

The M.S. Program in CSME is designed to be a 2-year program centered around lecture and laboratory courses which focus on obtaining mastery of the primary tools used in computational science. Extracurricular training is an important component of the program with an expectation of team based laboratory projects on relevant topics from computational science. All students must successfully complete the following course work for a Total of 38 Required Units:

Basic Proficiency: Subject to petition and approval by the CSME Executive Committee, proficiency may be demonstrated by taking UCSD's courses in both subjects while enrolled in the graduate program (4 units per course):

1. Numerical Methods (MATH 174/274 or MAE 290A)
2. Data Structures and Algorithms (CSE 100 or CSE 101)

Alternatively, proficiency in the material contained in these courses may be satisfied by having previously taking these or equivalent courses at other institutions, or through other evidence of sufficient knowledge of this material. Demonstrating proficiency without taking these courses at UCSD is subject to petition and approval by the CSME Admissions Committee on an individual basis.

1. (8 units) One of the following two-quarter sequences:
 - o MATH 174/274: Numerical Methods and MATH 175/275: Numerical PDE
 - o MAE 290A: Numerical Methods and MAE 290B: Numerical PDE
2. (4 units) One of the following courses:
 - o MATH 176: Datastructures and Algorithms
 - o CSE 100: Datastructures and Algorithms
3. (4 units) The following course:
 - o PHYS 243: Stochastic Methods
4. (8 units) The following two-quarter sequence of courses:
 - o PHYS 141/241: Computational Physics I: Probabilistic Models and Simulations
 - o PHYS 142/242: Computational Physics II: PDE and Matrix Models
5. (4 units) One of the following courses:
 - o PHYS 244: Parallel Computing
 - o CSE 260: Parallel Computing
6. (8 units) Two quarters from the same sequence chosen from the following list:
 - o MATH 210ABC: Mathematical Methods in Physics and Engineering
 - o MATH 270ABC: Numerical Analysis
 - o MATH 271ABC: Numerical Optimization
 - o MATH 272ABC: Numerical Partial Differential Equations
 - o MATH 273ABC: Advanced Techniques in Computational Mathematics
 - o PHYS 105AB: Mathematical and Computational Physics
 - o PHYS 130AB: Quantum Physics

or any two courses from the following list:

- o PHYS 225: General Relativity
- o BIPN 146: Computational Neurobiology

- Other science courses as approved by the CSME Executive Committee
7. (2 units) CSME Journal Club (taken for 2 quarters of 1 unit each)

Note: Full-time students are required to register for a minimum of twelve (12) units every quarter. Eight (8) of these twelve (12) units must be graduate-level CSME Program courses taken for a letter grade.

Qualifying Requirements: M.S. students must pass the final exams in three qualifying exam courses. It is expected that most students will register for and take these courses (4 units per course), but the Qualifying Exam Committee may allow an exceptionally well-prepared student to take the final exams without taking the courses. The three qualifying exam courses have been selected to provide a general broad set of tools in computational science, must be taken for a letter grade and are as follows:

1. MATH 275 or MAE 290B (Numerical PDE)
2. PHYS 244 or CSE 260 (Parallel Computing)
3. Course to be selected from LIST A