



SOFTWARE ENGINEERING M.S. PROGRAM

PART-TIME OPTION (369)

HANDBOOK
March 2002

NAVAL POSTGRADUATE SCHOOL



Monterey, California

PROGRAM OBJECTIVE

The Software Engineering program at the U.S. Naval Postgraduate School provides military and government graduate students with an opportunity to learn all relevant aspects of software development and the skills needed to efficiently and reliably plan and create large-scale software intensive systems using the best available science and technology. These skills are essential for officers and civilians responsible for acquisition, development or maintenance of military software.

The program includes in-residence and distance learning M.S. and Ph.D. degree programs, certificate programs, short courses, and laboratory support. The Ph.D. program is the first-ever doctoral program in Software Engineering. Both the M.S. and Ph.D. degree programs may be completed either on campus by students carrying a full-time course load, or part-time through the distance learning option.

REQUIREMENTS FOR ENTRY

Any military or civilian personnel sponsored by the U.S. Government, holding an accredited Bachelor's degree in computer science, computer engineering, or related field, with above-average grades in mathematics, resulting in an APC of at least 325, and at least two years of software development or maintenance experience is eligible to apply.

Application information for the M.S. degree in Software Engineering can be found at: <http://seac.nps.navy.mil/Masters.htm>

ADMISSION PROCEDURES

The point of contact to request Naval Postgraduate School catalogs and admission to all degree programs is:

Director of Admissions
Code 01B3, Naval Postgraduate School,
589 Dyer Rd., RM 103C
Monterey, CA 93943-5100
Telephone (831) 656-3093, DSN 878-3093
FAX (831) 656-2891

DEGREE REQUIREMENTS

Students enrolled in the Software Engineering curriculum must successfully complete the 12 quarter-length Software Engineering courses. Completion of a master's thesis is required.

VTC EQUIPMENT SPECIFICATIONS

Students participate in the Distance Learning Program via our PictureTel 4000 Video Teleconferencing Systems using Integrated Services Digital Network, Basic Rate Interface (ISDN BRI) lines. This setup allows two-way, interactive audio and video between distant sites and an NPS classroom. The students' site must have a standards-based (H.320-compatible system) connection to a dial-up network (FTS2000).

Commercial networks may be used when FTS2000 is not available. NPS uses AT&T Accunet for commercial calls. NPS is currently establishing a program to lease VTC equipment to sites to provide the highest degree of compatibility and fidelity that the technology offers.

THESIS GUIDELINES

The Master's thesis is the capstone achievement of the student's academic endeavor at NPS. A challenging research thesis, requiring students to apply their focused graduate education, is one of the most effective methods for both solving Fleet/Joint force problems and instilling the life-long capability for applying basic principles to the creative solution of complex problems.

A Software Engineering thesis should either demonstrate the use of Software Engineering principles and techniques in solving existing software problems, or develop new theory, models, methods, or tools for building/maintaining software systems. A thesis must have some kind of scientific contribution, not just manufacturing of a lot of source code. This is why students must specify their expected scientific contributions in their thesis proposal.

It is very important for a student to pick the right project and define the scope of the thesis work. The student's thesis advisor will help him/her define the scope of the thesis work and identify its scientific contributions.

Additionally, the thesis advisor will:

- help a student to lay out a schedule of milestones.
- suggest initial references to read and people to contact.
- meet with the student regularly to monitor progress and provide consultation and direction.
- review and critique the thesis outline.
- review and critique the work, offer suggestions for necessary revisions, and check for accuracy and completeness.

The thesis advisor can help with topics in one of the following two ways:

- (1) The advisor has a list of thesis topics in mind. He/she already knows how much work each topic is involved and what the scientific contributions are. A student simply has to follow the direction of his/her advisor to complete the thesis work.
- (2) A student has a project from work, and he/she finds it beneficial to use results of the project to write the thesis.

If a student chooses option 2, then the thesis advisor will have to spend time to understand the project in order to help the student define the scope of the thesis and identify its scientific contributions. In many cases, the advisor may have to suggest work in addition to that done in the project to generate enough scientific contribution from the thesis work. Depending on the labor involved, the advisor may need reimbursable research funding support to allow him/her to work on the project.

THE THESIS PROCESS

An on-line thesis handbook is available at:

<http://vislab-www.nps.navy.mil/~code36/THESISGUIDE.html>

THESIS PROPOSAL

The thesis proposal is the key document in preparing for the thesis process. It performs several important functions in the process of communicating thesis activities. The proposal focuses the research effort for the student. It requires the student to develop a specific research question and subsidiary research questions, and to identify the methodologies to be employed in the research and the particular scope and limitations of the thesis work; it forces the student to give serious thought to the items that might become major problems later on. For a proposal example, refer to:

<http://vislab-www.nps.navy.mil/~code36/THESISGUIDE.html#proposalexample> and
<http://vislab-www.nps.navy.mil/~code36/THESISGUIDE.html#appendixA>

STEPS FOR COMPLETING THE THESIS PROPOSALS

- (i) Send drafts of the thesis proposal to the advisor(s) and second reader (if applicable) for review.
- (ii) If the thesis involves co-advisor or second reader at a remote site, ask them to sign the final thesis proposal.
- (iii) Send the final thesis proposal to the advisor(s) and second reader (if applicable) at NPS for signature.
- (iv) Ask the advisor to forward the signed thesis proposal to the Software Engineering program coordinator.
- (v) The Software Engineering program coordinator will obtain the signature of the Director and then forward the proposal to the Curricular Officer for signature and filing.

THESIS FORMAT APPROVAL

When determining format in terms of pagination, titles, headers, etc., follow the guidelines in the NPS Thesis Preparation Manual. The most current edition of this manual is available from the Thesis Processor.

Ms. Elaine Christian, Code 91EC
Research Office
Naval Postgraduate School
Bldg. 234 Halligan Hall, Room 236
Monterey, CA 93943-5138
DSN: 878-2762, Comm: (831) 656-2762

The Thesis Processor will become very important to the student as the student prepares the final draft of the thesis. She will provide the student formatting information and other such information needed to get the thesis published.

The student should send the Thesis Processor a copy of their thesis for format check as soon as a complete draft of the thesis is completed. This can be done while waiting for comments from advisors and second readers.

FINAL THESIS SUBMISSION

- (i) The student notifies the Software Engineering program coordinator by the first Friday of the quarter that he/she plans to graduate that quarter. The Software Engineering program coordinator will forward the request to the school (Academic Council, Graduation coordinator, etc.) via the curricular office.

- (ii) If the thesis involves a co-advisor or second reader at a remote site, ask them to sign the thesis.
- (iii) Send three copies of the thesis, together with the thesis classification form, thesis advisor information sheet and a floppy disk containing an on-line copy of the special abstract to the advisor at NPS for signature.
- (iv) Ask the advisor to forward the signed thesis, floppy disks, etc. to the Software Engineering program coordinator.
- (v) The Software Engineering program coordinator will obtain the signature of the Director and then forwarded the thesis to the Thesis Processor.
- (vi) The Software Engineering program coordinator will notify the student via email once the thesis has been accepted by the Thesis Processor.

**MASTER OF SCIENCE IN SOFTWARE ENGINEERING,
PART-TIME OPTION (369)**

The MSSE program is offered with a two-year part-time distance learning option with entry date in October. For more information, visit our website at <http://seac.nps.navy.mil> or email your inquiries to seac@nps.navy.mil, or contact the Curricular Officer, CDR Chris Lapacik, at clapacik@nps.navy.mil

**24 MONTH CURRICULUM FOR PART-TIME CIVILIAN STUDENTS
FALL INPUT**

QUARTER	COURSE MATRIX FOR STUDENTS ENTERING IN FALL	
1 FALL	SW3460 (3-1) SOFTWARE METHODOLOGY	SW4582 (3-1) SOFTWARE SAFETY
2 WINTER	SW4500 (3-1) INTRODUCTION TO SOFTWARE ENGINEERING	SW4580 (3-0) DESIGN OF EMBEDDED REAL-TIME SYSTEMS
3 SPRING	SW4520 (3-0) ADVANCED SOFTWARE ENGINEERING OR IS4300 (3-2) SOFTWARE ENGINEERING & MANAGEMENT	SW4590 (3-1) SOFTWARE ARCHITECTURE
4 SUMMER	SW4540 (3-1) SOFTWARE TESTING	SW4581 (3-1) SOFTWARE RELIABILITY & QUALITY METRICS OR MN3309 (4-1) ACQUISITION OF EMBEDDED WEAPON SYSTEMS SOFTWARE
5 FALL	IS4300 (3-2) SOFTWARE ENGINEERING & MANAGEMENT OR SW4592 (3-1) SOFTWARE RISK ASSESSMENT	CS3502 (4-0) COMPUTER COMMUNICATIONS AND NETWORKS OR IS3301 (3-2) FUNDAMENTALS OF DECISION SUPPORT SYSTEMS
6 WINTER	EO4011 (3-2) SYSTEM ENGINEERING FOR ACQUISITION MGRS	SW4591 (3-1) REQUIREMENTS ENGINEERING
7 SPRING	SW0810 (0-8) THESIS RESEARCH	SW0810 (0-8) THESIS RESEARCH
8 SUMMER	SW0810 (0-8) THESIS RESEARCH	SW0810 (0-8) THESIS RESEARCH