Capstone or Thesis
The Master’s thesis or capstone project forms the culmination of the MS program in Software Engineering. It is a large body of work, which you undertake independently, but under the supervision of a full-time SE faculty member.

A capstone project consists of a nontrivial software development effort and a report discussing it; or it is a report dealing with more theoretical questions. Original insight into a problem is desirable but not required. The project report is expected to be a scientific paper:

- describing background and relevant results in the area
- detailing the work carried out
- discussing the significance of the deliverables of the endeavor and providing appropriate reference citations

The project report is to be submitted in electronic and paper copy.

A thesis should deal with a significant question and involve some original insight. Compared to a capstone project, a thesis has a much higher level of expectation in terms of background research and justification. A thesis should also result in a paper submitted to a conference, a journal or other forms of public dissemination. Upon acceptance of the proposal by the committee, the effort required is that of a single 6-credit course.

More specifically, the difference between a project and thesis is the technical depth of the work involved. Capstone projects and thesis both often have a computer programming aspect and research component. The requirements for a capstone project are less stringent than for the thesis. The thesis requires more depth and the student should develop a substantial understanding of the topic through library journal research, experimentation, etc. The thesis report will be bound and reside in RIT Library’s archives and at least ten years in the Software Engineering Department’s reading room. Copies must also be provided to your committee.

The project, after it is well defined and the pre-proposal has been presented at SWEN 640 Research Methods course and accepted by the student’s committee, should take about as much effort as that devoted to a single six-credit course. The final report must be flat bound and a copy provided to each
committee member and one copy must be submitted to the department.

The purpose of a Master's thesis or project is to be of educational value to the student and to independently create and present a large, interesting, piece of work. Any acts of plagiarism or other acts of academic dishonesty will result in an automatic ‘F’ for the project/thesis. If you have any questions regarding plagiarism you should contact your committee chair before you complete your write up or make your presentation. Additionally, by forming your committee and registering for Capstone Project or Thesis you have effectively created a contract between your advisor (committee chair) and yourself. Your committee chair will contribute a substantial amount of time guiding project activities. Failure to complete your project or thesis within the agreed upon schedule may result in receiving a grade of ‘F’.

In either case, you will need to write a new Proposal, form a new committee, and register for capstone project or thesis again. In both cases the ‘F’ will remain on your transcript. Additionally, by signing your proposal the committee members agree to serve on your committee for one year. After one year they can resign from the committee if they feel the student is not making adequate progress.

Your Committee

Your capstone project/thesis committee is composed of three members:

- chair
- reader
- observer

The function of the chair is to direct the technical aspects of your project and to ensure that your project or thesis meets the department’s technical and administrative requirements. The chair has to be a member of the SE faculty or extended SE faculty who has a PhD. The extended SE faculty are:

- Wei Le, Ph.D., PhD Program Computing and Information Sciences

Normally, you will meet with your chair weekly. Monthly progress reports must be posted on your RIT student web page. The reader may also review your monthly reports and provide feedback on your progress or concerns
they may have to your chair. Your committee must be provided with a final copy of your report ten days prior to your defense. The reader or observer does not have to be a member of the SE faculty, but must hold a MS degree in SE, CS or a related discipline.

Other faculty members may also review your work and make recommendations to your committee chair. All advisement will come directly from your chair. The chair, reader and Graduate Coordinator must sign off on your Proposal before you register for capstone project or thesis. The third member of your committee, the observer, will attend your defense and ensure that department guidelines are met. It is most important that you establish a committee before you begin serious work on your project. Failure to do this may cause significant delay in the completion of your degree.

**MS Project/Thesis Seminar Registration**
As students prepare to begin their project or thesis, they must register for 3 credits of SWEN 640 Research Methods. During the term, you must develop your pre-proposal in the course and form your committee.

**Outcomes of MS Project/Thesis Seminar**
Each student takes the SWEN 640 Research Methods course. The student will find a chairperson and a capstone project/thesis topic during this course.

- The student writes a pre-proposal.
- The student submits the pre-proposal to the faculty chairperson and course instructor.
- The pre-proposal gets accepted or sent back to the student for modifications.
- The student writes the proposal, after the pre-proposal gets accepted.
- The proposal gets accepted or sent back for modifications.
- The student sets up a web site, after the proposal gets accepted.
- The student corresponds with faculty chairperson on a regular basis.
The student updates their web site at least every two weeks.

The student writes the final report/thesis.

The student defends the project/thesis, after the final report is accepted.

**MS Project/Thesis Proposal**

The proposal should contain the following sections:

- A summary describing what you will do.
- An overview of the area of your project/thesis.
- A hypothesis.
- How the proposed work will be evaluated against existing work.
- Detailed overview of the planned system or problem being investigated; e.g., the design specification. This may be less well understood, hence somewhat shorter.
- A list of the principal deliverables of your project/thesis and the form that these will be delivered, such as: technical paper or report, input/output examples or demonstration, code (the complete system should be given to your committee chair archived on a single file, user manual, with relevant artifacts (e.g. design documentation and maintenance manual).
- Annotated references. This should include the following: previous master’s projects or theses, books, papers, URLs in ACM or IEEE format.
- Detailed schedule, including target defense date.
- Status of the work at the present time. Monthly updates must be posted on your RIT web page.
MS Capstone Project or Thesis Registration for Credit

To register for Capstone Project or Thesis, you must give the office a copy of your Proposal signed by the Graduate Director, the chairperson and reader. The Department has a form for you to complete. If you do not finish your Capstone Project or Thesis in the first semester in which you register for credit, you will receive a grade of 'I.' You should continue to post monthly progress reports on your RIT web page until you finish, as well as register for Continuation of Capstone or Thesis for the subsequent semesters.

Doing a MS Project/Thesis Related to Your Work

A student may be working in the computing field, and find that their work provides them with an opportunity to do projects that are comparable to the MS Capstone Project or Thesis, and they would like that work to qualify. This approach is possible, and there is some precedent for doing it. Students can even have a Reader from their place of employment, but the chair of their committee must be a Software Engineering faculty member or an associated SE faculty and be knowledgeable in the proposed area of work. The work that will be submitted as the Capstone Project or Thesis must be monitored by the faculty members on the committee and the student must post their progress on their RIT web page monthly.

Because a SE faculty member is monitoring your work, this rules out submitting a proposal for work that has already been completed. In addition, the report, and a significant portion of the other work products such as code, must be made available for other students to read in the future. The committee sets the requirements - not the employer. It is your responsibility to assure that your employer’s requirements for confidentiality are respected.

Checklist for the Defense

The last step in the process is the defense. After the student has completed the write up of his/her work and the chair and the reader have approved it, the student defends his work during a 50-minute presentation. The defense is open to the public.

The student is required to follow the procedures outlined below:

- Schedule the defense and register that scheduling with the Software Engineering department office; assure all committee members are able
to attend; reserve the room with the department staff.

- Assure that the room has all the facilities you require (board, markers, projectors, ethernet connection, etc).

- Post announcements at least 10 days prior to the event with the following information being emailed to Sarah Mittiga:
  
  o Thesis/Project Title:
  o Author
  o Defense Date and Time
  o Location
  o Announcement type: Capstone or Thesis Announcement
  o Abstract
  o Committee Information (Names of Chair, Reader, Observer)
  o Report URL

- Verify with the department staff that all necessary paperwork has been completed (including current application for graduation).

- Review your presentation with at least one of your committee members typically the committee chair before presenting it formally. The defense should take 50 minutes, but you must allow time for questions and discussion. When you rehearse, it should take 40 minutes.

- A rehearsal is highly recommended. Ask a friend or two or a member of your committee to sit through a complete presentation. This is the only way you will know how long it takes and to locate the bugs (demos that fail, typos, faulty visuals, etc.) in your presentation.

- Prepare handouts for your presentation consisting of copies of your visuals in 4-up or 6-up form. Discuss with your committee chair how many copies to prepare.
**Deliverables**

The final paperwork for a Project requires that you give each of your committee members and the CS Department a copy of the professionally written report, in a pressboard binder (or some flat binding).

The report must also include a CD/DVD, which has the following content:

- Report in PDF: The filename has to be report.pdf
- Proposal in PDF: The filename has to be proposal.pdf
- Defense announcement in plain text or PDF:
  - The filename has to be announcement.pdf/announcement.txt
- A file which contains the keywords characterizing the work: The filename has to be keywords.txt

The final paperwork for a thesis requires that you arrange for a bound copy of the thesis for the RIT Library, the SE Department, and each committee member (that makes six copies, counting your own). Give the SE Department secretary copies of:

- the thesis binding receipt
- the thesis abstract
- the signed cover page

You will not be certified for your degree until these steps have been completed. Also all graduate students who complete a thesis are required to submit the thesis to Proquest/UMI for publication. A standard fee applies and is the sole responsibility of the student.

Please see [http://library.rit.edu/services/graduate-student-support.html](http://library.rit.edu/services/graduate-student-support.html) for additional information.