
WordPerfect
Excelerator

Software Verification and Validation (222 5220)
Codes: G P E D 0

Software Generation & Maintenance (222 5310)
Codes: G P E D 0
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.

Advanced Programming Techniques (222-3310)
Codes: U P R A 0
Textbooks: *Modern Structured Analysis*
by Yourdon, Edward N.
Structured Systems Design
by Page-Jones, Meilir
Tools: IBM PS/2 50's & 80's
Cadre's Teamwork
Ada

Software Systems Engineering (222-5200)
Codes: G N R Y 0
Tools: Cadre's Teamwork
Excelerator

Software Specification (222-5210)
Codes: G P E Y 0
Textbooks: *The Specification of Complex Systems*
by Cohen, Harwood, and Jackson
Tools: IBM PC
Pascal

Software Project Management (222-5230)
Codes: G P O Y 2
Textbooks: *Managing Programming People*
by Metzger, P. W.
Selected readings

Tools: IBM PS/2 50's & 80's
Cadre's Teamwork
Miscellaneous estimation and scheduling software
WordPerfect

Software Design (222-5300)
Codes: G N B Y 3
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: IBM PS/2
Teamwork PCSA

Ethical Issues in the Use of Computers (222-5450)
Codes: G N E Y 1
Textbooks: *Computer Ethics*
by Johnson, Deborah
Selected readings

Fisk University
Natural Science and Mathematics
Department of Mathematics and Computer Science
Program in Computer Science
Nashville, TN 37208-3051

Degrees: BS CS, BS CS

Contact: Ms. Vivian J. Fielder
Assistant Professor

Update: April 1991

Courses: **Introduction to Computer Science II** (CS 120)
Codes: U P R T 1
Textbooks: *Pascal*
by Dale and Weems
Computer Science
by Nance, Douglas
Software Engineering Concepts
by Fairley, Richard E.
Tools: Pascal
VAX 11/750, IBM PS/2

Special Topics - Introduction to Software Engineering (CS 390)
Codes: U P E D 0
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Software Engineering & Ada
by Booch, Grady
Software Components & Ada: Structures, Tools, and Subsystems
by Booch, Grady
Tools: Pascal, Ada, C
IBM PS/2, IBM PC, VAX 11/750 with VMS

University of Tennessee at Chattanooga
School of Engineering
Department of Computer Science
Chattanooga, TN 37403

Degrees: BS CS, MS CS

Contact: Dr. Jack Thompson
Head, Computer Science
(615) 755-4329

Update: April 1991

Courses: **Software Engineering I** (CpSc 350)
Codes: U P R Y 10
Textbooks: *Systems Development*
by Eliason, Alan L.
Tools: Pascal
Briefcase, Excelerator, ISPF on PCs
IBM 4381

Software Engineering II (CpSc 450)
Codes: U P E Y 6
Textbooks: *Software Engineering*
by Sommerville, Ian
Complete Guide to Software Testing
by Hetzel
Tools: Pascal
IBM 4381, Sun workstations, PCs

Group Software Project (CpSc 490)
Codes: G P B T 3
Tools: IBM 4381, Sun workstations
Pascal, C

Software Project Management (CpSc 520)
Codes: G P E B 5
Textbooks: *Controlling Software Projects*
by DeMarco, Tom
Practical Project Management
by Page-Jones, Meiler

User Interface Development (CpSc 546)
Codes: G P E D 0
Textbooks: *User Interface Design*
by Thimbleby
Readings in Human-Computer Interactions
by Baeker and Buxton

Additional Information:
Software Engineering I is offered twice per year.

Vanderbilt University
School of Engineering
Department of Computer Science
Nashville, TN 37235

Degrees: BA CS, BS CS, BS EE, MS CS, MS EE, PHD

Contact: Dr. Stephen R. Schach
Associate Professor
(615) 322-2924
E-mail address: srs@vuse.vanderbilt.edu
Network: Internet

Update: April 1991

Courses: **Software Engineering** (CS 277)
Codes: B P E Y 1
Textbooks: *Software Engineering*
by Schach, Stephen R.
Tools: Verdix Ada
Sun 3/50, 3/80
UNIX

Topics in Software Engineering (CS 387)
Codes: G P E Y 3
Textbooks: *Software Engineering*
by Schach, Stephen R.
Tools: Verdix Ada
Sun 3/50, 3/80
UNIX

Texas

Baylor University
College of Arts and Sciences
Department of Engineering and Computer Science
Program in Computer Science
Waco, TX 76798

Degrees: BA CS, BS CS, BE, MS CS

Contact: Dr. William B. Poucher
Professor of Computer Science
(817) 755-3871
E-mail address: poucherw@baylor
Network: BITNET

Update: December 1990

Courses: **Introduction to Software Engineering** (CSI 4344)
Codes: P B Y 4
Textbooks: *The Mythical Man-Month: Essays on Software Engineering*
by Brooks, Frederick P., Jr.
Software Engineering - A Practitioner's Approach, 2nd ed.
by Pressman, Roger S.
Tools: Anatool, Prototyper
MacApp, MPW Pascal, Lightspeed Pascal, Object Pascal

Rice University
Department of Computer Science
Program in Computer Science
Houston, TX 77251-1892

Degrees: BA CS

Contact: Prof. Ken Kennedy
Chairman
(713) 527-4834
E-mail address: ken@rice.edu

Update: September 1988

Courses: **Programming Studio** (COMP 310)
Codes: P X Y 3
Textbooks: *Abstraction and Specification in Program Development*
by Liskov, Barbara and Guttag, John
Tools: Powell's Modula-2 compiler on VAX, moving to C++ compiler on Sun/UNIX
VAX 11/750, moving to Sun 3/50

Southwest Texas State University
School of Science
Department of Computer Science
San Marcos, TX 78666

Degrees: BA, BS, MA, MS

Contact: Dr. Sukhkit Singh
Chairman
(512) 245-3434

Update: April 1991

Courses: **Software Engineering** (CS 3398)
Codes: U P E Y 5
Textbooks: *Software Engineering*
by Sommerville, Ian
Software Engineering: A Practitioner's Approach
by Pressman, Roger S.
Tools: C, FORTRAN, Pascal
VAX 8600 with VMS

Advanced Software Engineering (CS 5398)
Codes: G P E Y 3
Textbooks: *Software Engineering with Ada*
by Booch, Grady
Principles of Information System Analysis and Design
by Mills, Harlan D., Linger, Richard C., and Hevner
Tools: VAX Ada, VAX C
VAX 8600 with VMS

St. Edward's University
School of Natural Science
Department of Computer Science
Austin, TX 78704

Degrees: BA CS, BS CS, BA CIS

Contact: Dr. Barbara Boucher Owens
Associate Professor of Computer Science
(512) 448-8463

Update: April 1991

Courses: **Software Engineering** (CS 39)
Codes: U P E Y 1
Textbooks: *Software Engineering*
by Sommerville, Ian

Stephen F. Austin State University
School of Business Administration
Department of Computer Science
Nacogdoches, TX 75962

Degrees: BS CS, MS CS

Contact: Dr. Jarrell C. Grout
Professor
(409) 568-1876
E-mail address: jcgrout@sfaustin
Network: BITNET

Update: April 1991

Courses: **Software Development Principles** (513)
Codes: G P E B 2
Textbooks: *Software Engineering*
by Schach, Stephen R.

Texas Christian University
AddRan College
Computer Science Department
Master's Program in Software Design and Development
Ft. Worth, TX 76129

Degrees: MS Software Design and Development

Contact: Dr. James R. Comer
Chairman
(817) 921-7166

Update: December 1990

Courses: **Introduction to Software Design and Development** (SODE 5143)
Codes: G N R Y 9
Textbooks: *Software Engineering*
by Pressman, Roger S.
Software Engineering: An Industrial Approach
by Radice, R. and Phillips, R.

Ada Design and Development (SODE 6013)
Codes: G P E D 4
Textbooks: *Software Engineering with Ada*
by Booch, Grady
Tools: DEC Ada
DEC VAX 11/780

Object Oriented Programming (SODE 6023)
Codes: B P E D 0
Tools: Sun Workstations
Smalltalk/VMac, C++

Software Quality Assurance and Metrics (SODE 6043)
Codes: G P E D 4
Textbooks: *Software Metrics*
by Gilb, Tom

Security and Privacy (SODE 6053)
Codes: G P E D 4
Textbooks: *Foiling the System Breakers: Computer Security and Access Control*
by Lobel, Jerome

Modern Software Requirements and Design Techniques (SODE 6113)
Codes: G P R Y 8
Textbooks: *Structured Requirements Definition*
by Orr, Kenneth T.
Software Design: Methods and Techniques
by Peters, Lawrence J.

Applied Design, Programming and Testing Techniques (SODE 6123)
Codes: G P R Y 8
Textbooks: *The Art of Software Testing*
by Myers, Glenford J.

Software Evolution
by Arthur, L.

Management of Software Development (SODE 6153)
Codes: G P R Y 8
Textbooks: *Principles of Software Engineering Management*
by Gilb, Tom
Implementing Software Engineering Practices
by Buckley, Fletcher

Economics of Software Development (SODE 6163)
Codes: G P R Y 8
Textbooks: *Software Engineering Economics*
by Boehm, Barry W.
Programming Productivity
by Jones, R.

Effective Communications in Small Groups (SODE 6193)
Codes: G P E D 3
Textbooks: *Guide to Managerial Communication*
by Munter

Software Implementation Project I (SODE 7113)
Codes: G P R Y 7
Textbooks: *How to Write Macintosh Software*
by Master, Scott
Tools: Apple Macintosh, ANATOOLS, MACSCHEDULE, Prototyper, Think Pascal, MicroPlanner PLUS

Software Implementation Project II (SODE 7123)
Codes: G P R Y 7

Texas Tech University
Computer Science Department
Program in Computer Science
Lubbock, TX 79409-3104

Degrees: BS CS, MS CS, PHD

Contact: Dr. Donald J. Bagert, Jr.
Assistant Professor of Computer Science
(806) 742-1189
E-mail address: bedjb@ttacs1.ttu.edu
Network: Internet

Update: December 1990

Courses: **Senior Project Design** (CS 4411)
Codes: U P R T 4
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tools: Turbo Pascal 5.5, Excelerator
MS-Windows (on 386 PCs)

Senior Project Implementation Laboratory (CS 4412)
Codes: U P R T 4
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.

CASE Using Software Development Tools
by Fisher, Alan S.

Tools: Pascal (Turbo Pascal 5.5)
Excelerator
MS-Windows
(on 386 PCs)

Software Engineering Systems (CS 5363)
Codes: G P E B 6
Textbooks: *Software Engineering, 3rd Edition*
by Sommerville, Ian
Tools: Turbo Pascal 5.5
Turbo C 2.0
386 PCs

Principles of Software Development Systems (CS 5366)
Codes: G P E Y 1
Textbooks: *Software Engineering, 3rd ed.*
by Sommerville, Ian
Introduction to Programming Using Ada
by Volper, Dennis and Katz, Martin D.
Tools: Turbo Pascal 5.5
Turbo C 2.0
VAX Ada
Excelerator/RTS
386 PCs and VAX/VMS

University of Houston - Clear Lake
School of Natural and Applied Sciences
Department of Computer Science and Information Systems
Program in Computer Science
Houston, TX 77058

Degrees: BA CIS, BS CS, MA CIS, MS CS

Contact: Dean E. T. Dickerson
Office of the Dean

Update: September 1988

Courses: **Ada Programming Language** (CSCI 3432)
Codes: U P R T 1
Textbooks: *Ada as a Second Language*
by Cohen, Norman H.
Reference Manual for the Ada Programming Language
ANSI/MIL-STD-1815A
Tools: VAX 11/785

Software Design Methodologies (CSCI 4432)
Codes: U P E Y 3
Textbooks: *A Unified Methodology for Developing Systems*
by Wallace, Stockenberg, and Charette
Tools: Ada (DEC)
VAX 11/785

Software Design Tools (CSCI 5435)
Codes: G P E Y 1
Textbooks: *Software Engineering*
by Sommerville, Ian

Tools: Ada (DEC)
VAX 11/785

Additional Information:

UH-CL has a strong emphasis on the engineering of computer automated systems which includes the integration and trade-off studies of issues involving software, hardware, and people. There are several research projects, and these have a strong component of software engineering. In addition, two system-level courses are offered annually that contain such a component: Computer Automated Systems (CTEC 4532) and Synthesis of Computer Networks (CTEC 6532).

See also the entry in Part II of this directory.

University of Texas at Arlington, The
The College of Engineering
Department of Computer Science Engineering
Arlington, TX 76019

Degrees: BS, MS CS, MS CE, PHD CS, PHD CE

Contact: Dr. Paul C. Grabow
Assistant Professor
(817) 273-2348
E-mail address: cs-grabow@uta.edu

Update: September 1988

Courses: **Software Engineering** (CS 5324)
Codes: G P R O 6
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.
Tools: Ada, Pascal
VAX 11/780
Gypsy, ISML, Prolog

Advanced Software Engineering (CS 6324)
Codes: G P E Y 6
Textbooks: *Applying Software Engineering Principles with FORTRAN*
by Marca, David
Tools: Ada, Pascal
VAX 11/780

Methods in Software Engineering (CSE 4310)
Codes: U P E Y 6
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.
Tools: Pascal
VAX 11/780

Software Engineering in Ada (CSE 5321)
Codes: G P E O 2
Textbooks: *Programming in Ada*
by Barnes, John Gilbert Presslie
Tools: DEC Ada, VAX 11/780

Managing System Development (CSE 5346)
Codes: G P E Y 1
Textbooks: *Cost Estimation for Software Development*
by Londeix, B.
Principles of Software Engineering Management
by Gilb, T.
Tools: DEC Pascal
VAX 8700

Additional Information:
Software Engineering is offered twice per year (spring and summer).
Software Engineering in Ada is offered intermittently.

University of Texas at Austin, The
College of Natural Science
Department of Computer Science
Austin, TX 78712

Degrees: BA, BS, MS, PHD

Contact: Dr. Laurie Werth
Professor
(512) 471-9535
E-mail address: lwerth@cs.utexas.edu

Update: April 1991

Courses: **Software Engineering** (CS 373)
Codes: U P E T 7
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: Tools developed by students
HP9000 workstations
Macintosh

Additional Information:
We integrate Software Engineering in the CS 1, CS 2 (Pascal) and Data Structures sequence at the undergraduate level.

University of Texas at Dallas, The
School of Natural Sciences and Mathematics
Program in Computer Science
Richardson, TX 75083

Degrees: BS, MS, PHD

Contact: Dr. Simeon Ntafos
Associate Professor and Program Head
(214) 690-2181

Update: January 1986

Courses: **Software Engineering** (CS 6354)
Codes: G N E Y 1
Textbooks: *Software Engineering*
by Sommerville, Ian

Software Validation, Verification, and Performance Measurement (CS 6367)
Codes: G P E O 1

Additional Information:
Software Validation, Verification, and Performance Measurement is offered twice every three years.

University of Texas at El Paso, The
College of Engineering
Computer Science Department
El Paso, TX 79968-0518

Degrees: BS CS, BS CE, BS EE; MS CS, MS EE; PHD CE

Contact: Dr. Daniel Cooke
Assistant Professor
(915) 747-5470

Update: February 1990

Courses: **Software Engineering I** (CS 3410)
Codes: U P R Y 4
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: Pascal, Prolog

Software Engineering II (CS 3411)
Codes: U P R Y 4
Tools: This is a project course. The tools and languages used vary depending upon the nature of the project.

Software Engineering (CS 3531)
Codes: G P E Y 0

University of Texas at San Antonio, The
College of Science and Engineering
Division of Mathematics, Computer Science and Systems Design
Program in Computer Science
San Antonio, TX 78285

Degrees: BS, MS

Contact: Dr. Barbara Boucher Owens
Associate Professor of Computer Science
(512) 448-8463

Update: January 1986

Courses: **Programming Methodology** (CS 3773)
Codes: U P R O 1
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Automated Data Systems Documentation Standards
by (author unknown)
The Elements of Programming Style
by Kernighan, Brian W. and Plauger, P.J.
Tools: IBM 4381 with CMS
VAX 11/780 with VMS

Software Design (CS 5103)
Codes: G P E O 1
Textbooks: *The Program Development Process: Part II: The Programming Team*
by Aron, Joel D.
Tools: IBM 4381 with CMS

Software Testing (CS 5133)
Codes: G P E O 1
Textbooks: *The Art of Software Testing*
by Myers, Glenford J.
Tools: VAX 11/780 with VMS

Software Configuration Management (CS 5143)
Codes: G P E O 1
Textbooks: *Software Configuration Management: An Investment in Product Integrity*
by Bersoff, Edward et al.

Additional Information:
Programming Methodology is offered in fall and spring semesters. Software Design, Software Configuration Management, and Software Testing are offered together in regular semester rotation. The graduate courses (5103, 5133, 5143) comprise a depth area of study for graduate students, who must develop at least three such areas in their course of study.

Utah

Brigham Young University
College of Math and Applied Sciences
Department of Computer Science
Provo, UT 84602

Degrees: BS CS, MS CS, PHD CS

Contact: Prof. Scott N. Woodfield
Associate Professor
(801) 378-2915

Update: November 1987

Courses: **Introduction to Software Design** (CS 327)
Codes: U P R O 10
Textbooks: *Software Engineering*
by Sommerville, Ian
Composite Structure Design
by Myers, Glenford J.
Tools: UNIX (VAX, Sun Microsystems, 3B2), Ada, Eiffel

Systems Analysis (CS 425)
Codes: U P E O 10
Textbooks: *Structured Analysis and System Specification*
by DeMarco, Tom
Structured Systems Analysis: Tools and Techniques
by Gane, Chris and Sarson, Trish

Software Testing (CS 429)
Codes: U P E O 10
Textbooks: *Software Testing Techniques*
by Beizer, Boris

Software Development and Maintenance (CS 525)
Codes: G P E O 4
Textbooks: *IEEE Tutorial on Software Design Techniques*
by Freeman, Peter and Wasserman, Anthony I.

Software Management and Quality Assurance (CS 527)
Codes: G P E O 4
Textbooks: *Software Quality Assurance: A Practical Approach*
by Chow, Tsun S.
Software Cost Estimation and Life-Cycle Control
by Putnam, Lawrence H.
IEEE Tutorial: Software Configuration Management
by Bryan, William, Chadbourne, Christopher, and Siegel, Stan

Theory of Software Engineering (CS 627)
Codes: G P E O 4

Additional Information:
Introduction to Software Design is offered 3 times each year. Software Testing and Systems Analysis are offered once or twice per year. Software Development and Maintenance, Software Management and Quality Assurance, and Theory of Software Engineering are offered once every 3 semesters.

University of Utah
Department of Computer Science
Salt Lake City, UT 84112

Degrees: MS, PHD

Contact: Susan Jenson
Administrative Officer
(801) 581-8224

Update: February 1990

Courses: **Software Engineering Laboratory** (CS 451,CS 452,CS 453)
Codes: U P X X 0

Software Engineering (CS 631)
Codes: B P X X 0

Software Engineering (CS 632)
Codes: B P X X 0
Textbooks: *Selected readings*
Abstraction and Specification in Program Development
by Liskov, Barbara and Guttag, John
Tools: Clue Compiler
Student's choice
DEC VAX 11/780, Sun 3/280, various others

Utah State University
College of Science
Department of Computer Science
Logan, UT 84322-4205

Degrees: BS CS, MS CS

Contact: Prof. Greg Jones
Associate Department Head
(801) 750-3267
E-mail address: GJONES@cc.usu.edu

Update: April 1991

Courses: **Software Systems** (CS 456)
Codes: U P R A 9
Textbooks: *Software Engineering with Student Project*
by Mynatt
Tools: C++
PC Clones
HP workstations
Teamwork

Software Engineering (CS 627-8-9)
Codes: G P E Y 3
Textbooks: *Software Engineering*
by Jones, Greg
Tools: HP Workstations, VAX 8500
Teamwork, TeleSoft Ada

Virginia

College of William and Mary
School of Arts and Sciences
Department of Computer Science
Williamsburg, VA 23185

Degrees: BS CS, MS CS, PHD CS

Contact: Dr. Robert E. Noonan
Professor
(804) 221-3456
E-mail address: noonan@cs.wm.edu
Network: Internet

Update: September 1988

Courses: **Software Engineering** (CS 435, 535)
Codes: B P E Y 1
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: Pascal, Ada, C
T
IBM PC-AT

Theory of Program Correctness (CS 552)
Codes: G P B O 5
Textbooks: *The Science of Programming*
by Gries, David
Tools: Sheffield Pascal
Primes

Formal Methods in Software Engineering (CS 555)
Codes: G P E Y 2
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Tools: Sheffield Pascal
Primes

Human Factors (CS 575)
Codes: G P E B 5
Textbooks: *Software Psychology: Human Factors in Computer and Information Systems*
by Shneiderman, Ben
Tools: Sheffield Pascal
Primes

Program Testing (CS 605)
Codes: G P E B 5
Tools: Sheffield Pascal
Primes

Additional Information:
Software Engineering and Theory of Program Correctness are offered once every 3 semesters.

George Mason University
SITE
Information Systems & Systems Engineering
Fairfax, VA 22030

Degrees: BS, MS, MSE, PHD CS

Contact: Prof. Hassan Gomaa

Update: February 1990

Courses: **Software Construction** (CS 619/SWSE 619)
Codes: G P R T 0

Formal Methods and Models in Software Engineering (CS 623)
Codes: G P R T 4

Software Requirements and Prototyping (SWSE 620)
Codes: G P R T 1
Textbooks: *Software Construction in Ada*
by Sanden
Software Requirements: Analysis & Specification
by Davis
Software Engineering: A Practitioner's Guide
by Pressman, Roger S.
Science of Programming
by Gries, David
Tutorial: Software Engineering Project Management
by Thayer, Richard
Selected readings
Tools: WICOMO, COSTMODL
SuperProject Plus

Software Design (SWSE 621)
Codes: G P R T 1

Software Project Management (SWSE 625)
Codes: G P R T 1

Software Project Lab (SWSE 626)
Codes: G P R T 1

Advanced Software Requirements (SWSE 720)
Codes: G P E Y 0
Textbooks: *Selected readings*

University of Virginia
School of Engineering and Applied Science
Department of Computer Science
Charlottesville, VA 22903

Degrees: MS CS, MCS, PHD

Contact: Prof. Robert P. Cook
Associate Chairman
(804) 924-7605

Update: April 1991

Courses: **Software Engineering Laboratory** (CS 485)
Codes: U P R Y 6
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tools: UNIX
C

Software Engineering (CS 685)
Codes: G P E Y 6
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Tools: UNIX
StarLite Modula-z SDE

Software Engineering (CS 885)
Codes: G N E D 1

Virginia Commonwealth University
College of Humanities and Sciences
Department of Mathematical Sciences
Division of Computer Science
Richmond, VA 23284-2014

Degrees: BA, BS, MA, MS

Contact: Dr. Reuben W. Farley
Department Chairman
(804) 367-1301

Update: April 1991

Courses: **Software Engineering** (591)
Codes: B P E D 1
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: IBM 3170
IBM PC
IBM PC/AT
Pyramid mini-computer network

Washington

Eastern Washington University
Sciences, Mathematics and Technology
Computer Science Department MS - 86
Cheney, WA 99004-2495

Degrees: BS CS, BS CIS, MS CS

Contact: Dr. Douglas D. Bickerstaff
Assoc. Professor
(509) 359-6260
E-mail address: dbickerstaff@ewuvms
Network: BITNET

Update: April 1991

Courses: **Software Development I** (CSCD 450)
Codes: U P R Y 0
Tools: C, Pascal, MacProject
Microsoft Proj. Manager, TeamWork
Sun/UNIX, Vax/WMS
Apple Macintosh
PC/DOS
Excelerator

Software Development II (CSCD 451)
Codes: U P R Y 0
Tools: C, Pascal, MacProject,
Microsoft Project Manager, TeamWork
Sun/UNIX, Vax/VMS,
Apple Macintosh
PC/DOS
Excelerator, Rdb

Software Development III (CSCD 452)
Codes: U P R Y 0
Tools: C, Pascal, MacProject
Microsoft Project Manager, TeamWork
Sun/UNIX, Vax/VMS
Apple Macintosh
PC/DOS
Excelerator

Software Engineering (CSCD 524)
Codes: G P R Y 5
Textbooks: *Lecture notes and selected reprints*
Tools: Pascal, C
Microsoft Project Manager, TeamWork, MacProject
Sun/UNIX, Vax/VMS
Apple Macintosh
PC/DOS
Excelerator

Seattle University
School of Science and Engineering
Department of Software Engineering/Computer Science
Program in Software Engineering
Seattle, WA 98122

Degrees: MSE

Contact: Dr. Everald E. Mills
Director of Software Engineering
(206) 296-5510
E-mail address: mills%sumax.uucp@beaver.cs.washington.edu

Update: September 1988

Courses: **Technical Communication** (SE 508)
Codes: G N R Y 9
Textbooks: *Writing for the Technical Professions*
by Trzyna, T.
The Elements of Style
by Strunk and White
Tools: Encore
Macintosh, PCs
C, Pascal

Software Systems Analysis (SE 510)
Codes: G P R Y 9
Textbooks: *Modern Structured Analysis*
by Yourdon, Edward N.
Tools: Encore
Macintosh, PCs
Various languages

System Design Methodology (SE 512)
Codes: G P R Y 9
Textbooks: *The Practical Guide to Structured Systems Design*
by Page-Jones, Meilir
Tools: Encore
Macintosh, PCs
Various languages

Programming Methodology (SE 514)
Codes: G P R Y 9
Textbooks: *Writing Efficient Programs*
by Bentley, Jon Louis
Tools: Encore
Macintosh, PCs
Various languages

Software Quality Assurance (SE 516)
Codes: G P R Y 9
Textbooks: *The Art of Software Testing*
by Myers, G.
Testing Software Development
by Ould and Unwin
Tools: Encore
Macintosh, PCs
Various languages

Software Metrics (SE 518)
Codes: G P R Y 9

Textbooks: *Software Engineering Metrics and Models*
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.
Tools: Encore
Macintosh, PCs
Various languages

Software Project Management (SE 531)
Codes: G P R Y 9
Textbooks: *Managing a Programming Project*
by Metzger, P.
Dynamic Project Management: A Guide for Managers and Engineers
by Kezborn & Schilling
Tools: Encore
Macintosh, PCs
Various languages

System Procurement and Contract Acquisition (SE 533)
Codes: G P E Y 9
Textbooks: *Data Processing Contracts: Structure, Contents, and Negotiations*
by Brandon, Dick H. and Segelstein, S.
Tools: Encore
Macintosh, PCs
Various languages

Formal Methods (SE 543)
Codes: G P R Y 9
Textbooks: *Structured Programming: Theory and Practice*
by Linger, Richard C., Mills, Harlan D., and Witt, Bernard I.

Human Factors in Computing (SE 560)
Codes: G P E Y 9
Textbooks: *Designing the User Interface*
by Schneiderman, B.
Elements of Friendly Software Design
by Heckel, P.
Tools: Encore
Macintosh, PCs
Various languages

Data Security and Privacy (SE 562)
Codes: G P E Y 9
Textbooks: *Security, Accuracy, and Privacy in Computer Systems*
by Martin, James
Tools: Encore
Macintosh, PCs

Software Engineering Project 1, 2, 3 (SE 585, SE 586, SE 587)
Codes: G P R Y 9
Tools: Varies by project

Special Topics (SE 591, SE 592, SE 593)
Codes: G P E D 9
Textbooks: *Varies by topic*
Tools: Varies by topic

Independent Study (SE 596, SE 597, SE 598)
Codes: G P E D 9
Textbooks: *Varies by topic*
Tools: Varies by topic

Additional Information:

At Seattle University, Software Engineering is viewed as an academic/professional discipline which has its principal academic basis in computer science. Thus, the following graduate courses in computer science are also offered as technical electives in the MSE program: ESW 500 Information Structures and Algorithms, ESW 501 Computer Systems Principles, ESW 541 Database Systems, ESW 551 Distributed Computing, ESW 553 Artificial Intelligence, ESW 564 Computer Graphics, and ESW 566 Real Time Systems.

See also the entry in Part II of this directory.

University of Washington
College of Arts and Sciences
Department of Computer Science
Seattle, WA 98195

Degrees: BS CS, MS CS, PHD CS

Contact: Prof. Richard E. Pattis
Assistant Professor
(206) 545-3798
E-mail address: pattis@cs.washington.edu

Update: October 1988

Courses: **Software Engineering** (CSci 503)
Codes: G P E Y 3
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.
Tools: Turbo Pascal, UNIX C, Xerox XDE
IBM PC/AT
MicroVAX II
VAX 8550
Xerox Dandelion
Mesa

Washington State University
College of Sciences and Arts
Department of Computer Science
Pullman, WA 99164

Degrees: BS, MS, PHD

Contact: Dr. David B. Benson
Professor
(509) 335-2706

Update: January 1986

Courses: **Software Development** (CptS 422)
Codes: U P E Y 1
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
C: An Advanced Introduction
by Gehani, Narain

Introducing the UNIX System
by McGilton, Henry and Morgan, Rachel
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.
The UNIX C Shell Field Guide
by Anderson, Gail and Anderson, Paul

Tools: UNIX systems

Software Development Lab (CptS 423)
Codes: U P E Y 1
Textbooks: *Introducing the UNIX System*
by McGilton, Henry and Morgan, Rachel
C By Dissection: The Essentials of C Programming
by Kelley, Al and Pohl, Ira
Tools: UNIX systems

Verification (CptS 522)
Codes: G P E Y 1
Textbooks: *The Science of Programming*
by Gries, David

Additional Information:

Research opportunities in system software engineering, software test concepts, distributed computing concepts (especially theory) are available.

West Virginia

University of West Virginia College of Graduate Studies (UWVCOGS)
Engineering and Science Division
Information Systems
Institute, WV 25112

Degrees: MS CIS

Contact: Prof. Robert N. Hutton
Associate Professor
(304) 766-2037
E-mail address: U006A@WVNVM
Network: BITNET

Update: April 1991

Courses: **Ada Programming** (IS 525)
Codes: B N E Y 4
Textbooks: *Programming in Ada*
by Barnes, John Gilbert Presslie
Tools: VAX Ada

Systems Analysis Techniques (IS 605)
Codes: G N R Y 5
Textbooks: *Structured Analysis*
by Yourdon, Edward N.

System Design (IS 610)
Codes: G P R Y 6
Textbooks: *Computer Information Systems Development: Design and Implementation*
by Adams, Powers, and Owles
Tools: VM/CMS
VAX

Software Engineering Principles (IS 625)
Codes: G P E Y 4
Textbooks: *Software Engineering with Ada*
by Booch, Grady
Tools: VAX Ada

West Virginia University
Department of Statistics and Computer Science
Program in Computer Science
Morgantown, WV 26506

Degrees: BS, MS, PHD

Contact: Dr. Donald F. Butcher
Professor and Chairman
(304) 293-3607
E-mail address: dfb@cs.wvu.wvnet.edu
Network: Internet

Update: April 1991

Courses: **Principles of Software Development** (CS 170)
Codes: U P E Y 5
Tools: PL/I optimizing compiler on VAX PL/I
PL/I optimizing compiler on IBM
IBM 3081
VAX 11/780
PL/I and system utilities

Software Systems Design (CS 270)
Codes: U P E D 3
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.

Software Engineering (CS 275)
Codes: U P E Y 2
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: VAX
Ada

Ada with Software Engineering (CS 291/391)
Codes: B P E Y 3
Textbooks: *Software Engineering with Ada*
by Booch, Grady
Tools: Digital Ada
VAX 11/780 under VMS

Software Engineering in Data Communications (CS 350)
Codes: G P E Y 4
Tools: ALSYS Ada
IBM PC Assembler
Lattice C
RT-11 Assembler
VAX , UNIX C
IBM PC/AT, IBM PC/XT, IBM PCs
PDP 11/23s
VAX 11/750
Assembly

Reusable Software Components (CS 491)
Codes: G P E D 1
Textbooks: *Software Reusability, Vol. I*
by Biggerstaff, Ted J. and Perlis, Alan J. (eds)
Tools: Ada

Software Reusability (CS 491)
Codes: G P E D 1
Textbooks: *Software Reusability, Vol. I*
by Biggerstaff, Ted J. and Perlis, Alan J. (eds)
Tools: Ada, ML, C++

Additional Information:
Courses numbered 0-99 are Freshman and Sophomore level courses. Courses numbered 100-299 are Junior and Senior level courses. Up to four 200-level courses may count as credit toward the MS degree for graduate students. Courses numbered 300-399 are MS level courses, and courses numbered 400-499 are PhD level courses. All 200-level courses have CS 1, 2, 50 and 51, a year of calculus, and a course in discrete mathematics as prerequisites.

Wisconsin

Marquette University
College of Engineering
Department of Electrical and Computer Engineering
Program in Electrical Engineering
Milwaukee, WI 53233

Degrees: BS EE, MS EE, PHD EE

Contact: Dr. Russell J. Niederjohn
Professor and Chairman
(414) 224-6820
E-mail address: NIEDERJOHN@MUCSD
Network: BITNET

Update: April 1991

Courses: **Software Engineering** (EECE-211)
Codes: G N E T 11
Tools: Pascal
VAX

Additional Information:
Other courses on compilers, advanced software, database, operating systems, and architecture are offered.

University of Wisconsin-Madison
College of Engineering
Department of Industrial Engineering
Madison, WI 53706

Degrees: MS, PHD

Contact: Prof. A. Thesen
Department Chairman
(608) 262-2686

Update: April 1991

Courses: **Computer Methods in Industrial Engineering** (490-612-9)
Codes: G N B Y 9
Textbooks: *Selected readings*
Tools: Turbo Pascal
IBM PC

University of Wisconsin-Milwaukee
School of Engineering and Applied Science
Department of Electrical Engineering and Computer Science
Milwaukee, WI 53201

Degrees: BS, MS, PHD

Contact: Dr. K. Vairavan
Chair, Computer Science
(414) 229-5183
E-mail address: ku@cs.uwm.edu
Network: Internet

Update: June 1988

Courses: **Software Engineering Laboratory** (262-438)
Codes: B P E Y 1
Textbooks: *None -- project based course*
Tools: VAX 11/750, 68000 based, MicroVAX 2000
UNIX/C under X11

Introduction to Software Engineering (262-536)
Codes: B P R O 8
Textbooks: *Software Engineering: A Practical Approach*
by Pressman, Roger S.
Software Engineering in C
by Darnell, Peter A. and Margolis, Philip E.
Tools: 68000 based, VAX 11/750, MicroVAX 2000 running X11

Additional Information:
262-536 Introduction to Software Engineering is offered twice a year.

University of Wisconsin-Stout
Mathematics Department
Program in Applied Mathematics with Concentration in Software Development
Menomonie, WI 54751

Degrees: BS CS

Contact: Prof. Bruce W. Johnston
Professor of Computer Science
(715) 232-2481
E-mail address: Johnston@uwstout
Network: Internet

Update: April 1991

Courses: **Software Engineering** (354-448)
Codes: U P B T 8
Textbooks: *Software Engineering*
by Sommerville, Ian
Software Engineering with Ada
by Booch, Grady
Tools: VAX and Zenith 286 PCs running Ada with DEC and Meridian compilers

Wyoming

University of Wyoming
Department of Computer Science
Program in Computer Science
Laramie, WY 82071

Degrees: BS CS, BA CS, BS MIS, MS CS, PHD CS

Contact: Prof. John Rowland
(307) 766-6475

Update: January 1990

Courses: **Software Engineering** (COSC 684)
Codes: B P O B 1
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: Ada on VAX 8800
PC
VAX 11/785
VAX 8800

Software Engineering Laboratory (COSC 685)
Codes: B P E B 2
Tools: Ada
VAX 8800

Software Engineering Management (COSC 884)
Codes: G P E Y 1
Textbooks: *Managing the Software Process*
by Humphrey, W.S.
Tools: Ada
VAX 8800

Software Management Laboratory (COSC 885)
Codes: G P E B 0
Tools: Ada
VAX 8800

Additional Information:
COSC 885 Software Management Laboratory is operated jointly with the Software Engineering Laboratory; members of this class act as team leaders.

Australia

Royal Melbourne Institute of Technology
Information Technology Division
Melbourne, VC 3001 Australia

Degrees: BS CS, MS CS

Contact: Prof. Anthony Y. Montgomery
Head
660-2943
E-mail address: aym%goanna.oz@uunet.uu.net

Update: March 1990

Courses: **Software Engineering 1** (CS 280)
Codes: U X R X 1

Software Engineering 2 (CS 381)
Codes: U X E X 1
Textbooks: *Models and Measurements for Quality Assessment of Software*
by Mohanty, S.N.

Software Engineering 3 (CS 387)
Codes: U X E X 1
Textbooks: *The Mythical Man-Month: Essays on Software Engineering*
by Brooks, Frederick P., Jr.

Canada

Alberta

University of Alberta, The
School of Science
Department of Computing Science
Edmonton, AB T6G 2H1 Canada

Degrees: BS, MS, PHD

Contact: Dr. Paul Sorenson
Chairman
(403) 492-4589
E-mail address: sorenson@cs.ualberta.ca

Update: April 1991

Courses: **Software Engineering** (CMPUT 301)
Codes: U P R T 5
Textbooks: *Software Engineering*
by Somerville, Ian
C Programming in the Berkeley UNIX Environment
by Horspool, N. R.
Tools: Sun workstation (UNIX 05)

Specification and Verification (CMPUT 508)
Codes: G P E Y 4
Textbooks: *The Logic of Programming*
by Hehner, E.C.
Tools: VAX computer systems (UNIX OS)
m- EVES Verification System

British Columbia

University of Victoria
Faculty of Engineering
Department of Computer Science
Victoria, BC V8W 2Y2 Canada

Degrees: BS, MS, PHD

Contact: Dr. Daniel Hoffman
Assistant Professor
(604) 721-7222
E-mail address: dhoffman@uvunix.uvic.ca

Update: December 1990

Courses:

Software Engineering (CSC 365)
Codes: U P R T 6
Textbooks: *The Mythical Man-Month: Essays on Software Engineering* by Brooks, Frederick P., Jr.
Tools: C, Pascal on UNIX 4.2
Pyramid
VAX 11/780

Computer Communications & Networks (CSC 450)
Codes: G P R Y 5
Textbooks: *Computer Networks* by Tanenbaum, A.S.
Tools: PCs / 3 Com Ethernet

Design & Analysis of Real-Time Systems (CSC 460)
Codes: G X E Y 5
Textbooks: *Real-Time Systems and Their Programming Languages* by Burns & Wellings
Tools: Modula 2 on 386 PC

Advanced Software Engineering (CSC 465)
Codes: G P E Y 3
Textbooks: *Structured Programming: Theory & Practice* by Linger, Richard C., Mills, Harlan D., Witt, Bernard I.
Tools: UNIX
C on Suns
Locally written testing tools, in C and Prolog

Additional Information:
Software Engineering/Education Cooperative Project - a joint project with IBM Canada to advance the state of the art in educational software

Nova Scotia

Acadia University
Jodrey School of Computer Science
Department of Computer Science
Wolfville, NS B0P 1X0 Canada

Degrees: BS CS, MS CS

Contact: Dr. Leslie H. Oliver
Professor and Director
(902) 542-2201 x331
E-mail address: oliver@acadiau.ca
Network: BITNET

Update: December 1990

Courses: **Software Engineering** (Comp 3653)
Codes: U P B Y 5
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
The Mythical Man-Month
by Brooks, Frederick P., Jr.
Using Excelerator for Systems Analysis & Design
by Whitten, Jeffrey L. & Bentley, Ronnie D.
Tools: Turbo Pascal, UNIX C
PC-Compatible
Sun
Excelerator
Foxbase

Additional Information:
Acadia University offers degrees in BCSH, BCSS Software, and BCSS Business Data Processing.

Ontario

Queen's University
Faculty of Arts and Science
Department of Computing and Information Science
Kingston, ON K7L 3N6 Canada

Degrees: BS, MS, PHD

Contact: Dr. David A. Lamb
Assistant Professor
(613) 545-6067
E-mail address: dalamb@qucis.queensu.ca
Network: BITNET

Update: April 1991

Courses: **Modules and Specifications** (CISC 322)
Codes: U P E Y 2

Software Engineering (CISC 422/CISC 838)
Codes: B P E Y 5
Textbooks: *Software Engineering: Planning for Change*
by Lamb, David
Tools: Berkeley Pascal
Sun Computing Server under UNIX
Test Driver generator (developed at Queen's)
module decomposition checker
schedule maintenance tool

Software Engineering Environments (CISC 849)
Codes: G N E Y 1
Tools: Yacc
LeX
Interface Description Language
Tool user interface generator
Program Component Generator tools

Additional Information:
As a senior thesis, computing majors take CISC-499, a course where (working by themselves, supervised by a faculty member) they complete a substantial programming project.

University of Ottawa
Faculty of Science
Department of Computer Science
Program in Computer Science
Ottawa, ON K1N 9B4 Canada

Degrees: BS CS, MCS, PHD

Contact: Dr. H. Ural
Associate Professor
(613) 564-5092
E-mail address: HURSL@UOTTAWA
Network: BITNET

Update: January 1990

Courses: **Software Engineering I** (CSI 3111)
Codes: U P R Y 4
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Software Engineering: A Practitioner's Approach
by Pressman, Roger S.
Tools: Pascal, Ada, Prolog

Software Engineering II (CSI 4112)
Codes: U P R Y 6
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Software Engineering: A Practitioner's Approach
by Pressman, Roger S.
Tools: VAX 750
C, Ada

Software Testing: Theory and Practice (CSI 5111)
Codes: G N E Y 7
Textbooks: *Selected readings*

Software Engineering (CSI 5112)
Codes: G N E Y 5
Textbooks: *Selected readings*
Tools: VAX 750
Modula II, Ada

Additional Information:
The University of Ottawa aiso offers the following courses: B.Sc. Major and Honours with General Computer Science; B.Sc. Major and Honours with Information and Management System Software Engineering (offered in the winter and summer terms); Software Engineering I (offered twice a year). We also have courses in Ada (Ada Language Concepts, CSI 2161) and Modula II (Modula II Language Concepts, CSI 2169).

University of Waterloo
Faculty of Mathematics
Department of Computer Science
Waterloo, ON N2L 3G1 Canada

Degrees: BA, MA, PHD, BMath CS, MMath

Contact: Mrs. Jane Prime, Administrative Coordinator
(519) 885-1211 ext. 2191
E-mail address: jprime@watserv1.waterloo.edu

Update: April 1991

Courses: **Applications Software Engineering** (CS 430)
Codes: U P E Y 1
Textbooks: *Software Engineering*
by Schach, Stephen R.

Business System Analysis (CS 432)
Codes: U P E T 1
Textbooks: *Modern Structured Analysis*
by Yourdon, Edward
Tools: IBM PC

Software System Design and Implementation (CS 446 and CS 646)
Codes: B P E O 1
Textbooks: *Software Engineering*
by Schach, Stephen R.

Techniques in Systems Analysis (CS 482)
Codes: U P E O 1
Textbooks: *Analysis and Design of Information Systems, 2nd ed.*
by Senn, J. A.

Additional Information:

Applications Software Engineering (CS 430) is offered in the fall term. Techniques in Systems Analysis (CS 482) is offered in the fall and winter terms. Software System Design and Implementation (CS 446) is offered in the spring and winter terms.

Quebec

Concordia University
Faculty of Engineering and Computer Science
Department of Computer Science
Montreal, PQ H3G 1M8 Canada

Degrees: BS, MCS, PHD

Contact: Prof. Pankaj Goyal
Associate Professor
(514) 848-3018
E-mail address: pankaj@concour.cs.concordia.ca
Network: Internet

Update: December 1990

Courses: **Software Engineering** (COMP 354)
Codes: U P R T 3
Textbooks: *Software Engineering*
by Somerville, Ian
Software Engineering Concepts
by Fairley, Richard E.
An Introduction to Software Engineering
by Pressman, Roger S.
Tools: C, Prolog, OBJ3
Sun network
Sun Tools/Graphics

Software Design Methodologies (COMP 647)
Codes: G P E Y 3
Tools: Sun network
Sun Tools
C++
Eiffel

Systems Requirements Specification (COMP 648)
Codes: G P E Y 3
Textbooks: *The Specification of Computer Systems*
by Cohen, Harwood, Jackson
Lecture notes
Tools: Sun network
Prolog
OBJ3

Software Verification and Testing (COMP 748)
Codes: G P X B 0

Additional Information:
We offered an Ada-Language Laboratory during the 1987-88 academic year. Several compilers were under evaluation.

McGill University
School of Computer Science
Program in Computer Science
Montreal, PQ H3A 2A7 Canada

Degrees: BS CS, MS CS, PHD

Contact: Prof. Nazim H. Madhavji
Professor
(514) 398-3740
E-mail address: madhavji@opus.cs.mcgill.ca
Network: Internet

Update: April 1991

Courses: **Software Engineering** (308-434A)
Codes: U P E Y 1
Textbooks: *Software Engineering, A Practitioner's Approach*
by Pressman, Roger S.
Tools: Modula-2, Modula-3, C
Sun 4, UNIX

Software Development Environments (308-630A)
Codes: G P E Y 5
Textbooks: *Interactive Programming Environments*
by Barstow, David R., Shrobe, Howard E., and Sandewall, Erik
Proceedings of the ACM Symposium on Software Development Environments
Proceedings of the International Conference on Software Engineering
Tools: Modula-2, Modula-3
C, C++
Sun 4, UNIX

Software Process Management (308-631B)
Codes: G P E Y 1
Textbooks: *Managing the Software Process*
by Humphrey, Watts S.
Proceedings of International Software Process Workshop
Proceedings of International Software Process Conference
Proceedings of International Conference on Software Engineering
Proceedings of ACM Symposium on Software Development Environments
Tools: Modula-2, Modula-3
C, C++
Sun 4, UNIX

Additional Information:
Special Interest Group research seminars in software process.

University of Quebec at Montreal
Department of Mathematics and Computer Science
Program in Computer Science
Montreal, QC H3C 3P8 Canada

Degrees: BS CS, BS CIS, MS CS, MS CIS, PHD CS

Contact: Dr. Philippe J. Gabrini
Head of Math/Computer Science Department
(514) 987-3087
E-mail address: R23414@UQAM.bitnet
Network: BITNET

Update: April 1991

Courses: **Software Engineering** (INF 5050)
Codes: U P R B 5
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: Modula-2
Sun workstations, PCs

Software Engineering I (INF 7410)
Codes: G N E Y 4
Textbooks: *Selected readings*
Tools: Modula-2
CASE Tools

Software Engineering II (INF 7420)
Codes: G N E Y 4
Textbooks: *Selected readings*

Workshop (INM 5000)
Codes: U P E B 5
Tools: Modula-2
Sun workstations, PCs

Saskatchewan

University of Regina
Faculty of Science
Department of Computer Science
Regina, SK S4S 0A2 Canada

Degrees: BA, BS, MS

Contact: Dr. A. G. Law
Department Head
(306) 585-4633
E-mail address: law@max.uregina.ca
Network: Bitnet (NetNorth)

Update: November 1990

Courses: **Business Information Systems** (CS 270)
Codes: U P R T 11
Textbooks: *Elements of Systems Analysis, 4th ed.*
by Gore, Marvin and Stubbe, John W.
Tools: IBM PC AT
Excelerator InTech

Advanced Systems Analysis and Design (CS 372)
Codes: U P E Y 5
Textbooks: *Introduction to Systems Analysis and Design: A Structured Approach*
by Kendale, Penny A.
Tools: UNIX C
Berkeley 4.2 UNIX on VAX 750
C programming language

Project Management for Data Processing Applications (CS 373)
Codes: U P E T 6
Textbooks: *Managing Computer Resources, 2nd ed.*
by Hussain and Hussain

Introduction to Database Systems and Document Storage and Retrieval (CS 375)
Codes: U P E T 1
Textbooks: *The Database Book*
by Loomis, Mary E.S.
Tools: INGRES

Advanced Topics in System Software (CS 430)
Codes: U P E O 1
Textbooks: *Distributed Databases, Principles & Systems*
by Stefano, Ceri, Giuseppe, and Pelagatti

Advanced Topics in Database Systems (CS 470)
Codes: U P E Y 1
Textbooks: *An Introduction to Database Systems, 5th ed.*
by Date, C.J.
Tools: INGRES, DB2/SQL

Additional Information:
Advanced Topics in System Software (CS 430) is offered every other year.

University of Saskatchewan
College of Engineering
Department of Computational Science
Program in Computer Science
Saskatoon, SK S7N 0W0 Canada

Degrees: BS CS, BA CS, MS CS, PHD CS

Update: October 1988

Courses: **Computer Systems** (CMPT 230.6)
Codes: U P R Y 1
Tools: VAX 8600

Information Systems Analysis and Design (CMPT 477.6)
Codes: U P E Y 1
Textbooks: *Advanced Structured Analysis and Design*
by Peters, L.
Software Design and Development
by Gilbert, P.
Tools: DEFT analysis and design (CASE Tools)
Macintosh

Information Systems (CMPT 876.3)
Codes: G P E Y 1
Tools: Sun workstations
VAX 8600

Additional Information:
Other degree offered: combined B.Sc. (Computer Science) and B. Eng. (Electrical Engineering)

Mexico

Instituto Technologico y de Estudios Superiores de Monterrey
Graduate Research
Informatics Graduate Program
Monterrey, NL 64849 Mexico

Degrees: BS CS , MS CS , PHD (Aug 1991)

Contact: Dr. Carlos Scheel
83-582000 x5011
E-mail address: SCHEEL@TECMTYVM
Network: BITNET, Internet

Update: December 1990

Courses: **Software Engineering** (Cb-075)
Codes: U P R B 4
Textbooks: *Software Engineering Concepts*
by Fairley, Richard E.
Software Engineering, 2nd Edition
by Sommerville, Ian

Advanced Programming Techniques (Cb-147)
Codes: G P E Y 1
Textbooks: *Selected readings*
Tools: Scheme, MACPROLOG, SMALLTALK
CASE Tools, 4th Dimension, Modula-2
VAX, MicroVAX, IBM 4381, ALTOS, Macintosh, IBM PS/2

Programming Design (Cb-150)
Codes: G N R B 4
Textbooks: *Software Tools in Pascal*
by Kernighan, Brian W. and Plauger, P.J.
Programming by Design
by Miller and Miller
Tools: Pascal, C
IBM PS/2 Model 50/80, IBM 4381

Software Engineering (SI-151)
Codes: G P R Y 4
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Software Engineering Concepts
by Fairley, Richard E.
Tools: Modula-2, C, 4th Dimension
VAX, MicroVAX, IBM 4381
IBM PS/2 Model 50/80
ALTOS

Information Engineering (SI-154)
Codes: G P R Y 1
Textbooks: *Information Engineering*
by Martin, J. and Finkelstein, C.
Strategic Data-Planning Methodologies
by Martin, J.
Tools: C, Pascal, Oracle
IBM 4381, IBM PS/2 Model 50/80, VAX

Specifications, Analysis and Design of Software Engineering (Cb-170)
Codes: G P R B 4
Textbooks: *Software Engineering: A Practitioner's Approach*
by Pressman, Roger S.
Software Engineering Concepts
by Fairley, Richard E.
Tools: CASE Tools, 4th Dimension, Modula-2
VAX, MicroVAX, IBM 4381, ALTOS, Macintosh, IBM PS2

Software Design (Cb-221)
Codes: G P R B 1
Textbooks: *Selected readings*
Tools: CASE Tools, 4th Dimension, Modula-2
VAX, MicroVAX, IBM 4381, ALTOS, Macintosh, IBM PS2

Software Verification, Generation, and Maintenance (Cb-225)
Codes: G P R Y 0
Textbooks: *Software Maintenance, The Problem and Its Solutions*
by Martin, J. and McClure, C.
Tools: CASE Tools
VAX, MicroVAX, IBM 4381, ALTOS, Macintosh, IBM PS2

Advanced Topics in Software Engineering (Cb-227)
Codes: G P E Y 0
Textbooks: *Selected readings*
Tools: CASE Tools
VAX, MicroVAX, IBM 4381, Altos, Macintosh, IBM PS2

Scotland

University of Stirling
Department of Computing Science
Stirling, SL FK9 4LA United Kingdom

Degrees: BS, MS

Contact: Dr. David Budgen
Senior Lecturer
(44) 786 67428
E-mail address: db@uk.ac.stir.cs
Network: JANET

Update: April 1991

Courses: **Software Engineering** (31W7)
Codes: U N B Y 8
Textbooks: *The Craft of Software Engineering*
by Macro, Allen and Buxton, John
Software Engineering, 3rd Edition
by Sommerville, Ian
The Mythical Man-Month: Essays on Software Engineering
by Brooks, Frederick P., Jr.
Software Engineering: A Practitioner's Approach (2nd Ed)
by Pressman, Roger
Tools: CASE Tools: Teamwork

Methods of Formal Specification (SE5S)
Codes: G N R Y 4
Textbooks: *Introduction to Discrete Mathematics for Software Engineering*
by Denvir, Tim
Tools: HP UNIX Workstations

Additional Information:
Our degree programmes are fairly structured, so we can put a software engineering bias into many of the course units that are not specifically concerned with software engineering themes (e.g., the course unit on concurrency). The two course units listed are those that concentrate on specific areas of software engineering itself.

University of Strathclyde
Faculty of Science
Department of Computer Science
Program in Computer Science
Glasgow, SL G1 1XH United Kingdom

Degrees: BS CS, BS CE

Contact: Dr. Robin B. Hunter

Update: April 1990

Courses: **Software Engineering**
Codes: G N E Y 6
Textbooks: *Introduction to Systems Analysis and Design: A Structured Approach*
by Kendall, Penny A.
Software Engineering
by Sommerville, Ian
Tools: Ada, Pascal

Systems Design
Codes: G N R Y 6
Textbooks: *Introduction to Systems Analysis and Design: A Structured Approach*
by Kendall, Penny A.
Software Engineering
by Sommerville, Ian
Tools: Turbo Pascal
IBM PC

Software Engineering (52.302)
Codes: U P R Y 7
Textbooks: *Software Engineering*
by Sommerville, Ian
Tools: Pascal
Sequent
Ada

Systems Analysis and Design (52.304)
Codes: U N R Y 16
Textbooks: *Information Systems Design*
by Brookes, Cyril H. P.
Basic Systems Analysis
by Daniels, Alan and Yeates, Donald
Systems Analysis and Design: A Structured Approach
by Davis, William S.
Software Engineering with Systems Analysis and Design
by Steward, Donald V.
Systems Analysis and Design for Computers
by Millington, Ellis, and Horwood

Formal Methods (52.415)
Codes: U N E Y 11
Textbooks: *Software Engineering*
by Sommerville, Ian
Program Verification Using Ada
by McGettrick, Andrew D.
Tools: Sequent
Ada/Anna

Software Engineering (52.415)
Codes: U P E Y 6
Textbooks: *Software Engineering*
by Sommerville, Ian
Program Verification Using Ada
by McGettrick, Andrew D.

Part II: Graduate Degree Programs in Software Engineering

Graduate degree programs first appeared in the late 1970s at Texas Christian University, Seattle University, and the Wang Institute of Graduate Studies. All three programs responded to significant needs from local industry in the Dallas/Fort Worth, Seattle, and Boston areas, respectively. In 1985, three additional programs were started: at the College of St. Thomas in St. Paul, Minnesota; at Imperial College of Science and Technology in London; and at the University of Stirling in Scotland. The last five years have seen a significant increase in the development of and interest in such programs. We know of at least a dozen programs that either have been initiated or are under development.

In this section, we survey the programs, primarily in the United States, for which we were able to obtain information. Readers will note substantial variation among the programs. This can be attributed to a number of factors:

- Most of the programs were developed in the absence of any recognized model curriculum.
- Each school had a number of existing courses, mostly in computer science, that were incorporated into the new programs, and these courses differed greatly among schools.
- Software engineering is a new discipline, and the developers of these programs had differing perceptions of the scope of the discipline, and its principles and practices.
- Each school was responding to perceived needs that varied greatly from one community to another.

Another notable point of variation among these programs is the program title. Many programs were unable to use the word *engineering* in their titles because of legal or administrative restrictions. In a way, it is unfortunate that the term *software engineering* is so nearly universally accepted as an informal name for the discipline, because it has generated an inordinate amount of argument on the semantic issues of whether (or not) software engineering is really engineering.

The program listings that begin on the following page originally appeared in the *1991 SEI Report on Graduate Software Engineering Education* by Gary Ford, (CMU/SEI-91-TR-2, Software Engineering Institute, Carnegie Mellon University, Pittsburgh, Pa., May 1991).

Air Force Institute of Technology (Entry 1)

Location	Wright Patterson Air Force Base, Ohio
Degree title	Master of Science (Computer Science) Master of Science (Computer Systems)
Degree requirements	Twelve required courses, one elective course in the theory area, and a thesis. The requirements are structured as six courses in systems, two in theory, two in an application sequence (See below), and one each in mathematics and technical communication.
Required courses	Systems and Software Analysis Software Design Software Generation and Maintenance Software Project Management Operating Systems Computer Architecture Principles of Embedded Software Formal-Based Methods in Software Engineering Advanced Information Structures Automata and Formal Language Theory Probability and Statistics for Computer Science Technical Reports and Thesis
Program initiation	See below
Contact	Major Paul D. Bailor Department of Electrical and Computer Engineering Air Force Institute of Technology Wright Patterson Air Force Base, OH 45433
Source	This information was reported to the SEI by AFIT in August 1990.

The objective of the graduate programs in computer systems and computer engineering is the development of a broad competence in the application of the concepts and techniques of computer systems, computer science, and computer engineering, emphasizing specialized areas of interest to the Air Force. Each student is required to take a set of six systems courses (four of which are software engineering courses), a set of three theory courses, an application sequence, a graduate-level mathematics course, a technical writing and speaking course, and an independent study that leads to the preparation and completion of a master's thesis. Currently, seven application sequences are offered: software engineering, computer graphics, database systems, computer architecture, VLSI design, information systems, and artificial intelligence. The breadth of the systems and theory courses and the specialized application sequence courses prepare the students for a variety of Air Force assignments involving research, development, and program management in the career areas of computer systems, computer science, and computer engineering. Courses in software engineering were introduced into the curriculum in the late 1970s. The application sequence in software engineering was developed in mid-1980s.

See also the entry for AFIT in Part I of this directory.

Air Force Institute of Technology (Entry 2)

Location	Wright Patterson Air Force Base, Ohio
Degree title	Master of Science in Software Systems Management
Degree requirements	Seventeen required courses and a thesis. The requirements are structured as four technically-oriented software engineering courses, four management-oriented software engineering courses, one course in computer systems concepts, and eight courses in management and quantitative/qualitative analysis.
Required courses	Systems and Software Analysis Software Design Software Generation and Maintenance Principles of Embedded Systems Software Quality Assurance Software Cost and Schedule Estimation Software Configuration Management Seminar in Software Systems Management Computer Systems Concepts Managerial Economics Managerial Statistics I and II Theory and Practice of Professional Communications Introduction to Management Science Organization and Management Theory Organizational Behavior Federal Financial Management Contracting and Acquisition Management
Program initiation	June 1990
Contact	Major Chris Arnold Department of System Acquisition Management Air Force Institute of Technology Wright Patterson Air Force Base, OH 45433
Source	This information was reported to the SEI by AFIT in August 1990.

The objective of the graduate program in software systems management is to provide military and civilian software managers with the concepts, analytical skills, and methods of software systems management so that its graduates are prepared to handle the acquisition and management of large software systems, including embedded software systems. Each student is required to take a set of four technically-oriented software engineering courses, a set of management-based software engineering courses, a computer systems concepts course, additional courses in management and quantitative/qualitative analysis, and an independent study that leads to the preparation and completion of a master's thesis.

See also the entry for AFIT in Part I of this directory.

Andrews University

Location	Barren Springs, Michigan
Degree title	Master of Science in Software Engineering
Degree requirements	48 quarter credits (typically 4 credits per course): 8 credits of projects, 16 credits core courses, 0-20 credits foundation courses, 4-24 credits electives.
Foundation courses	Data Structures Data Base Systems Systems Analysis I Systems Analysis II Operating Systems
Core courses	Computer Architecture Software Engineering I Software Engineering II Programming Project Management
Program initiation	[*unknown*]
Contact	Daniel R. Bidwell Computer Information Science Dept. Andrews University Berrien Springs, MI 49104
Source	This information was reported to the SEI by Andrews University in April 1989.

See also the entry for Andrews in Part I of this directory.

Boston University

Location	Boston, Massachusetts
Degree title	Master of Science in Software Systems Engineering
Degree requirements	Nine courses of four credits each: seven required courses (including a project course) and two electives. Two of the required courses differ depending on whether the student's background is in hardware or software.
Required courses	Applications of Formal Methods Software Project Management Software System Design Computer as System Component Software Engineering Project Advanced Data Structures *(hardware background)* Operating Systems *(hardware background)* Switching Theory and Logic Design *(software background)* Computer Architecture *(software background)*
Program initiation	Fall 1988 (The program has existed as a software engineering option in the Master of Science in Systems Engineering since spring 1980; the current curriculum was adopted in January 1988.)
Contact	Dr. John Brackett
Source	This information was taken from John W. Brackett, Thomas Kincaid, and Richard Vidale, "The Software Engineering Graduate Program at the Boston University College of Engineering." *Software Engineering Education: SEI Conference 1988*, Gary A. Ford, ed. New York: Springer-Verlag, 1988, 56-63.

Boston University absorbed the Wang Institute's facilities in 1987 and was the beneficiary of some of the experience of the Wang Institute. This program incorporates the best features of the MSE curriculum of Wang and the MS in Systems Engineering from Boston University. The program emphasizes the understanding of both hardware and software issues in the design and implementation of software systems. Special emphasis is placed on the software engineering of two important classes of computer systems: embedded systems and networked systems. Both full-time and part-time programs are available, and most of the program is available through the Boston University Corporate Classroom interactive television system. The program can be completed in twelve months by full-time students. The university also has a doctoral program leading to the PhD in Engineering, with research specialization in software engineering.

See also the entry for Boston University in Part I of this directory.

Carnegie Mellon University

Location	Pittsburgh, Pennsylvania
Degree title	*Master of Software Engineering*
Degree requirements	Fifteen courses: six required courses, three electives, a theory course, a business course, two software engineering seminars, and a four-semester master's project.
Required courses	Software Systems Engineering Formal Methods in Software Engineering Advanced System Design Principles Software Creation and Maintenance Software Analysis Software Project Management
Electives	Graduate courses in computer science and business
Prerequisite note	Prospective students must have at least two years of experience working in a sizable software project.
Program initiation	September 1989
Contact	Norman E. Gibbs Software Engineering Institute Carnegie Mellon University Pittsburgh, Pennsylvania 15213
Source	This information was reported to the SEI by CMU in July 1990.

The objective of Carnegie Mellon University's MSE program is to produce a small number of highly skilled experts in software system development. It is designed to elevate the expertise of practicing professional software designers. The emphasis is on practical application of technical results from computer science; the nature of these technical results dictates a rigorous, often formal, orientation. The engineering setting requires responsiveness to the needs of end users in a variety of application settings, so the program covers resolution of conflicting requirements, careful analysis of tradeoffs, and evaluation of the resulting products. Since most software is now produced by teams in a competitive setting, the program also addresses project organization, scheduling and estimation, and the legal and economic issues of software products.

See also the entry for Carnegie Mellon in Part I of this directory.

Florida Atlantic University

Location	Boca Raton, Florida
Degree title	Master of Computer Science, Software Engineering Option
Degree requirements	33 semester hours, including three regular FAU courses, five of the six FAU/SEI videotape courses, and CASE Tools material (may or may not be a separate course).
Required FAU courses	Compiler Writing Computability and Complexity Artificial Intelligence
FAU/SEI videotape courses	Software Project Management Software Systems Engineering Specification of Software Systems Principles and Applications of Software Design Software Generation and Maintenance Software Verification and Validation
Admissions note	The software engineering option is available only to students participating in the FAU/SEI videotape courses offered in cooperation with specific South Florida companies.
Program initiation	September 1989
Contact	Neal Coulter Department of Computer Science Florida Atlantic University PO Box 3091 Boca Raton, FL 33431-0991
Source	This information was reported to the SEI by Florida Atlantic University in December 1989.

See also the entry for Florida Atlantic in Part I of this directory.

George Mason University

Location	Fairfax, Virginia
Degree title	Master of Science in Software Systems Engineering
Degree requirements	30 hours of course work in the School of Information Technology and Engineering, including six required courses.
Required courses	Software Construction Software Requirements and Prototyping Software Design Formal Methods and Models in Software Engineering Software Project Management Software Project Laboratory
Electives	Four courses, or two courses and 6 semester hours of master's thesis.
Program Initiation	Fall 1989 (core courses offered beginning fall 1988)
Contact	Hassan Gomaa School of Information Technology George Mason University 4400 University Drive Fairfax, VA 22030
Source	This information was reported to the SEI by George Mason University in August 1990.

The program for the degree of Master of Science in Software Systems Engineering is concerned with engineering technology for developing and modifying software components in systems that incorporate digital computers. The program is concerned with both technical and managerial issues but who primary emphasis is placed on the technical aspects of building and modifying software systems.

In addition to the degree program, the university offers a Graduate Certificate Program in software systems engineering. The program is designed to provide knowledge, tools, and techniques to those who are working in, or plan to work in, the field of software systems engineering, but who do not desire to complete all of the requirements for a master's degree. Students in the certificate program must already hold or be pursuing a master's degree in a science or engineering discipline. To receive the certificate, students must complete the six required courses listed above.

See also the entry for George Mason in Part I of this directory.

Georgia Institute of Technology

Location	Atlanta, Georgia
Degree title	Master of Science in Software Engineering
Degree requirements	50 quarter hours of coursework, including nine required courses, four electives, and a three-quarter software engineering project sequence.
Required courses	Introduction to Software Engineering Foundations of Software Engineering Programming Language Design Human Computer Interface Requirements Analysis and Prototyping Specification of Software Systems Project Management Principles and Applications of Software Design Software Generation, Test, and Maintenance Software Engineering Project I, II, III
Admissions note	Entering students must have an appropriate undergraduate degree (typically in computer science) and at least two years of full-time software development experience.
Program initiation	This program has been proposed; it has not yet been approved.
Contact	Not yet designated
Source	This information was reported to the SEI by the Georgia Institute of Technology in November 1990.

Georgia Tech has recently created a College of Computing in recognition of the importance of the computing-related disciplines. The college recognizes the need within the computer industry for professionals able to provide technical and managerial leadership in the area of software engineering.

The curriculum most appropriate to the traditions and capabilities of the institute and of the College of Computing falls between the extremes of very theoretical and completely practical. The program should emphasize practical skills that will equip graduates to play leadership roles in the software industry. At the same time, they should develop a sufficient fundamental understanding of software engineering to enable them to keep up with changes in a rapidly growing and evolving field. The best way to characterize this dual emphasis is to say that the curriculum leads to a professional degree.

Miami University

Location	Oxford, Ohio
Degree title	Master of Systems Analysis
Degree requirements	30 semester hours: twelve hours of core courses, twelve hours of systems electives, and six hours of graduate research.
Core courses	Analysis of Information Systems *plus any three of:* Structured Design and Implementation Data Structures and Data Base Systems Operations Research II Simulation Artificial Intelligence
Systems electives	Advanced Software Engineering Advanced Data Base Systems Data Communication Networks & Distributed Process Expert Systems Operating Systems Concepts Advanced Simulation Analysis of Inventory Systems Analysis of Forecasting Systems Analysis of Manufacturing Systems Regression Analysis An Introduction to Applied Probability Seminar in Systems Analysis
Prerequisite note	Students with little formal education or experience in systems analysis or related disciplines may be required to complete up to 13 semester hours of additional foundation courses.
Program initiation	Fall 1990
Contact	Mufit Ozden Department of Systems Analysis Miami University Oxford, Ohio 45056
Source	This information was reported to the SEI by Miami University in January 1990.

The aim of the program is to graduate a systems analyst who has a sound grasp of systems development and the mathematical models frequently needed in industrial information systems. It differs from computer science programs through its strong focus on the practical aspects of systems development and mathematical models. It differs from MIS programs offered by schools of business through its technical emphasis on systems development built on a solid foundation of computer science and mathematics.

Monmouth College

Location	West Long Branch, New Jersey
Degree title	Master of Science in Software Engineering
Degree requirements	30 credit hours, consisting of six core and four elective courses.
Core courses	Mathematical Foundations of Software Engineering I Software Engineering Project Management Formal Methods in Programming Software Systems Design System Project Implementation (Laboratory Practicum)
Elective courses	Mathematical Foundations of Computer Science II Computer Communications Programming Languages Database Systems Security Aspects of Systems Design System Development Environment Technology AI Technology for Software Engineers Software Quality
Program initiation	1986
Contact	Richard Kuntz Monmouth College West Long Branch, New Jersey 07764
Source	This information was taken from Serafino Amoroso, Richard Kuntz, Thomas Wheeler, and Bud Graff, "Revised Graduate Software Engineering Curriculum at Monmouth College." *Software Engineering Education: SEI Conference 1988*, Gary A. Ford, ed. New York: Springer-Verlag, 1988, 70-80, and from information reported to the SEI by Monmouth College in July 1990.

The program is offered through the departments of computer science and electrical engineering. The current enrollment is more than 100, and to date 50 students have completed the degree requirements.

National University

Location	San Diego, California
Degree title	Master of Science in Software Engineering
Degree requirements	60 quarter units, of which at least 45 units (including the software engineering project courses) must be completed in residence.
Required courses	Principles of Software Engineering Advanced Software Engineering Verification and Validation Techniques Principles of Hardware and Software Integration Systems Software Networked Computing Systems Data Base Management I, II Expert Systems Software Engineering Project I, II, III
Prerequisite note	Programming ability in Ada is a prerequisite.
Program initiation	April 1985
Contact	Dr. Justin Abraham
Source	This information was reported to the SEI by National University in December 1989.

National University is the third largest private university in California, with more than 10,000 students currently enrolled. It has over 100 students in the MS SE program at campuses in San Diego, San Jose, Sacramento, Irvine, Los Angeles, and Vista. As of December 1989, more than 400 students have graduated from the MS SE program. Graduate classes meet for 40 hours over a four week period, primarily in the evening in order to accommodate the schedules of working adults. Approximately 85% of the students in the MS SE program are currently software practitioners. Most instructors in the program are adjunct faculty who work for local companies and who are recognized experts in their fields.

See also the entry for National University in Part I of this directory.

Rochester Institute of Technology

Location	Rochester, New York
Degree title	Master of Science in Software Development and Management
Degree requirements	48 credits (quarter system; typical course is four credits).
Required courses	Principles of Software Design Principles of Distributed Systems Principles of Data Management Software and System Engineering Project Management Organizational Behavior Analysis and Design Techniques, or Analysis & Design of Embedded Systems Software Verification and Validation Software Project Management Technology Management Software Tools Laboratory Software Engineering Project
Program initiation	Fall 1987
Contact	Jeffrey A. Lasky Graduate Department of Computer Science Rochester Institute of Technology PO Box 9887 Rochester, NY 14623-0887
Source	This information was reported to the SEI by RIT in April 1989.

The program has approximately 100 students at the RIT campus and 15 students at Griffiss Air Force Base in Rome, New York. Approximately 90% of the students attend part-time.

Seattle University

Location	Seattle, Washington
Degree title	Master of Software Engineering
Degree requirements	45 credits (quarter system), including eight required core courses, four elective courses, and a project sequence extending over three quarters.
Required courses	Technical Communication Software Quality Assurance Software Systems Analysis Software Metrics System Design Methodology Software Project Management Programming Methodology Formal Methods
Elective courses	System Procurement Contract Acquisition and Administration Database Systems Distributed Computing Artificial Intelligence Human Factors in Computing Data Security and Privacy Computer Graphics Real Time Systems Organization Behavior Organization Structure and Theory Decision Theory *(other electives may be selected from the MBA program)*
Prerequisite note	Prospective students must have at least two years of professional software experience.
Program initiation	1979
Contact	Everald E. Mills Software Engineering Department Seattle University 900 Broadway Avenue Seattle, WA 98122
Source	This information was taken from E. Mills, "The Master of Software Engineering (MSE) Program at Seattle University after 8+ Years," *Software Engineering Education: The Educational Needs of the Software Community*, Norman E. Gibbs and Richard E. Fairley, eds. New York: Springer-Verlag, 1986, 182-200. Additional information was reported to the SEI by Seattle University in July 1990.

Seattle University is an independent urban university committed to the concept of providing rigorous professional educational programs within a sound liberal arts background. In 1977 the university initiated a series of discussions with representatives from local business and industry, during which software engineering emerged as a critical area of need for specialized educational programs. Leading software professionals were invited to assist in the development of such a program, which was initiated the following year.

Normally, classes are held in the evenings and students are employed full-time in addition to their studies. The first graduates of the program received MSE degrees in 1982.

See also the entry for Seattle University in Part I of this directory.

Texas Christian University

Location	Fort Worth, Texas
Degree title	Master of Software Design and Development
Degree requirements	36 semester hours, including nine required courses and three electives; submission of a technical paper to a journal for publication.
Required courses	Introduction to Software Design and Development Modern Software Requirements and Design Techniques Applied Design, Programming, and Testing Techniques Management of Software Development Economics of Software Development Computer Systems Architecture Database and Information Management Systems Software Implementation Project I Software Implementation Project II
Program initiation	Fall 1978
Contact	James R. Comer Computer Science Department Texas Christian University Ft. Worth, TX 76129
Source	This information was taken from James R. Comer and David J. Rodjak, "Adapting to Changing Needs: A New Perspective on Software Engineering Education at Texas Christian University." *Software Engineering Education: The Educational Needs of the Software Community*, Norman E. Gibbs and Richard E. Fairley, eds. New York: Springer-Verlag, 1986, 149-171, and reconfirmed by Texas Christian University in July 1990.

The university established a graduate degree program in software engineering in 1978. Due to external pressure, prompted by the absence of an engineering college at TCU, the program was given its current name in 1980.

The program offers most of its courses in the evening, and all 50 students in the program are employed full-time in the Dallas/Fort Worth area.

See also the entry for Texas Christian in Part I of this directory.

University of Houston-Clear Lake

Location	Houston, Texas
Degree title	Master of Science in Software Engineering
Degree requirements	36 credit hours, including 30 hours of required courses and 6 hours of electives.
Required courses	Specification of Software Systems Principles and Applications of Software Design Software Generation and Maintenance Software Validation and Verification Software Project Management Master's Thesis Research Advanced Operating Systems Theory of Information and Coding Synthesis of Computer Networks
Elective courses	Must be chosen from courses in software engineering, computer science, computer systems design, or mathematical sciences.
Program initiation	September 1990
Contact	Dean E. T. Dickerson Office of the Dean University of Houston-Clear Lake Houston, TX 77058-1057
Source	This information was reported to the SEI by the University of Houston-Clear Lake in July 1990.

Five of the required courses in this degree program are based on SEI recommendations.

See also the entry in Part I of this directory.

University of Pittsburgh

Location	Pittsburgh, Pennsylvania
Degree title	Master of Science in Software Engineering
Degree requirements	33 credits: four required software engineering courses; additional required and optional courses in computer science.
Required courses	Software Engineering: Specification and Design Software Engineering: Implementation and Testing Information Processing Systems Master's Directed Project *Either of:* Theory of Computation I Design and Analysis of Algorithms I *Any two of:* Language Design Advanced Computer Operating Systems I Computer Architecture
Elective courses	*Three graduate-level courses including two of:* Modeling and Simulation Principles of Database Systems Interface Design and Evaluation Knowledge Representation
Program initiation	1989
Contact	*[unknown]*
Source	This information was reported to the SEI by the University of Pittsburgh in the fall of 1990.

This program is project-oriented, emphasizes a methodological approach to software development, and provides a more focused education than the traditional Master of Science in Computer Science. Applicants with professional experience may be given special consideration for admission, although such experience is not required. All students' programs are individually designed with the help of a faculty advisor. There is no thesis requirement.

University of Scranton

Location	Scranton, Pennsylvania
Degree title	Master of Science in Software Engineering
Degree requirements	36 graduate credits: six required courses and four electives (3 credits each), and a thesis (6 credits)
Required courses	Introduction to Software Engineering Advanced Data Structures and Algorithms Formal Methods and Models Requirements Analysis and Software Specification Principles and Applications of Software Design Software Project Management
Electives	Software Generation and Maintenance Engineering of Software Systems Database Systems Cost Collection and Analysis Metrics Real-time and Embedded Systems CASE Tools Legal Aspects and Ethics
Program initiation	Fall 1990
Contact	Dr. J. Fernando Naveda *Director, Master of Science in Software Engineering* Department of the Computing Sciences University of Scranton Scranton, PA 18510-4664
Source	This information was reported to the SEI by the University of Scranton in August 1990.

The program expects 15 part-time students during the first year, with full-time students beginning in the second year. The student body is expected to be composed of software practitioners, most of whom will not have a recent computer science degree or a strong background in some of the more formal methods of computer science. With this in mind, the program begins with two bridge courses, *Introduction to Software Engineering* and *Advanced Data Structures and Algorithms.* The goals of these courses are to give the students the mathematics needed in subsequent courses, an overview of what software engineering is (the "big picture"), and knowledge of data structures in Ada.

The university does not offer a graduate degree in computer science.

University of St. Thomas

Location	St. Paul, Minnesota
Degree title	Master of Software Design and Development
Degree requirements	Ten required courses, including a two-semester project course sequence, and four elective courses. All courses are three semester credits.
Required courses	Technical Communications Software Engineering Methodologies DBMS and Design Systems Analysis and Design I Software Productivity Tools I Software Project Management Software Quality Assurance/Quality Control Legal Issues in Technology
Program initiation	February 1985
Contact	Bernice M. Folz, Dean Department of Quantitative Methods and Computer Science University of St. Thomas 2115 Summit Avenue St. Paul, MN 55105-1096
Source	This information was reported to the SEI by the University of St. Thomas in July 1990.

This program was developed through an advisory committee made up of technical managers from Twin Cities companies such as Honeywell, IBM, Sperry, 3M, NCR-Comten, and Control Data. Elective courses are added to the curriculum on the basis of need as expressed by technical managers in local industry or by students in the program. The program is applied rather than research-oriented. Most instructors are from industry (14 of 23 in the spring 1990 semester). Instead of a thesis, students complete a two-semester software project in a local company; in many cases this company is their employer, but the project must not be part of their normal work responsibilities. Classes are offered evenings, and 98% of students work full-time in addition to their studies. Students normally require three years to complete the degree. The program enrolled 290 students in spring 1990. Prior to September 1, 1990, the school's name was the College of St. Thomas.

See also the entry in Part I of this directory.

University of West Florida

Location	Pensacola, Florida
Degree title	Master of Science in Computer Science, Software Engineering Option
Degree requirements	33 semester hours of approved course work; at least 18 hours at 6000 (advanced) level; up to six hours of related course work; thesis optional.
Required courses	Advanced Operations Research Software Engineering Project Software Engineering Economics Software Engineering Management Computer Aided Software Engineering Computer Systems Performance Analysis Embedded Programming in Ada Advanced Database Systems
Prerequisites	In addition to the expected undergraduate computer science prerequisites, the program requires a two-semester sequence in software engineering, two semesters of economics, and one each of technical writing, management, operations research, and statistics.
Program initiation	1989
Contact	Theodore F. Elbert Professor and Division Head Division of Computer Science University of West Florida 11000 University Parkway Pensacola, Florida 32514-2542
Source	This information was reported to the SEI by the University of West Florida in July 1990.

The University offers three substantially different options within its Master of Science in Computer Science program, the other two being the Systems and Control Engineering option and an option simply referred to as the MSCS. The Software Engineering option provides instruction in advanced concepts of software engineering, database methodologies, and computer performance analysis. The Systems and Control Engineering option provides advanced course work in mathematics, modern control theory concepts, computer architecture, and software engineering as it applies to real-time embedded systems. The MSCS option provides advanced instruction in concepts of computer science, with concentration in the areas of artificial intelligence, knowledge-based systems, data classification, and image processing. The requirements for the Software Engineering option will be revised during the 1990-91 academic year.

The Wichita State University

Location	Wichita, Kansas
Degree title	Master of Computer Science Software Engineering Option
Degree requirements	30 credit hours total: two required courses, six credit hours of software engineering electives, additional electives in software engineering or computer science, and practicum (3 hours) or thesis (6 hours) on a software engineering topic.
Required courses	Software Requirements, Specification and Design Software Testing and Validation
Elective courses	Software Project Management Ada and Software Engineering Systems Analysis Topics in Software Engineering *(recent offerings have included Configuration Management, Formal Methods, Quality Assurance, Software Metrics, and Formal Verification of Software)*
Program initiation	Fall 1988
Contact	Mary Edgington, Chair Computer Science Department The Wichita State University Wichita, Kansas 67208
Source	This information was reported to the SEI by Wichita State in July 1990.

The Wichita State University Department of Computer Science has created a set of courses than can lead to a specialization in software engineering within the existing Master of Computer Science degree program. These courses are taught in cooperation with the Software Engineering Institute's Software Engineering Curriculum Project.

See also the entry for Wichita State in Part I of this directory.

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This directory provides information about software engineering courses and software engineering degree programs offered by colleges and universities, primarily in the United States.

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