

Technical Elective & Streams FAQ

CHOOSING A STREAM IN MECHANICAL ENGINEERING:

Q. What is a stream in Mechanical Engineering?

A. Mechanical Engineering has three main categories of specialization, or “streams”. based on the technical electives you choose to take. The three streams are based on the main areas of the mechanical engineering discipline:

- Manufacturing
- Mechanics and Design
- Thermo-fluids

You can choose to specialize in one of these streams by taking technical elective courses that are specifically in one of these three areas, or you can choose the general stream.

Note: the concept of streams is primarily to categorize the courses into areas of specialization for the students. Unlike your Level 2 decision to enter into Mechanical Engineering, you do not have to choose which stream to take. You simply choose the technical electives that match the stream in which you are most interested. You can pick most or your technical electives courses from one stream and then mix it up by taking a technical elective from another stream if that is what interests you the most.

Q. What will it say on my degree if I specialize in one of the streams?

A. Your degree will say the same thing, Bachelor of Engineering (Mechanical), regardless of the stream you choose. You may list the stream of specialization as information on your resume. The idea of streams is so a student can specialize in certain topic areas. It is OK if you do not pick a stream, or if you like topics from multiple streams; you can choose to do a general specialization.

Q. Do employers look for stream specialization?

A. Each employer will be looking for different things, but generally they will look for a demonstrated interest in the field. This can be demonstrated in different ways – through specializing, through taking several electives in the area, or through extra-curricular activities or previous summer / co-op jobs.

Q. Why are there only four streams? What if I want another stream (e.g. bioengineering)?

A. The streams are focused around our major “groupings” of courses and are a recommended subset for those interested in specific topics. For more specialized topics (such as bioengineering) we don’t have as large a complement – however, you can certainly take all of the related courses in that field, it will simply be through the “general” stream. You can emphasize how you focused your electives in the area on your resume.

Q. What else should I consider when picking my stream/courses?

A. Think about what interests you most – those are the courses you should take. This is your last chance to take a course in something other than where you think you will end up, or to get more specialized knowledge about a field in which you think you would like to try working. Try not to focus on what courses have the best GPAs. You will do best in what you like, and most electives have higher averages than the core courses. Remember that many graduates don't end up working in the field they expect, or will move around through their careers.

CHOOSING TECHNICAL ELECTIVES:

Q. When should I choose my technical electives?

A. Courses will be available for you to choose when your enrolment window opens at the end of June or early July for the coming academic year. It is important for you to choose the courses that you are most interested in as soon as possible. Some courses have limited enrollment due to special criteria (e.g., labs or projects). Other courses fill up very quickly due to student interest.

It is important to note that there are no waiting lists. So do not wait until early September or early January to enrol in the technical elective courses that you most desperately want for your final year. If a course is at capacity, then you will have to wait until another student drops the course to attempt to enrol. Some students drop courses early in the term if they discover that the course is not as they imagined, and so spots tend to open up, but it will be up to you to monitor Mosaic for any available openings.

Also note, the enrolment window for senior level students opens up first (in late June / early July), so they will get first pick of the technical electives. If you are a level 4 student in a 5-year program, you might not get the course you wanted in Level 4, but you will have first pick in Level 5 (so don't despair).

Q. What happens if I cannot enrol in the course that I most wanted (i.e., it is full)?

A. There are no waiting lists. If a course is at capacity, then you will have to wait until another student drops the course to attempt to enrol. Some students drop courses early in the term if they discover that the course is not as they imagined, and so spots tend to open up, but it will be up to you to monitor Mosaic for any available openings.

Q. What happens if I failed a course and do not have the appropriate prerequisites to take a technical elective?

A. You will need to submit a permission form for prerequisite waiver to the instructor of the course. It is up to the instructor to determine if they will waive the prerequisite course.

Q. What if there is a conflict in the schedule for two of the courses that I want to take?

A. If there is a conflict between two courses that you want to take, then you must submit a permission for conflict waiver to the instructors of the two courses. It is up to the instructors to grant you permission to take their course if it conflicts with another course. Note that sometimes the conflict is too great (i.e., the lectures times all coincide and if the instructor feels that it is mandatory for students to attend the lectures). In such cases, the instructor will deny the students request to waive the conflict and you will have to choose between the courses.

Some course conflicts are inevitable. Our administrative team works very hard to avoid conflicts between courses, but given the number of courses available, it simply is not possible to be conflict free for all possible MECHENG courses. The number one priority is to try to ensure that no MECHENG technical electives conflict with the level 4 MECHENG core courses.

It is even more challenging to avoid conflicts between MECHENG courses and courses offered by other programs. Conflicts between MECHENG courses and possible complementary electives cannot be controlled.

CAPSTONE PROJECT:

Q. How are groups for the capstone course created?

A. Groups for the capstone projects for the most part are self-selected unless some students have been unable to form a group themselves. For the latter, they will be either assigned to an existing group by mutual consent or they will be assisted by the Course Coordinator in forming a new group, depending upon their project preferences. Every group must have a minimum of 2 students (no single student projects are permitted), and a maximum of 4 students except in exceptional circumstances.

Q. What kinds of capstone projects are available to students?

A. There are three main types of capstone projects:

- 1) Faculty members in Mechanical Engineering propose projects for groups to work on related to their expertise, and typically also related to their research.
- 2) Faculty members propose project that are suggested and/or supported by partnerships with industry.
- 3) Students can propose a project that interests them to a potential faculty supervisor.
Note the following important guidelines for student-initiated projects:
 - A student project must be supervised by a faculty member.

- The faculty member must agree to the terms of the project and that the project meets a suitable level of design and technical challenge for a fourth year design project. This means that the student group must meet with the potential advisor to discuss the project and develop and refine the scope of the project so that it meets the requirements.
- The submission deadline for student-initiated projects is **middle of July**. No student-initiated projects will be included if submitted past this timeline.
- Faculty supervisors must then submit the student-initiated project to the course coordinator by the middle of July.

Q. Can students submit their project preferences individually from the Project List provided to them?

A. Yes. A Project Selection Sheet will be posted on Avenue which will allow students to either provide their top 5 preferences as a group or as individuals (when they are not part of any group).

Q. Can students on Co-op term take 4M06?

A. No. Only full-time student not on Co-op term will be allowed to take 4M06 course (and they must take both semesters in an academic year).

Q. How are capstone projects selected / assigned?

A. The complete list and full description of available projects is made available to the students in early September. The students review the list and meet with prospective faculty supervisors to discuss their projects and to determine if they are interested in the project. The student groups then list the top five projects they are interested in by rank (first to fifth). Students are then allocated to their top ranked projects based on the following criteria:

- Projects are assigned to student groups based on the groups' preferences
- First pass for allocation will be made to try to give student groups as well as those who filled the Project Selection Sheet individually one of their top five preferences.
 - Groups can lose their top choice if they did not meet with the professor to discuss the project.
- A maximum and minimum number of students will be allocated to each faculty supervisor to ensure equal distribution of student groups and load on faculty members.
- Ties will be broken based on average cumulative GPA of the group.
- In the second pass, student groups and students who filled the original Project Selection Sheet individually will be asked for their other preferences from the list of still available projects. This is done informally by the Course Coordinator by contacting the students by e-mail.

NOTE: Student-initiated projects are reserved for the group that proposed the project. It is critical to submit a student-initiated project to a potential supervisor well in advance so that the faculty supervisor can submit the project as a reserved project.