

Robotics Certificate in the MAE Graduate Program

The certificate in Robotics is to prepare students enrolled in the MAE Masters program for their career path in robotics-related jobs in industry, government R&D centers and future graduate studies. The program offers a rigorous and in depth exposure to scientific and engineering fundamentals in the broad set of core disciplines required in robotics-related fields. Taking advantage of existing courses (see below) and resources of the MAE department, including the faculty's expertise and state-of-the-art research and teaching laboratories related to robotics & mechatronics, students will be trained to be practicing professionals through specialized coursework and an in-depth research (M.Sc.) or a capstone engineering project (M.Eng)

1st Semester (10cr)

Required	642:527 Math	3cr
Required	650:514 Mechanisms of Robotics (Design of Mechanisms)	3cr
Required	Seminar	1cr
Robotics Elective	(Choose One from the list below)	3cr

2nd Semester (10cr)

Required	650:504 Advanced Control I	3cr
Required	Seminar	1cr
Robotics Elective	(Choose one from the list below)	3cr
Technical Elective	See below	3cr

3rd Semester³ (10cr)

Required	650: 512 Robotics and Mechatronics	3cr
Required	Seminar	1cr
Robotics Elective	(Choose one from the list below)	3cr
Technical Elective	See below	3cr

Required Courses: Math (527), Mechanisms of Robotics (514), Advanced Control I (504), Robotics and Mechatronics (512), Seminar in Mechanical Engineering (608, 609).

Robotics Elective Courses: Math (528), Analytical Dynamics (522), Advanced Control II (505), Optimal Design (524), Computer Aided Design (510). In other departments: Applications of Robotics in Mfg. Systems (540:570), Introduction to Artificial Intelligence (198:520).

Technical Elective Courses: Any graduate course offered by Engineering, Math, Computer Science, or Physics. As per Graduate School guidelines, a maximum of two 400-level undergraduate courses can be taken with the permission of the graduate director toward the credit requirements for M.Sc. or M.Eng. degree.