



Memo

To: Randy Smith, Vice Provost for Academic Programs, Office of Academic Affairs
From: Rosie Quinzon-Bonello, Assistant Dean for Curriculum and Assessment
Date: April 21, 2025

Re: Informational Item: UG Program Change to Engineering Physics Specializations

On April 21, 2025, the College of Engineering Committee for Academic Affairs had no questions or concerns regarding an informational item submitted by the Engineering Physics UG program which updated the program's elective courses in the following specializations:

- Aerospace Engineering
- Chemical Engineering
- Computer Science and Engineering
- Electrical and Computer Engineering
- Industrial and Systems Engineering
- Materials Science and Engineering
- Mechanical Engineering
- Nuclear Engineering

Yours sincerely,

Rosie Quinzon-Bonello

PROPOSAL TO UPDATED ENGINEERING PHYSICS SPECIALIZATION COURSE LIST

Dear College of Engineering Committee on Academic Affairs,

The Engineering Physics undergraduate major proposes an update to the current course offerings in the Engineering Physics major specialization requirements. Engineering Physics majors are required to declare one of eight specializations and complete 27 hours of coursework in the specialization subject area. In most cases, students are required to take a few required courses in the subject area and then take the remainder of their courses from an elective list until they meet the 27 hours requirement.

At this time, each specialization has a set list of elective courses from which to choose. In most cases, this is not a comprehensive list of courses offered by the specialization subject area. In the current state the following issues occur:

- Students are required to request exceptions to take unlisted courses, which are always approved by the Engineering Physics major. A staff member then must manually add the course to the degree audit system for the individual student.
- As new courses are developed and added to the catalog, they are not listed as available to Engineering Physics students.
- Transparency of all curricular options for students is inhibited if courses available are not included on the specialization requirement lists.

We are requesting that the elective lists are replaced with a simple range of classes. For example, all courses number ENGR 2000 to ENGR 5999. This would provide a transparent list of available courses to students, it would account for development of future courses, and can be easily programmed into the degree audit system reducing manual modifications by staff.

Some specializations may exclude a few courses from their course ranges, those are indicated in the table below. The following list of courses will be excluded from all specializations. Students may request for an excluded course to count and will be reviewed on an individual bases.

* Excluded List:

- Independent Study and Group Study courses: numbered xx93 and xx94
- Study Abroad courses: numbered xx97
- Research courses: number xx98 and xx99

We reduced the elective requirements for the CBE, ECE, ISE, and MSE specializations. This was to allow additional flexibility, but we are open to feedback from all departments regarding the required courses and we can add or remove required courses as they see fit.

After these changes are approved and implemented, we will create materials for our students to help them choose electives based their interests and career goals.

Specialization	Current Requirements	Proposed
Aerospace Engineering	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: AEROENG 2200, 2405</p> <p>Elective List: AEROENG 3520, 3521, 3522, 3542, 3543, 3560, 3570, 3580, 3581, 4515, 4516, 4550</p>	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: AEROENG 2200, 2405</p> <p>Elective List: AEROENG 3000 to 5996 Excluding (capstone courses 4516/4518, and excluded list*)</p>
Chemical Engineering	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: CBE 2200, 2420, 3421, 3422, 3508, 3509, 3610, 4760, 5713</p> <p>Elective List: None</p>	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: CBE 2200</p> <p>Elective List: CBE 2000-5996 (if needed) Excluding (capstone courses 4764, and excluded list*)</p>
Computer Science and Engineering	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: CSE 2221, 2231, 2321, 2421</p> <p>Elective List: CSE 2122, 2331, 2431, 3241, 3461, 4251, 4252, 4253</p>	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: CSE 2221, 2231, 2321, 2421</p> <p>Elective List: CSE 2331, 2371, 2431 3000-5996 Excluding (capstone courses 591x, and excluded list*)</p>
Electrical and Computer Engineering	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: ECE 2020, 2050, 2060, 3020 At least 2 labs (ECE 3027, 3047, 3567, 5007, 5037, 5207)</p> <p>Elective List: ECE 2560, 3030, 3040, 3050, 3561, 3551, 5000</p>	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: ECE 2020, 2050, 2060</p> <p>Elective List: ECE 2000-5996 Excluding (capstone courses 3906/4905, and excluded list*)</p>
Industrial and Systems Engineering	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: ISE 2400, 2500, 3200 ,3600, 3210, 3400, 3700, 3800, 4120</p> <p>Elective List: None</p>	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: ISE 2400, 2500, 3200</p> <p>Elective List: ISE 2000-5996 (if needed) Excluding (capstone courses 4900, 5811, 5812, 5813, and excluded list*)</p>

Materials Science and Engineering	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: MATSCEN 2010, 2241, 2331, 2251, 3141</p> <p>Elective List: MATSCEN 3151, 3271, 3331, 3332, 4181, 5431, 5451, 5531, 5532, 5951</p>	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: MATSCEN 2010, 2241, 2331, 2251</p> <p>Elective List: MATSCEN 2000-5996 Excluding (capstone courses 438x.0x, and excluded list*)</p>
Mechanical Engineering	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: MECHENG 2010</p> <p>Elective List: MECHENG 2020, 2030, 2850.01, 2900, 3500, 3501, 3503, 3260, 3670, 3671, 3751, 4505, 4510, 5139, 5339, 5372, 5530, 5682.01</p>	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: MECHENG 2010</p> <p>Elective List: MECHENG 2000 to 5999 Excluding (capstone courses 490x.0x, and excluded list*)</p>
Nuclear Engineering	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: NUCLREN/MECHENG 4505</p> <p>Elective List: NUCLREN 4506, 4536, 5001, 5002, 5003, 5004, 5606, 5610, 5735, 5742, 5776, MECHENG 3500</p>	<p>Complete at least 27 hours from Required and Elective List.</p> <p>Required: NUCLREN/MECHENG 4505</p> <p>Elective List: NUCLREN 4000 to 5999, MECHENG 3500 Excluding (excluded list*)</p>

The changes have been made in consultation and support of the academic departments hosting the specialization subject areas.

- Department of Chemical and Biomolecular Engineering
 - Chemical Engineering specialization
- Department of Computer Science and Engineering
 - Computer Science and Engineering specialization
- Department of Electrical and Computer Engineering
 - Electrical and Computer Engineering specialization
- Department of Integrated and Systems Engineering
 - Industrial and Systems Engineering specialization
- Department of Materials Science and Engineering
 - Materials Science and Engineering specialization
- Department of Mechanical and Aerospace Engineering
 - Aerospace Engineering specialization
 - Mechanical Engineering specialization
 - Nuclear Engineering specialization