Mechanical Engineering/Robotics 4+1 (BME/MS) Graduates of this program will be able to demonstrate different technical skills depending on their specialization through their course selection. These skills may cover different aspects of design, analysis, simulation, and control of robotic systems. Yet, all graduates should be able to demonstrate competency relative to the following three program learning outcomes:

A. Ability to derive mathematical models of robotic systems: Ability to derive mathematical models of typical robotic systems, analyze their dynamic behavior, and design standard controllers.

B. Ability to simulate robotic behavior: Ability to simulate robotic behavior in industry-standard software environments —e.g., Robot Operating System (ROS), Webots, etc.

C. Robotic systems deployment: Familiarity with implementation issues of robotic deployment in real-world environments.

Students should apply to this program in the spring of their junior year. The application will be reviewed by the executive committee of the MSR program. To be eligible for the BME and HBME, all requirements of the BME and HBME must be completed for the degree, respectively. To be eligible for the MSR, the student must complete at least 30 credits of graduate coursework that satisfy the requirements of the MSR degree. The curriculum consists of a core of six (6) required courses, and four (4) electives. The latter are selected from an approved list of graduate courses, and are designed to provide the opportunity for specialization in particular academic subareas of interest to robotics such as control, estimation, optimization, or machine learning. The student may use either the thesis or non-thesis option. Students in the 4+1 program may count up to six credits of graduate coursework toward both their BME (or HBME) and MSR degrees.