Request for New Course Designator: ROB

Purpose: The proposed course designator should have an identified purpose within the curricular structure of Oregon State University.

The ROB course designator (ROBOTICS) aims to capture the inter-disciplinary course offerings that span the relevant multiple disciplines. The field of “Robotics” lives at the intersection of Mechanical Engineering, Electrical and Computer Engineering, and Computer Science. In some classes, all three topics are needed, and the emphasis isn’t on any of them, but on how the three build on each other. For example, we have introduced a course called “Applied Robotics” three years ago, and specifically decided to not use the ME, ECE or CS designators. Instead, we chose to name this course ENGR 421/521 to make sure students (and academic advisors) in all disciplines understood the multi-disciplinary nature of the course. However, the ENGR designator isn’t the best option for this type of course, as it only addresses one aspect of the issue: it ensures that the course isn’t restricted to one program. But it doesn’t provide the inclusive aspect of the course, or the way in which the different disciplines are combined to provide a unique educational experience. Having an ROB designator for robotics courses will provide an umbrella that will capture the specific way in which robotics combines ME, ECE and CS.

- What academic programs, including majors, certificates, options and minors will be served by courses within the designator?

The ROB course designator will primarily be used by courses currently using the ENGR and ME designators. The degree programs that may use ROB courses in their majors, minors and options can include: Mechanical Engineering, Electrical and Computer Engineering, Computer Science.

- In what ways do the general area and scope of the content constitute a coherent body of knowledge?

Robotics is a growing field that covers mechanical, electrical and computer devices, as well as software and artificial intelligence. In addition, robots interact with humans, creating other key areas of study. But all of these topics are unified under the umbrella of having the robots interact with the real world. That interaction (sensing, locomotion, decision making, acting) provides the coherent theme that runs through all robotics.

- Is the proposed usage of the designator consistent with practice at OSU and other institutions? Give examples.

The usage of ROB will be consistent with OSU practice. The closest example in OSU to such a designator is the MATS designator (Material Science). In both cases, the designator calls attention to a common theme running across courses offered in many departments and provides a unifying theme for students’ programs of study. Other institutions that aim to specialize in robotics use specific designators for robotics. For example, Carnegie Mellon University (the leader in robotics), offers courses with a specific designator for robotics, but they use numbers rather than letters. All courses starting with “16-” are designated for robotics.

Accountability: Responsibility for the integrity and oversight of the proposed course designator should be clearly identified.

- What is the academic College of the designator?

The College of Engineering.

- Who is responsible for administering courses in the designator, e.g. scheduling and catalog updates. Who are the faculty contact persons?

The school of Mechanical, Industrial and Manufacturing Engineering will administer courses in the ROB designation. The contact persons are:
Dr. Kagan Tumer: Curricular questions

Dr. Ken Funk: Scheduling questions

Lynn Paul: Administrative questions

- Who is responsible for consistency and outcome assessment for courses in the designator?
  Kagan Tumer and Lynn Paul will be responsible for the consistency and outcome assessment.

- Which units get credit for the SCH generated by courses in the subject code?
  School of MIME

  - Who is responsible for communicating information about the new designator to stakeholders, including advisors, Admissions, and students?
    Kagan Tumer and Lynn Paul will provide the necessary information to the stakeholders.

Impacts: Who will benefit from the new designator and what changes will result from its implementation?

The key beneficiaries will be students who will be able to point to a consistent body of work for the electives (see below for more detail).

- Will courses in the new designator duplicate or compete with existing ones?
  No, some courses will change from ME or ENGR to ROB, but there will be no duplication or competition.

- Are there expected cross-listings or curricular equivalencies?
  Yes, some courses will move from ME to ROB, others will be cross-listed. This will be based on whether the course content is primarily robotics or whether it simply supports robotics.

- How will the new designator affect transfer credits?
  For transfer of credit from between the same departments (say, ME to ME), this will have minimal impact. However, it will have a positive impact in transfer of credits if a student uses or transfers credits from one department to another (say from ME to CS). In those cases, having ROB credits will make it easier to transfer the credits as both ME and CS departments will consider ROB topics closer to their core disciplines that they would the other established discipline.

- Will any previous existing designators expire as the new one appears?
  No.

- How will the new designator benefit students?
  The student will be able to:
    - Identify and select courses that share a common theme
    - Show specialization in robotics, a rapidly growing area
    - Become more marketable by having transcript visible expertise in robotics