Thesis, Project, or Capstone Course; what's the difference?

A **thesis**, a project or the capstone course is required to complete the requirements of the **MS in Computing Security** program. It should demonstrate your ability as professional and as a creative and independent thinker. It is also intended as an opportunity for you to demonstrate your mental inquisitiveness, creativity, and your ability to independently pursue academic inquiries. In short, it demonstrates and proves your abilities as an academic scholar.

A thesis involves researching a topic of interest. This research is typically based upon a hypothesis or assertion statement. The hypothesis may be verified using mathematical analysis, experiments, simulations or emulation. There may or may not be a development component. It must, however, add some "nugget of knowledge" to the body of literature on the chosen topic. This "nugget" concept refers to originality in thought, application of concepts, implementation, or conclusions on the part of the student. In other words, a thesis is more than simply a large literature review or report on a given topic area. It requires investigation, analysis and creativity of high quality, suitable for external peer-reviewed publications. The investigation process and the results are documented in a published document, available to the public through the RIT Library and the Internet. An MS thesis is worth 6 credits.

A **project** involves some type of practical development with a deliverable. This may include development with computer equipment, software packages, and programming or scripting languages. Alternately, it may be the development and demonstration of an innovative process that addresses a current computing issue or problem. As technologies change, capstone resources should keep pace. A well-written professional report is required that details current thinking on the topic in the professional literature, the design and implementation of development that was done, and a critical evaluation of the results. An MS Project is worth 3 credits.

A **capstone course** has expectations similar to a project. The difference is that the scope of the project is defined so that the results can be achieved within a semester. Also, students work with the instructor of the course (or another faculty member, if required) rather than a faculty committee. Students submit a 2-page proposal to the course instructor, *prior* to obtaining the approval to register for the course. The proposal should outline the problem, the methodology and the deliverables. The scope should be carefully defined so that the work can be completed within the semester time frame. Although termed as a course, students are expected to carry out independent work with some guidance provided by the instructor. A well-written professional report is required that details current thinking on the topic in the professional literature, the design and implementation of development that was done, and a critical evaluation of the results. Students are expected to present their findings via a departmental poster session. An MS capstone course is worth 3 credits.

The three capstone options are:

CSEC 790 MS Thesis - This course is a capstone course in the MS in Computing Security program. It offers students the opportunity to investigate a selected topic and make an original contribution which extends knowledge within the computing security domain. As part of their original work students will write and submit for publication an article to a peer reviewed journal or conference. Students must submit an acceptable proposal to a thesis committee (chair, reader, and observer) before they may be registered by the department for the MS Thesis. Students must defend their work in an open thesis defense and complete a written report of their work before a pass/fail grade is awarded. (6 Credits)

CSEC 791 MS Project - This course is a capstone course in the MS in Computing Security program. It offers students the opportunity to investigate a selected topic within the computing security domain. The student may complete a project for real world application or in a laboratory environment. Students must submit an acceptable proposal to a project committee (chair, and reader) before they may be registered by the department for the MS Project. Students must defend their work in an open project defense and complete a written report of their work before a letter grade is awarded.

CSEC 793 MS Capstone Course - Students will apply their knowledge learned through the program to solve real world problems various areas of computing security. Large size projects will be defined for students to work on throughout the semester. At the end of semester students will present their results and demonstrate their knowledge and skills in problem solving and critical thinking in a setting open to the public.