

MS in Computer Science Degree Program

Program Requirements

The MS in Computer Science is a 30 credit-hour program with an optional thesis track. All students must complete 12 credits of core courses (4 courses). Students in the thesis track must take 12 additional credits of electives and the 6-credit thesis sequence or if approved 9 additional credits of electives and the 9-credit thesis sequence. Students choosing the non-thesis track must take 18 additional credits of electives, 6 credits of which must be classified as **project intensive**.

The **12-credits** must be selected from the following list of **core** courses:

- CS 04.530 Advanced Database Systems: Theory and Programming (3 s.h.)
- CS 04.548 Programming Languages: Theory, Implementation and Application (3 s.h.)
- CS 04.560 Design and Implementation of Operating Systems (3 s.h.)
- CS 04.564 Compiler Design Theory (3 s.h.)
- CS 04.570 Advanced Object Oriented Design (3 s.h.)
- CS 06.510 Computer Networks (3 s.h.)
- CS 06.520 Topics in Computer Architecture (3 s.h.)
- CS 07.522 Advanced Theory of Computing (3 s.h.)
- CS 07.523 Advanced Software Engineering (3 s.h.)
- CS 07.540 Advanced Design and Analysis of Algorithms (3 s.h.)
- CS 07.550 Concepts in Artificial Intelligence (3 s.h.)
- CS 07.751 Advanced Cyber Security: Principles and Applications (3 s.h.)
- CS 07.552 Cryptographic Algorithms (3 s.h.)
- CS 07.556 Machine Learning (3 s.h.)

Electives include the following existing Rowan University graduate level courses:

- CS 01.541 Bioinformatics - Advanced Computational Aspects (3 s.h.)
- CS 02.505 Data Mining I
- CS 02.515 Data Warehousing
- CS 02.605 Data Mining II
- CS 03.505 Data Quality and Web/Text Mining
- CS 04.505 Advanced Web Programming (3 s.h.)
- CS 04.563 Concurrent Programming – Theory and Practice (3 s.h.)
- CS 04.565 System Programming (3 s.h.)
- CS 04.571 Advanced Topics in Mobile Programming (3 s.h.)
- CS 06.505 Wireless Networks and Systems (3 s.h.)
- CS 06.512 Network Security (3 s.h.)
- CS 06.515 Embedded Systems Programming (3 s.h.)
- CS 07.524 Agile Software Engineering (3 s.h.)
- CS 07.545 Advanced Robotics (3 s.h.)
- CS 07.555 Natural Language Processing (3 s.h.)
- CS 07.560 Computer Graphics (3 s.h.)
- CS 07.565 Computer Vision (3 s.h.)
- CS 07.570 Information Visualization (3 s.h.)
- CS 07.575 Advanced TCP/IP and Internet Protocols and Technologies (3 s.h.)
- CS 07.580 Computer Animation (3 s.h.)

CS 07.590 Game Design and Development (3 s.h)

CS 07.595 Advanced Topics in Computer Science (3 s.h.)

Any core course can be taken as an elective.

Students can choose a **maximum** of 6 credits of **approved** graduate electives from graduate programs in the field of Electrical and Computer Engineering, Mathematics, Management Information Systems, Data Analytics, or Bioinformatics. Only 3 credits from the graduate program in Management Information Systems could be counted towards electives for a graduate degree in Computer Science.

Any graduate course taken outside of Rowan-CS must be **approved** prior to registration by the CS Graduate Program Committee. Such an approval is on an individual basis. The interested student must submit in writing to the CS Graduate Program Coordinator an explanation as to why they are interested in the course and how the course addresses one or more of the goals of the MS in Computer Science program. The student can expect a response from the Graduate Committee within 10 business days.

The MS in Computer Science Program Goals

- **Program Goal 1:** MS Computer Science graduates are able to design, analyze, implement, and evaluate computer systems and applications as part of a major course project, as well as effectively communicate key aspects of these projects.
- **Program Goal 2:** MS Computer Science graduates are prepared to engage in continuing professional development and research as a result of independent exploration and learning
- **Program Goal 3:** MS Computer Science graduates understand core areas of Computer Science and apply this knowledge to solving computing problems.

Students choosing the *thesis track* must complete:

CS 07.530 Computer Science Thesis I (3 s.h.)

CS 07.531 Computer Science Thesis II (3 s.h.)

OR (only after the **approval** of the CS Graduate Program Coordinator)

CS 07.530 Computer Science Thesis I (3 s.h.)

CS 07.531 Computer Science Thesis II (3 s.h.)

CS 07.532 Computer Science Thesis III (3 s.h.)

Project Intensive Designation

The course instructor may choose to designate a course as “Project Intensive.” Project intensive courses contain a significant project component that contributes to the students’ final grade. Students choosing the non-thesis option must take at least two project intensive courses. The current list can be found at [Project Intensive Courses](#).

Graduate Course Offering

The graduate course offerings can be found at [Section Tally](#) by choosing the appropriate semester, as department “CSCI- Computer Science” and as attribute “GRAD – Graduate Lvl crses 500 and up”. Students can only register for courses that are offered on the Main and Camden campuses. The Camden campus is easily accessible from the main campus by free Rowan University shuttle. The catalog description of the courses offered can be found by clicking on the course CRN. Students cannot register for courses offered as part of our extension programs.

Ensuring Academic Success

The success of our graduate students is essential to the Computer Science Department and to Rowan University. Therefore, in order to ensure progress towards graduation and academic success, it is important for students to stay in regular contact with the Graduate Program Coordinator and to get advice on courses, to check academic progress as well as communicate

any concerns, questions or general student issues. Do not hesitate to contact Dr. Xu at xu@rowan.edu.

It is the students' responsibility to make sure that they have the necessary background for every course they take. In order to ensure that, the students are encouraged to contact the instructor of the course to enquire about the expected necessary background. If a student is lacking the necessary background for a course, it is the student's responsibility to supplement with self-study in preparation for the course.

Thesis Requirements

Rowan students pursuing a *thesis-track* MS in Computer Science degree have to write and defend a thesis. In addition, as part of their fulfillment for graduation, are required to submit their thesis to the Office of Graduate Research Services for final format approval. The Office of Graduate Research Services coordinates the final format review process and is responsible for ensuring that all theses adhere to the format and style as prescribed in the [Thesis & Dissertation Manual](#) prior to final approval with the Registrar for graduation purposes.

For information regarding thesis final format review please see: <https://rowanu.com/thesis>.