Software Engineering Education Directory

Software Engineering Curriculum Project

May 1991
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Software Engineering Institute
Carnegie Mellon University
Pittsburgh, Pennsylvania 15213
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.

<table>
<thead>
<tr>
<th>Degrees</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA</td>
<td>Bachelor of Arts</td>
</tr>
<tr>
<td>BA</td>
<td>Bachelor of Science</td>
</tr>
<tr>
<td>MA</td>
<td>Master of Arts</td>
</tr>
<tr>
<td>MA</td>
<td>Master of Science</td>
</tr>
<tr>
<td>MA</td>
<td>Master of Computer Science</td>
</tr>
<tr>
<td>MA</td>
<td>Master of Software Engineering</td>
</tr>
<tr>
<td>PHD</td>
<td>Doctor of Philosophy</td>
</tr>
<tr>
<td>SCD</td>
<td>Doctor of Science</td>
</tr>
<tr>
<td>MSE</td>
<td>Computer and Information Science</td>
</tr>
<tr>
<td>CS</td>
<td>Computer Science</td>
</tr>
<tr>
<td>CE</td>
<td>Computer Engineering</td>
</tr>
<tr>
<td>EE</td>
<td>Electrical Engineering</td>
</tr>
<tr>
<td>SE</td>
<td>Software Engineering</td>
</tr>
</tbody>
</table>
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
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
Excelsior (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 through Pictures (StP): User’s Manual
Tools:  IDE Software through Pictures (StP)
SUN SPARC Stations

CMU/SEI-91-TR-9  For an explanation of course codes, see page 4.
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.

For an explanation of course codes, see page 4.
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:  
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

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

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

Principles of Compilation  (Computer Science 553)  
Codes:  G P R Y 0  
Textbooks:  Compilers-Principles, Techniques and Tools  
by Aho, Sethi, Ullmann  
Tools:  Segment symmetry running Dynix

Advanced Topics in Software Systems  (Computer Science 630)  
Codes:  G P E D 13
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@UAF SYSB.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 Y 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

CMU/SEI-91-TR-9 For an explanation of course codes, see page 4.
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
    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)
          by  Page-Jones, Melir
          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 R Y 6
          Textbooks:  Fundamentals of Business Systems
          by  Flaatten, P.O., McCubrey, 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 Mayrhauser, 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

For an explanation of course codes, see page 4.
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

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**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)

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**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
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

CMU/SEI-91-TR-9  For an explanation of course codes, see page 4.
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, Melir
  *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 Ritchie, 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.
  by Pressman, Roger S.

**Tools:**  Sun 3 Workstations

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**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@usa.f.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 Brookshear, 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, Melir
            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, R.
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)
  - VAAX 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.

*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.

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**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.

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.

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.
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

For an explanation of course codes, see page 4.
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@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.
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)  
Codes: U P R O 11  
Textbooks:  
- *Software Engineering: The Production of Quality Software, 2nd ed.* by Pfleeger, Shari Lawrence  
- *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)  
Codes: U P R O 5  
Textbooks:  
- *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  
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  

For an explanation of course codes, see page 4.
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 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.
          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

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

CMU/SEI-91-TR-9  For an explanation of course codes, see page 4.  55
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

CMU/SEI-91-TR-9 For an explanation of course codes, see page 4. 57
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 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, lan

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 E Y 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 Kherghan, 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
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:  UNRT6
Textbooks:  *Pascal Algorithms*
by Reingold and Reingold
Tools:  VAX/UNIX
        VAX Pascal Compiler

**Computer Science II**  (CMSC 113)
Codes:  UPRT6
Tools:  UNIX workstations
        Pascal

**Introduction to AI Programming**  (CMSC 421)
Codes:  UNEY6
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:  GPET7
Textbooks:  *Software Engineering: Methods and Management*
by Von Mayrhofer, 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:  GPETY2
Textbooks:  *IEEE Tutorial on Models and Metrics for Software Management and Engineering*
by Basil, Victor R.
*Software Engineering Metrics and Models*
by Conte, S.D., Dunsmore, H.E., and Shen, V.Y.

For an explanation of course codes, see page 4.
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

CMU/SEI-91-TR-9  For an explanation of course codes, see page 4. 63
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

For an explanation of course codes, see page 4.
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

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**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

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**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: Softw...
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

For an explanation of course codes, see page 4.
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

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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)

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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  
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

CMU/SEI-91-TR-9  For an explanation of course codes, see page 4.
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 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 Validation: Inspection - Testing - Verification - Alternatives* by Hausen, H.L.  
- *Software Engineering with Ada* by Booch, Grady  
Tools: Software Specification Techniques

**IEEE Tutorial**: *Software Testing and Validation Techniques*  
- Gehani, Narain and McGettrick, Andrew D.

**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.

CMU/SEI-91-TR-9 For an explanation of course codes, see page 4. 77
**Additional Information:**
We also have weekly seminars on various aspects of software engineering.

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**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 Ilcs
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

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.

CMU/SEI-91-TR-9  
For an explanation of course codes, see page 4.
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 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 R 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
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 Development  (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.

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**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

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**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

CMU/SEI-91-TR-9 For an explanation of course codes, see page 4.
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 IIfx, 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

CMU/SEI-91-TR-9  For an explanation of course codes, see page 4. 109
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: THINK'S'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

CMU/SEI-91-TR-9 For an explanation of course codes, see page 4. 111
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
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.

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**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  
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:  
See also the entry in Part II of this directory.

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**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.

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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*

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**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

CMU/SEI-91-TR-9 For an explanation of course codes, see page 4. 121
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.

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**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

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**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**
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.
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.
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
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 B 5
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
<table>
<thead>
<tr>
<th>Courses: Software Engineering Laboratory (CS 485)</th>
<th>Codes: U P R Y 6</th>
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<td>Tools: UNIX C</td>
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<th>Codes: G P E Y 6</th>
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<td>Textbooks: Software Engineering Concepts by Fairley, Richard E.</td>
<td></td>
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<tr>
<td>Tools: UNIX StarLite Modula-z SDE</td>
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<th>Courses: Software Engineering (CS 885)</th>
<th>Codes: G N E D 1</th>
</tr>
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**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) 367-1901

**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
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 Project Manager, TeamWork
Sun/UNIX, Vax/VMS
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

For an explanation of course codes, see page 4.
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 (UWCOGS)
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@WNVM
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

For an explanation of course codes, see page 4.
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.
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

CMU/SEI-91-TR-9  For an explanation of course codes, see page 4.
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  
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-Compatibe
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 also 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.
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
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
83-582200 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 Sommervile, 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: UNBYY8
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: GNRY4
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.

Air Force Institute of Technology (Entry 1)

<table>
<thead>
<tr>
<th>Location</th>
<th>Wright Patterson Air Force Base, Ohio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree title</td>
<td>Master of Science (Computer Science)</td>
</tr>
<tr>
<td></td>
<td>Master of Science (Computer Systems)</td>
</tr>
<tr>
<td>Degree requirements</td>
<td>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.</td>
</tr>
<tr>
<td>Required courses</td>
<td>Systems and Software Analysis</td>
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<tr>
<td></td>
<td>Software Design</td>
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<td></td>
<td>Software Generation and Maintenance</td>
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<td></td>
<td>Software Project Management</td>
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<td>Operating Systems</td>
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<td></td>
<td>Computer Architecture</td>
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<td></td>
<td>Principles of Embedded Software</td>
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<td></td>
<td>Formal-Based Methods in Software Engineering</td>
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<td></td>
<td>Advanced Information Structures</td>
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<td></td>
<td>Automata and Formal Language Theory</td>
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<tr>
<td></td>
<td>Probability and Statistics for Computer Science</td>
</tr>
<tr>
<td></td>
<td>Technical Reports and Thesis</td>
</tr>
<tr>
<td>Program initiation</td>
<td>See below</td>
</tr>
<tr>
<td>Contact</td>
<td>Major Paul D. Bailor</td>
</tr>
<tr>
<td></td>
<td>Department of Electrical and Computer Engineering</td>
</tr>
<tr>
<td></td>
<td>Air Force Institute of Technology</td>
</tr>
<tr>
<td></td>
<td>Wright Patterson Air Force Base, OH 45433</td>
</tr>
<tr>
<td>Source</td>
<td>This information was reported to the SEI by AFIT in August 1990.</td>
</tr>
</tbody>
</table>

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

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.
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

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  

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)
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

<table>
<thead>
<tr>
<th>Location</th>
<th>Wichita, Kansas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree title</td>
<td>Master of Computer Science Software Engineering Option</td>
</tr>
<tr>
<td>Degree requirements</td>
<td>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.</td>
</tr>
<tr>
<td>Required courses</td>
<td>Software Requirements, Specification and Design Software Testing and Validation</td>
</tr>
<tr>
<td>Elective courses</td>
<td>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)</td>
</tr>
<tr>
<td>Program initiation</td>
<td>Fall 1988</td>
</tr>
<tr>
<td>Contact</td>
<td>Mary Edgington, Chair Computer Science Department The Wichita State University Wichita, Kansas 67208</td>
</tr>
</tbody>
</table>

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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