Computational Engineering

Graduate Coordinator: Dr. Pasquale "PC" Cinnella
Center for Advanced Vehicular Systems (CAVS)
Box 9618
Mississippi State, MS 39762
Telephone: 662-325-5431
E-mail: grad-coordinator@hpc.msstate.edu

An Interdisciplinary Curriculum

The Computational Engineering graduate program is interdisciplinary, with faculty drawn from the academic departments of the College of Engineering and the College of Arts and Sciences, as well as the research faculty of the HPC^2. Programs of study and research leading to both the Master of Science degree and the Doctor of Philosophy degree are available. There is an increased demand by industry, academia, and government for scientists and engineers with a better knowledge of the skills necessary to create new technologies and improve upon existing ones through simulation tools. Such programs come with curricula covering a large range of subjects, so that they can produce scientists and engineers with broad backgrounds and viewpoints. These scientists and engineers can then be expected to understand the basic approaches to solving analytical problems and also using mathematical and computational tools required to arrive at solutions. The program is open to students with undergraduate degrees in engineering, computer science, mathematics, or a physical science. Research assistantships are available through research projects in the HPC^2.

Admission Criteria

To be admitted, the student must meet the admission requirements of the Office of the Graduate School and receive a positive recommendation from the Computational Engineering screening committee. International students must have scored at least 550 PBT (213 CBT or 79 iBT) on the Test of English as a Foreign Language (TOEFL) or 6.5 on the International English Language Testing System (IELTS). Students with a degree from a program that is not EAC/ABET accredited must have a satisfactory performance on the GRE.

In addition, highly qualified undergraduate students, with a minimum equivalent GPA of 3.50/4.00 on the last 60 credit hours of undergraduate courses, or a first class with distinction degree classification for students from institutions where no GPA is reported, or a satisfactory performance on the GRE for students from a non-ABET-accredited program, can be directly admitted to the Ph.D. program.

Provisional Admission

Because of the interdisciplinary nature of the Computational Engineering program, virtually all students are required to take some prerequisite courses. Nevertheless, all students admitted to the program are granted regular admission. Provisional admission is not approved.

Program of Study

The specific requirements for the degrees are governed by the requirements of the Office of the Graduate School, the College of Engineering, and by the student's graduate committee. The committee must include at least one Computational Engineering faculty member from each of the following areas:

1. a Computational Engineering application area,
2. high-performance computing, and
3. numerical mathematics.

The graduate committee will ensure that the student's program of study adequately addresses each of the three primary cross-disciplinary areas (an application area, high-performance computing, and numerical mathematics), and students are encouraged to include one or more courses in scientific visualization or graphics. The composition of the graduate committee and the student's program of study must be approved by the Computational Engineering Graduate Coordinator.

Academic Performance

Continued enrollment in the graduate program in Computational Engineering is dependent upon satisfactory performance in the courses and satisfactory progress toward completion of the degree. To achieve satisfactory performance, a student must

1. maintain a B average on:
    a. all undergraduate prerequisite courses;
    b. all graduate courses completed after admission to the program;
    c. all graduate courses included on the student's program of study;
2. have no more than one grade less than C;
3. have a major advisor and a supervisory committee (after the first two semesters of enrollment).

Should a student's cumulative grade point average (in any of the three categories above) be less than 3.00 at the end of a term, the student will be placed on "probation" and will be given one semester to earn a cumulative grade point average of 3.00 or greater. If at the end of the probationary term the student's cumulative grade point average (in any of the three categories above) is less than 3.00, the student's program of study will be terminated immediately. If the student enrolls in the summer term, it will count as one term.

Should a student earn a second grade less than a C, the student's program of study will be terminated immediately. Should a student who is beyond his/her second period of study not have a major advisor and supervisory committee, the student will be placed on probation and given one semester to form a committee. Should the student not be able to form a committee, his/her program of study will be terminated. A student may appeal termination of his/her study to the Computational Engineering Supervisory Committee.

Graduate Courses

Because of the interdisciplinary nature of the Computational Engineering program, courses listed below are typical of those used to assemble a program of study. Courses not listed can be used for graduate credit with the approval of the student's supervisory committee and the Computational Engineering Program Coordinator (p.   ) .

Master of Science in Computational Engineering - Thesis

8000-level coursework	12
Additional graduate-level coursework	12
Research/thesis	6
Total Hours	30

Master of Science in Computational Engineering - Non-Thesis

8000-level coursework	15
Additional graduate-level coursework	15
Research project	3
Total Hours	33

Doctor of Philosophy in Computational Engineering

The Doctor of Philosophy in Computational Engineering, in addition to the coursework and research hours, includes a comprehensive examination, a dissertation, and dissertation defense. Each candidate for the doctoral degree must conduct research and in their dissertation defense on that research

1. demonstrate a mastery of the techniques of research and
2. make a very distinct contribution to the field of Computational Engineering.

The dissertation must conform to the rules of the Office of the Graduate School.

For direct-admit Ph.D. students, 72 credit hours beyond the B.S. are required (48 credit hours of coursework and 24 credit hours of dissertation research).