

Rochester INSTITUTE OF TECHNOLOGY

Minor Program proposal form

Kgcoe

**Dept. of Mechanical Engineering**

**Name of Minor:** Mechanical Engineering

**Brief description of the minor to be used in university publications**

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| The minor in Mechanical Engineering exposes students to the core foundations of the discipline and helps non-majors explore high-technology careers and communicate effectively with engineers on project teams. This minor consists of a sequence of 5 discipline-based courses (no fewer than 15 credits) that build on prerequisite knowledge from calculus and engineering mechanics. Elective courses are included to provide additional depth of knowledge in an area of individual student interest. |

**1.0 Minor Program Approvals**

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| --- | --- | --- |
|  | Approval request date: | Approval granted date: |
| Academic Unit Curriculum Committee | 12/12/12 | 12/12/12 |
| College Curriculum Committee | 4/1/2013 | 4/18/2013 |
| Inter-College Curriculum Committee | 5-8-13 | 5-8-13 |

**2.0 Rationale:**

A minor at RIT is a related set of academic courses consisting of no fewer than 15 semester credit hours leading to a formal designation on a student's baccalaureate transcript

How is this set of academic courses related?

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| The prerequisite courses for the minor will provide the student with the requisite Calculus and hands-on Physics, programming and data-acquisition knowledge needed before undertaking fundamental coursework in Statics and Thermodynamics. The required courses, Statics, Thermodynamics, and Engineering Design Tools, are intended to provide students with core Mechanical Engineering knowledge related to Engineering Sciences and Engineering Design. Statics and Thermodynamics are foundational courses in Mechanical Engineering. The elective courses are included to provide additional depth of knowledge in an area of individual student interest. Since the field of Mechanical Engineering is so broad, the electives are included to provide students with the maximum flexibility to focus in an area of specific interest. |

**3.0 Multidisciplinary involvement:**

If this is a multidisciplinary minor spanning two or more academic units, list the units and their role in offering and managing this minor.

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| N/A |

**4.0 Students ineligible to pursue this minor:**

The purpose of the minor is both to broaden a student's college education and deepen it in an area outside the student’s major program. A minor may be related to and complement a student’s major, or it may be in a completely different academic/professional area.   It is the responsibility of the academic unit proposing a minor and the unit’s curriculum committee to indicate any home programs for which the minor is not a broadening experience.

Please list below any home programs whose students will not be allowed to pursue this minor, provide the reasoning, and indicate if this exclusion has been discussed with the affected programs:

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| Mechanical Engineering: students may not receive both a major and a minor in the same program. |

**5.0 Minor Program Structure, Sequence and Course Offering Schedule:**

Describe the structure of the proposed minor and list all courses, their anticipated offering schedule, and any prerequisites.

* All minors must contain at least fifteen semester credit hours;
* Minors may be discipline-based or interdisciplinary;
* In most cases, minors shall consist of a minimum of two upper division courses (300 or above) to provide reasonable breadth and depth within the minor;
* As per New York State requirements, courses within the minor must be offered with sufficient frequency to allow students to complete the minor within the same time frame allowed for the completion of the baccalaureate degree;
* Provide a program mask showing how students will complete the minor.

Narrative of Minor Program Structure:

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| *A minor in Mechanical Engineering consists of the following course sequence:*  ***Prerequisites:***  *MECE-102 – Engineering Mechanics Lab* ***OR*** *PHYS-211 University Physics I (MATH-181; co-requisite: MATH-182)* ***plus*** *an approved course with significant programming content (examples include, but are not limited to: PHYS-225 Introduction to Computational Physics and Programming (PHYS 211, MATH-182; co-requisite: PHYS-212); EEEE-120 Digital Systems I(EEEE-105); CSCI-141 Computer Science I; ISEE-200 Computing for Engineers)*  ***Required Courses:***  *MECE-104 – Engineering Design Tools (3 credits)*  *MECE-103 – Statics (3 credits) (MECE-102 or equivalent; co-requisite: MATH-182)*  *MECE-110 – Thermodynamics (3 credits) (MECE-102 equivalent; co-requisite: MATH-182)*  ***Electives:***  ***Two*** *additional three-semester credit Mechanical Engineering (MECE) courses (6 credits). At least* ***one*** *of the two courses must be a 300 level course or higher. Examples include, but are not limited to, MECE-203 Strength of Materials I (MECE-103), MECE-210 Fluid Mechanics I (MECE-110), MECE-205 Dynamics (MECE-103), MECE-310 Heat Transfer I (MECE-210), MECE-305 Materials Science with Applications, MECE-355 Fluid Mechanics II (MECE-210).*  *Students are responsible for meeting the prerequisites for all upper division courses. Due to the overall broad nature of the field of Mechanical Engineering, a larger number of lower division courses and only one upper division elective are required. The larger number of lower division courses is included to provide a breadth of knowledge in the discipline and to enable students to meet the appropriate upper division course prerequisites. Some students may select to complete two upper division courses as minor electives.* |

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| Course Number & Title | SCH | Required | Optional | Fall | Spring | Annual/Biennial | Prerequisites |
| MECE-104, Engineering Design Tools | 3 | YES | NO | X | X | Annual | NONE |
| MECE-103, Statics | 3 | YES | NO | X | X | Annual | MECE-102 , Engineering Mechanics Lab or Equivalent  MATH-182 (Co-Req) |
| MECE-110, Thermodynamics | 3 | YES | NO | X | X | Annual | MECE-102 Engineering Mechanics Lab or equivalent  MATH-182, Calculus II (Co-Req) |
| MECE Elective 1 | 3 | YES |  | X | X | Annual |  |
| MECE Elective 2, Must be 300 level or higher | 3 | YES |  | X | X | Annual |  |
| *MECE Electives* |  |  |  |  |  |  |  |
| MECE-203, Strength of Materials | 3 | NO | YES | X | X | Annual | MECE-103, Statics |
| MECE-210, Fluid Mechanics I | 3 | NO | YES | X | X | Annual | MECE-110, Thermodynamics |
| MECE-205, Dynamics | 3 | NO | YES | X | X | Annual | MECE-103, Statics |
| MECE-310, Heat Transfer | 3 | NO | YES | X | X | Annual | MECE-210, Fluid Mechanics I |
| MECE-305, Materials Science with Applications | 3 | NO | YES | X | X | Annual | NONE |
| MECE-317, Numerical Methods | 3 | NO | YES | X | X | Annual | MATH-231, Differential Equations and MECE-102, Engineering Mechanics Lab |
| MECE-320, System Dynamics | 3 | NO | YES | X | X | Annual | MECE-205, Dynamics, MECE-317, Numerical Methods;  Co-Requisite: EEEE-281, Circuits I |
| MECE-355, Fluid Mechanics II | 3 | NO | YES | X | X | Annual | MECE-210, Fluid Mechanics I |
| MECE-359, Advanced Computational Techniques | 3 | NO | YES | X |  | Annual | MECE-317, Numerical Methods |
| MECE-402, Turbomachinery | 3 | NO | YES | X |  | Annual | MECE-210, Fluid Mechanics I |
| MECE-403, Propulsion | 3 | NO | YES |  | X | Annual | MECE-310, Heat Transfer |
| MECE-405, Wind Turbine Engineering | 3 | NO | YES | X |  | Annual | NONE |
| MECE-406, Advanced Solid Modeling and Design | 3 | NO | YES | X |  | Annual | MECE-104, Engineering Design Tools |
| MECE-407, Biomedical Device Engineering | 3 | NO | YES |  | X | Annual | MECE-203, Strength of Materials and MECE-310, Heat Transfer |
| MECE-409, Aerodynamics | 3 | NO | YES |  | X | Annual | MECE-210, Fluid Mechanics I |
| MECE-410, Flight Dynamics | 3 | NO | YES | X |  | Annual | Co-Requisite: MECE-320, System Dynamics |
| MECE-411, Orbital Mechanics | 3 | NO | YES |  | X | Annual | MECE-320, System Dynamics |
| MECE-412, Aerostructures | 3 | NO | YES | X |  | Annual | MECE-203, Strength of Materials |
| MECE-421, Internal Combustion Engines | 3 | NO | YES |  | X | Annual | MECE-110, Thermodynamics |

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| Total credit hours: 15 |  |

**Minor Course Conversion Table: Quarter Calendar and Semester Calendar Comparison**

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| **Directions: The tables on this page will be used by the registrar’s office to aid student’s transitioning from the quarter calendar to the semester calendar.**  **If this minor existed in the quarter calendar and is being converted to the semester calendar please complete the following tables.**  **If this is a new minor that did not exist under the quarter calendar do not complete the following tables.**  Use the following tables to show minor course comparison in quarter and semester calendar formats. Use courses in the (2011-12) minor mask for this table. Display all required and elective minor courses. If necessary clarify how course sequences in the quarter calendar convert to semesters by either bracketing or using some other notation. |

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| --- | --- |
| Name of Minor in Semester Calendar: | Mechanical Engineering |
| Name of Minor in Quarter Calendar: | Mechanical Engineering |
| Name of Certifying Academic Unit: | Mechanical Engineering |

| **QUARTER: Current Minor Courses** | | | **SEMESTER: Converted Minor Courses** | | |  |
| --- | --- | --- | --- | --- | --- | --- |
| Course # | Course Title | QCH | Course # | Course Title | SCH | **Comments** |
| 0304-336 | Statics | 4 | MECE-101 | Statics | 3 |  |
| 0304-347 | Mechanics of Materials | 4 | MECE-103 | Engineering Design Tools | 4 | Engineering Design tools is being integrated into the minor to provide minor students with fundamentals of engineering design. Mechanics of Materials is no longer required, but may be selected as one of the elective courses to allow students flexibility in course selection |
| 0304-413 | Thermodynamics | 4 | MECE-110 | Thermodynamics | 3 |  |
| 0304-415 | Fluid Mechanics I | 4 | MECE-TBD | Elective | 3 | Fluid Mechanics is no longer required, but may be selected as one of the elective courses to allow students flexibility in course selection |
| 0304-TBD | Elective | 4 | MECE-TBD | Elective | 3 | Course must be 300 level or higher |

Policy Name: **D1.1 MINORS POLICY**

 1. Definition

A minor at RIT is a related set of academic courses consisting of no fewer than 15 semester credit hours leading to a formal designation on a student's baccalaureate transcript.

The purpose of the minor is both to broaden a student's college education and deepen it in an area outside the student’s major program. A minor may be related to and complement a student’s major, or it may be in a completely different academic/professional area.   It is the responsibility of the academic unit proposing a minor and the unit’s curriculum committee to indicate any home programs for which the minor is not a broadening experience.

In most cases, minors shall consist of a minimum of two upper division courses to provide reasonable breadth and depth within the minor.

2. Institutional parameters

1. Minors may be discipline-based or interdisciplinary;
2. Only matriculated students may enroll in a minor;
3. At least nine semester credit hours of the minor must consist of courses not required by the student's home program;
4. Students may pursue multiple minors.  A minimum of nine semester credit hours must be designated towards each minor; these courses may not be counted towards other minors;
5. The residency requirement for a minor is a minimum of nine semester credit hours consisting of RIT courses (excluding "X" graded courses);
6. Posting of the minor on the student's academic transcript requires a minimum GPA of 2.0 in each of the minor courses;
7. Minors may not be added to the student's academic record after the granting of the bachelor's degree.

3. Development/approval/administration processes

* 1. Minors may be developed by faculty at the departmental, inter-departmental, college, or inter-college level. As part of the minor development process:
     1. students ineligible for the proposed minor will be identified;
     2. prerequisites, if any, will be identified;
  2. Minor proposals must be approved by the appropriate academic unit(s) curriculum committee, and college curriculum committee(s), before being sent to the Inter-College Curriculum Committee (ICC) for final consideration and approval.
  3. The academic unit offering the minor (in the case of interdisciplinary minors, the designated college/department) is responsible for the following:
     1. enrolling students in the minor (as space permits);
     2. monitoring students progress toward completion of the minor;
     3. authorizing the recording of the minor's completion on student's academic records;
     4. granting of transfer credit, credit by exam, credit by experience, course substitutions, and advanced placement;
     5. responding to student requests for removal from the minor.
  4. As per New York State requirements, courses within the minor must be offered with sufficient frequency to allow students to complete the minor within the same time frame allowed for the completion of the baccalaureate degree.

4. Procedures for Minor revision

It is the duty of the college curriculum committee(s) involved with a minor to maintain the program’s structure and coherence.  Once a minor is approved by the ICC, changes to the minor that do not have a significant effect on its focus may be completed with the approval of the involved academic unit(s) and the college curriculum committee(s).  Significant changes in the focus of the minor must be approved by the appropriate academic unit(s) curriculum committee(s), the college curriculum committee(s) and be resubmitted to the ICC for final consideration and approval.