IV. Curriculum

Intent

- The curriculum is consistent with the program’s documented objectives.
- It combines technical requirements with general education requirements and electives to prepare students for a professional career in the computer field,
- for further study in computer science,
  and
- for functioning in modern society.
- The technical requirements include
  - up-to-date coverage of basic and advanced topics in computer science
  - an emphasis on science and mathematics.
Standards

- Curriculum standards are specified in terms of semester hours
- 30 semester hours generally constitutes one year of full-time study
- equivalent to 45 quarter hours
- A course or part of a course can only be applied toward one standard.

Curriculum is divided into four sections

- General
- Computer Science
- Mathematics and Science
- Additional Areas of Study
Curriculum Standards -- General

I-1. The curriculum must include at least 40 semester hours of up-to-date study in computer science topics.

I-2. The curriculum must contain at least 30 semester hours of study in mathematics and science as specified below under Mathematics and Science.

I-3. The curriculum must include at least 30 semester hours of study in humanities, social sciences, arts and other disciplines that serve to broaden the background of the student.

I-4. The curriculum must be consistent with the documented objectives of the program.
Curriculum Standards -- Computer Science

I-5. All students must take a broad-based core of fundamental computer science material consisting of at least 16 semester hours.

I-6. The core materials must provide basic coverage of algorithms, data structures, software design, concepts of programming languages, and computer organization and architecture.

I-7. Theoretical foundations, problem analysis, and solution design must be stressed within the program’s core materials.

I-8. Students must be exposed to a variety of programming languages and systems and must become proficient in at least one higher-level language.

I-9. All students must take at least 16 semester hours of advanced course work in computer science that provides breadth and builds on the core to provide depth.
Curriculum Standards -- Mathematics and Science

I-10. The curriculum must include at least 15 semester hours of mathematics.

I-11. Course work in mathematics must include discrete mathematics, differential and integral calculus, and probability and statistics.

I-12. The curriculum must include at least 12 semester hours of science.

I-13. Course work in science must include the equivalent of a two-semester sequence in a laboratory science for science or engineering majors.

I-14. Science course work additional to that specified in Standard IV-13 must be in science courses or courses that enhance the student’s ability to apply the scientific method.
Curriculum Standards -- Additional Areas of Study

I-15. The oral communications skills of the student must be developed and applied in the program.

I-16. The written communications skills of the student must be developed and applied in the program.

I-17. There must be sufficient coverage of social and ethical implications of computing to give students an understanding of a broad range of issues in this area.
Sample Advanced Courses

- algorithms and data structures,
- artificial intelligence and robotics,
- computer networks,
- computer organization and architecture,
- database and information retrieval,
- human-computer communication,
- numerical and symbolic computation,
- operating systems,
- programming languages,
- software methodology and engineering,
- theory of computation.