

Rochester INSTITUTE OF TECHNOLOGY

Minor Program proposal form

kate gleason college of engineering

**Industrial and Systems Engineering**

**Name of Minor:** Sustainable Product Development

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

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| This multidisciplinary minor is aimed at students interested in exploring issues associated with developing and delivering sustainable product systems. Courses in the minor enhance understanding of the three dimensions of sustainability (economic, ethical, and environmental), develop awareness of the need for more sustainable approaches to product development, and explore strategies for developing and delivering sustainable product systems. |

**1.0 Minor Program Approvals**

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| --- | --- | --- |
|  | Approval request date: | Approval granted date: |
| Academic Unit Curriculum Committee | 01/25/13 | 01/25/13 |
| College Curriculum Committee | 02/19/1305/05/17 (revision) | 02/19/1305/09/17 |
| Inter-College Curriculum Committee |  |  |

**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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| Courses in the minor enhance understanding of the three dimensions of sustainability (economic, ethical, and environmental), develop awareness of the need for more sustainable approaches to product development, and explore strategies for developing and delivering sustainable product systems. |

**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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| Industrial and Systems Engineering (KGCOE-ISEE), Management (SCB-MGMT), Science and Technology Studies (COLA-STSO), Public Policy (COLA-PUBL), Mechanical Engineering, (KGCOE-MECE), Environmental, Sustainability, Health, and Safety (CAST-ESHS), and Packaging (CAST-PACK). Management of the minor will be entirely through the Industrial and Systems Engineering Department. Students will be admitted and advised through the Industrial and Systems Engineering Department. |

**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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| N/A |

**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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| The Sustainable Product Development minor consists of 15 semester credit hours, three required courses and two elective courses. One of the electives must be a social context elective. Industrial Engineering students, who complete the Engineering Economy course as part of their regular program of study, must substitute a technical elective for ISEE-345. Mechanical Engineering students must select one course from the available Technical Electives. Other courses may be appropriate, with minor advisor approval. Additionally, as appropriate courses are added to the RIT portfolio, they may be added to this list of electives. |

As an example, students may complete the minor by following the sequence below. However, given the flexible structure of the course, multiple program masks exist.

Industrial Engineering BS Students:

Non-Industrial Engineering BS only:

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| Course Number & Title | SCH | Required | Optional | Fall | Spring | Annual/ Biennial | Prerequisites\* |
| Required Courses |
| KGCOE-ISEE-345 Engineering Economy | 3 | Y |  | Y | Y |  | None |
| KGCOE-ISEE-785 Fundamentals of Sustainable Engineering | 3 | Y |  | Y |  |  | None |
| KGCOE-ISEE-786 Lifecycle Assessment | 3 | Y |  |  | Y |  | None |
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| Course Number & Title | SCH | Required | Optional | Fall | Spring | Annual/ Biennial | Prerequisites\* |

Social Context Courses (at least one) |
| COLA-ANTH-280 Sustainable Development | 3 |  | Y |  |  | Annual | None |
| CMDS-333 Wicked Problems | 3 |  | Y | Y | Y |  | 3rd year standing |
| COLA-STSO-120 Intro to Environmental Studies | 3 |  | Y | Y | Y |  | None |
| COLA-STSO-140 Science, Technology, and Values | 3 |  | Y | Y | Y |  | None |
| COLA-STSO-201 Science and Technology Policy | 3 |  | Y | Y | Y |  | None |
| COLA-STSO-220 Environment and Society | 3 |  | Y | Y |  |  | None |
| COLA-STSO-240 Social Consequences of Technology | 3 |  | Y | Y | Y |  | None |
| COLA-STSO-321 Face of the Land | 3 |  | Y |  | Y |  | None |
| COLA-STSO-326 History of Ecology & Environmentalism | 3 |  | Y | Y |  |  | None |
| COLA-STSO-330 Energy and the Environment | 3 |  | Y | Y |  |  | None |
| COLA-STSO-421 Environmental Policy | 3 |  | Y |  | Y |  | None |
| COLA-STSO-422 Great Lakes | 3 |  | Y | Y |  |  | None |
| COLA-STSO -521 Biodiversity | 3 |  | Y |  | Y |  | None |
| COLA-STSO-550 Sustainable Communities | 3 |  | Y | Y |  |  | None |
| COLA-PUBL-510 Tech Innovation and Public Policy | 3 |  | Y |  | Y |  | None |
| COLA-PUBL-530 Energy Policy | 3 |  | Y |  | Y |  | None |
| COLA-ECON-520 Environmental Economics | 3 |  | Y |  | Y |  | ECON-101 |
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| Course Number & Title | SCH | Required | Optional | Fall | Spring | Annual/ Biennial | Prerequisites\* |

Technical Electives |
| KGCOE-ISEE-684 Engineering and the Developing World | 3 |  | Y |  | Y |  | None |
| KGCOE-ISEE-787 Design for the Environment | 3 |  | Y |  | Y |  | ISEE-140 or MECE-305 |
| KGCOE-EEEE-221 Clean and Renewable Energy Systems & Sources | 3 |  | Y | Y |  |  | Co-req. – PHYS-212 |
| KGCOE-MECE-348 Contemporary Issues: Energy and the Environment | 3 |  | Y | Y |  |  | MECE-110 |
| KGCOE-MECE-529/629 Renewable Energy Systems | 3 |  | Y | Y |  |  | MECE-310 |
| KGCOE-MCEE-520 Photovoltaic Science and Engineering | 3 |  | Y |  | Y |  | 4th year standing |
| CAST-ESHS-310 Solid and Hazardous Waste Management | 3 |  | Y |  | Y |  | ESHS-150CHMG-111 |
| CAST-ESHS-330 Industrial Wastewater Management | 3 |  | Y | Y |  |  | CHMG-111ESHS-150 |
| CAST-ESHS-500 Social Responsibility and Environmental Sustainability | 3 |  | Y | Y |  |  | 4th year standing |
| CAST-ESHS-525 Air Emissions Mgmt. | 3 |  | Y |  | Y |  | CHMG-111ESHS-150 |
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| CAST-EEET-251&252 Green Energy Systems / Lab | 2/1 |  | Y |  |  | Biennial | PHYS-111 or PHYS-211 |
| CAST-MCET-560 Alternative Energy | 3 |  | Y |  | Y |  | MCET-530 |
| CAST-MCET-580 Plastics Manufacturing Tech.  | 3 |  | Y | Y |  |  | None |
| CAST-MCET-583 Plastics Product Design | 3 |  | Y |  | Y |  | MCET-210MCET-211 |
| CAST-PACK-530 Packaging Sustainability and the Environment | 3 |  | Y | Y |  |  | (PACK-301 and PACK-302) or (PACK-311 and PACK-312) |
| Total credit hours: | 15 |  |  |  |  |  |  |

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**\*in most cases, pre-requisites may be satisfied by equivalent courses or instructor permission**