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| --- | --- |
| For Academic Affairs and Research Use Only | |
| Proposal Number |  |
| CIP Code: |  |
| Degree Code: |  |

**New or Modified Course Proposal Form**

**[ ] Undergraduate Curriculum Council**

**[X] Graduate Council**

|  |
| --- |
| **[X]New Course, [ ]Experimental Course (1-time offering), or [ ]Modified Course (Check one box)** |

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

|  |  |
| --- | --- |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **COPE Chair (if applicable)** |
| Brandon Kemp 2/7/2020 **Department Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Head of Unit (if applicable)** |
| |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date | | **Director of Assessment** |  | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Undergraduate Curriculum Council Chair** |
| Brandon Kemp 2/7/2020 **College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Graduate Curriculum Committee Chair** |
| Abhijit Bhattacharyya 2/7/2020 **College Dean** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Vice Chancellor for Academic Affairs** |
| |  |  | | --- | --- | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Enter date |   **General Education Committee Chair (if applicable)** |  |

1. **Contact Person (Name, Email Address, Phone Number)**

Alexandr M. Sokolov

[asokolov@astate.edu](mailto:asokolov@astate.edu)

870-972-3635

1. **Proposed starting term and Bulletin year for new course or modification to take effect**

FALL 2020

**Instructions:**

*Please complete all sections unless otherwise noted. For course modifications, sections with a “Modification requested?” prompt need not be completed if the answer is “No.”*

|  |  |  |
| --- | --- | --- |
|  | **Current (Course Modifications Only)** | **Proposed (New or Modified)**  *(Indicate “N/A” if no modification)* |
| **Prefix** |  | **EGRM** |
| **Number\*** |  | **6143** |
| **Title** |  | **Industrial Material Handling** |
| **Description\*\*** |  | **An introduction to the field of material handling, including systems analysis, equipment selection, and the relationship of material handling to other activities and operations of the industrial plant or warehouse. You will learn how to plan and analyze material handling systems; how to improve material handling operations; and when to apply material handling automation.** |

***\**** (Confirm with the Registrar’s Office that number chosen has not been used before and is available for use. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*. )

\*\*Forty words or fewer as it should appear in the Bulletin.

1. **Proposed prerequisites and major restrictions** **[Modification requested?NO]**

(Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

1. NO Are there any prerequisites?
   1. If yes, which ones?

Enter text...

* 1. Why or why not?

This course goes over basic concepts of Automations and Material Handling. No other classes are needed.

1. NO Is this course restricted to a specific major?
   1. If yes, which major? Enter text...
2. **Proposed course frequency [Modification requested? NO]**

(e.g. Fall, Spring, Summer; if irregularly offered, please indicate, “irregular.”) *Not applicable to Graduate courses.*

Enter text...

1. **Proposed course type [Modification requested?NO]**

Will this course be lecture only, lab only, lecture and lab, activity (e.g., physical education), dissertation/thesis, capstone, independent study, internship/practicum, seminar, special topics, or studio? Please choose one.

Lecture

1. **Proposed grade type [Modification requested?NO]**

What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard Letter

1. NO Is this course dual-listed (undergraduate/graduate)?
2. NO Is this course cross-listed?

*(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross-listed course.)*

**a.** – If yes, please list the prefix and course number of the cross-listed course.

Enter text...

**b.** – **Yes / No** Can the cross-listed course be used to satisfy the prerequisite or degree requirements this course satisfies?

Enter text...

1. NO Is this course in support of a new program?

a. If yes, what program?

Enter text...

1. NO Will this course be a one-to-one equivalent to a deleted course or previous version of this course (please check with the Registrar if unsure)?

a. If yes, which course?

Enter text...

**Course Details**

1. **Proposed outline** **[Modification requested?NO]**

(The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

|  |  |  |
| --- | --- | --- |
| Week | Subject | Exam |
| 1 | Fundamental Principles and Concepts, Definition and objectives of material handling |  |
| 2 | Basic principles and economics of material handling, Classifications of Material Handling Equipment | Quiz 1 |
| 3 | Understanding the categories of handling equipment, Understanding the types of handling systems | Quiz 2 |
| 4 | How to Analyze Material Handling Problems, Systemic Handling Analysis (SHA) – an organized approach | Quiz 3 |
| 5 | Practical ways to visualize and analyze material movements, Guided Application in Material Handling Analysis | Midterm |
| 6 | Use data on material movements to develop a material handling plan, Identify preferred handling methods and equipment for different classes of materials and for each move in a facility. | Quiz 4 |
| 7 | Map actual material handling products to a wide range of movement situations: high-volume; low volume; conveyable, not conveyable; short-distance; long-distance; between workplaces; within the workplace, etc. | Quiz 5 |

|  |  |  |
| --- | --- | --- |
| Week | Subject | Exam |
| 1 | Fundamental Principles and Concepts |  |
| 2 | Definition and objectives of material handling |  |
| 3 | Basic principles and economics of material handling | Quiz 1 |
| 4 | Classifications of Material Handling Equipment |  |
| 5 | Understanding the categories of handling equipment | Quiz 2 |
| 6 | Understanding the types of handling systems |  |
| 7 | How to Analyze Material Handling Problems | Quiz 3 |
| 8 | Systemic Handling Analysis (SHA) – an organized approach | Midterm |
| 9 | Practical ways to visualize and analyze material movements | Quiz 4 |
| 10 | Guided Application in Material Handling Analysis |  |
| 11 | Use data on material movements to develop a material handling plan | Quiz 5 |
| 12 | Identify preferred handling methods and equipment for different classes of materials and for each move in a facility. |  |
| 13 | Map actual material handling products to a wide range of movement situations: high-volume; low volume; conveyable, not conveyable; short-distance; long-distance; between workplaces; within the workplace, etc. | Quiz 6 |
| 14 | Material Handling Exercise |  |
| 15 | Material handling evaluations, selections, and continuous improvement |  |

1. **Proposed special features** **[Modification requested? Yes/No]**

(e.g. labs, exhibits, site visitations, etc.)

NO

1. **Department staffing and classroom/lab resources**

Engineering Management

1. Will this require additional faculty, supplies, etc.?

NO

1. NO Does this course require course fees?

*If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.*

**Justification**

**Modification Justification (Course Modifications Only)**

1. Justification for Modification(s)

Enter text...

**New Course Justification (New Courses Only)**

1. Justification for course. Must include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

This is a course designed to help Engineers identify material handling issues. Because this is a growing field with large companies like Hytrol and Amazon that need experienced material handling experience this will serve the global population with knowledge and skills to be competitive in the Engineering Management market.

b. How does the course fit with the mission of the department? If course is mandated by an accrediting or certifying agency, include the directive.

This is an underlying basic course offered by most Engineering Management programs and makes ASTATE more competitive.

c. Student population served.

All students should take this class, but it will serve the Master student body, by those online and in-class

d. Rationale for the level of the course (lower, upper, or graduate).

This is a graduate level course.

**Assessment**

**Assessment Plan Modifications (Course Modifications Only)**

1. Yes Do the proposed modifications result in a change to the assessment plan?

*If yes, please complete the Assessment section of the proposal*

**Relationship with Current Program-Level Assessment Process (Course modifications skip this section unless the answer to #19 is “Yes”)**

1. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

PLO #1: Graduate of the Master of Engineering Management program will be able to identify critical issues, formulate realistic solutions, evaluate alternatives, and solve technical problems.

PLO #2: Graduates of the Master of Engineering Management program will be able to interpret statistical or deterministic models and concepts as well as apply them to technical problems.

PLO #3: Graduates of the Master of Engineering Management program will be able to communicate effectively, both orally and in writing, to express alternatives and solutions dealing with technical problems.

PLO #4: Graduates of the Master of Engineering Management program will be able to function effectively as a member or leader on a technical team.

1. Considering the indicated program-level learning outcome/s (from question #20), please fill out the following table to show how and where this course fits into the program’s continuous improvement assessment process.

*For further assistance, please see the ‘Expanded Instructions’ document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.*

|  |  |
| --- | --- |
| **Program-Level Outcome 1 (from question #23)** | Graduate of the Master of Engineering Management program will be able to identify critical issues, formulate realistic solutions, evaluate alternatives, and solve technical problems. |
| Assessment Measure | Capstone Project (EGRM 600V) and Exiting Student Survey |
| Assessment  Timetable | Each semester EGRM 600V Capstone Course is offered |
| Who is responsible for assessing and reporting on the results? | Engineering Management Program Director and EGRM 600V Course Faculty |

*(Repeat if this new course will support additional program-level outcomes)*

|  |  |
| --- | --- |
| **Program-Level Outcome 2 (from question #23)** | Graduates of the Master of Engineering Management program will be able to interpret statistical or deterministic models and concepts as well as apply them to technical problems. |
| Assessment Measure | Capstone Project (EGRM 600V) and Exiting Student Survey |
| Assessment  Timetable | Each semester EGRM 600V Capstone Course is offered |
| Who is responsible for assessing and reporting on the results? | Engineering Management Program Director and EGRM 600V Course Faculty |

|  |  |
| --- | --- |
| **Program-Level Outcome 3 (from question #23)** | Graduates of the Master of Engineering Management program will be able to communicate effectively, both orally and in writing, to express alternatives and solutions dealing with technical problems. |
| Assessment Measure | Capstone Project (EGRM 600V) and Exiting Student Survey |
| Assessment  Timetable | Each semester EGRM 600V Capstone Course is offered |
| Who is responsible for assessing and reporting on the results? | Engineering Management Program Director and EGRM 600V Course Faculty |

|  |  |
| --- | --- |
| **Program-Level Outcome 4 (from question #23)** | Graduates of the Master of Engineering Management program will be able to function effectively as a member or leader on a technical team. |
| Assessment Measure | Capstone Project (EGRM 600V) and Exiting Student Survey |
| Assessment  Timetable | Each semester EGRM 600V Capstone Course is offered |
| Who is responsible for assessing and reporting on the results? | Engineering Management Program Director and EGRM 600V Course Faculty |

*(Repeat if this new course will support additional program-level outcomes)*

**Course-Level Outcomes**

1. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

|  |  |
| --- | --- |
| **Outcome 1** | Students will be able to identify critical issues, formulate realistic solutions, evaluate alternatives, and solve technical problems. |
| Which learning activities are responsible for this outcome? | Final Exam |
| Assessment Measure | The scoring rubric |

|  |  |
| --- | --- |
| **Outcome 2** | Students will be able to interpret statistical or deterministic models and concepts as well as apply them to technical problems. |
| Which learning activities are responsible for this outcome? | Final Exam |
| Assessment Measure | The project scoring rubric |

|  |  |
| --- | --- |
| **Outcome 3** | Students will be able to communicate effectively, both orally and in writing, to express alternatives and solutions dealing with technical problems. |
| Which learning activities are responsible for this outcome? | Final Exam |
| Assessment Measure | The scoring rubric |

|  |  |
| --- | --- |
| **Outcome 4** | Students will be able to function effectively as a member or leader on a technical team. |
| Which learning activities are responsible for this outcome? | Final Exam |
| Assessment Measure | The scoring rubric |

*(Repeat if needed for additional outcomes)*

**Bulletin Changes**

|  |
| --- |
| **Instructions** |
| **Please visit** [**http://www.astate.edu/a/registrar/students/bulletins/index.dot**](http://www.astate.edu/a/registrar/students/bulletins/index.dot) **and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Please include a before (with changed areas highlighted) and after of all affected sections.**  **\*Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.** |

|  |  |
| --- | --- |
| University Requirements: |  |
| See Graduate Degree Policies for additional information (p. 39) |  |
| Program Requirements: | Sem. Hrs. |
| EGRM 6003, Engineering Statistics | 3 |
| EGRM 6013, Quality Control and Improvement | 3 |
| EGRM 6083, Project Management for Engineers | 3 |
| ***EGRM 6053, Advanced Engineering Economy*** | ***3*** |
| ***EGRM 600V, Engineering Capstone*** | ***3*** |
| ~~EGRM 6023, Engineering Management I~~ | ~~3~~ |
| ~~EGRM 6043, Operations Research~~ | ~~3~~ |
| ~~EGRM 6063, Engineering Law and Ethics~~ | ~~3~~ |
| ~~EGRM 6113, Engineering Finance and Budgeting~~ | ~~3~~ |
| Select ~~nine~~ fifteen hours from following: | ~~9~~ 15 |
| ~~EGRM 6053, Engineering Economy~~  EGRM 6023, Engineering Management I |  |
| ***EGRM 6033, Engineering Management II*** |  |
| ***EGRM 6043, Operations Research*** |  |
| ***EGRM 6063, Engineering Law and Ethics***  EGRM 6073, Special Problems in Engineering Management |  |
| ***EGRM 6093, Value Engineering*** |  |
| EGRM 6103, Entrepreneurship for Engineers |  |
| ***EGRM 6113, Finance and Budgeting for Engineering*** |  |
| EGRM 6123, Human Resource Management for Engineers  ***EGRM 6133, Internship in Engineering***  ***EGRM 6143, Industrial Material Handling***  ***EGRM 6153, Facilities Management***  ***EGRM 6163, Logistics and Supply Chain*** |  |
| CE/CS/EE/ME/ENGR course, 5000-level or above |  |
| Sub-total | 30 |
| Total Required Hours: | 30 |

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**Engineering Management (EGRM)**

**EGRM 600V. Engineering Capstone** Engineering Capstone research project that includes literature review, data collection, analysis of data, and conclusions. Final project report and oral defense required. May be repeated. Maximum of three hours of letter grade counted toward degree. Must be registered for 1 hour course until capstone project is completed. Approval of program director required.

**EGRM 6003. Engineering Statistics** Basic concepts and methods of descriptive and inferential statistics including graphical techniques, measures of central tendency and dispersion, interval estimation, hypothesis and goodness of fit tests, comparisons of two populations, and analysis of variance. ~~Prerequisite MATH 2204.~~

**EGRM 6013. Quality Control and Improvement** A brief review of the evolution of quality control and improvement theory particularly as influenced by key pioneers such as Deming, Juran, and Taguchi. Extensive coverage of selected quality improvement techniques includes statistical process control, inspection sampling, and design of experiments. ~~Prerequisites: EGRM 6003.~~ Introductory elements of statistics will be introduced.

**EGRM 6023. Engineering Management I** Basic principles and practices of engineering management activities including planning, organization, leadership, controlling, motivating, ethics, communications, and decision making; group research of special topics with written and oral presentations is required.

**EGRM 6033. Engineering Management II** Principles and practices of engineering management including marketing management, globalization, time management, forecasting, finance, cost, accounting, managing technology, engineering management in the new millennium; invited lectures and seminars covering projects of interest to civil, electrical, mechanical, and manufacturing engineers in management positions

**EGRM 6043. Operations Research** Quantitative techniques for decision making; break-even analysis, economic models, Gaussian distributions, inventory control, production models, and mathematical programming. ~~Prerequisite: EGRM 6003, Engineering Statistics.~~ Introductory elements of statistics will be introduced.

**EGRM 6053.** ~~Engineering Economy~~ **Advanced Engineering Economy** Methodical assessment of the economic benefits and expenditures of projects concerning engineering design and analysis, including economic analysis for decision-making among contending opportunities.

**EGRM 6063. Engineering Law and Ethics** Introduction and application of legal concepts relating to the field of engineering management, including general principles, contracts, torts, real property, agency, intellectual property, product liability and safety, and professional legal ethics.

**EGRM 6073. Special Problems in Engineering Management** ~~A capstone, project-based course consisting of an investigation of an engineering management topic approved by the faculty; weekly project meetings, a formal engineer’s log book of activities, progress reports, oral presentation, and a comprehensive written report are required. This course is restricted to graduate students in Engineering Management.~~ Selected advanced topics of current interest. Ordinarily, topics covered are those not available in other graduate courses.

**EGRM 6083. Project Management for Engineers** Fundamentals of project management for engineering and information systems projects based on the principles established by the Project Management Institute’s Project Management Body of Knowledge.

**EGRM 6093. Value Engineering** Practical application of modern Value Analysis principles to design and modification of products and processes to reduce cost and/or improve performance. Topics covered include functional analysis, functional costing, cost drivers, evaluation of alternative designs, proposal preparation and presentation. Emphasis on management of Value Analysis programs and case studies. Project required.

**EGRM 6103. Entrepreneurship for Engineers** Entrepreneurship and innovation from perspectives at the political, social, and personal levels.

**EGRM 6113.** ~~Engineering Finance and Budgeting~~ **Finance and Budgeting for Engineering** Introduction and orientation to financial matters that concern engineers, with an emphasis on financial statements, cash flows, net present value calculations, and capital budgeting.

**EGRM 6123. Human Resource Management for Engineers** Introduction to the strategic application of human resource management in an organization, including human resource leadership, e-recruitment strategies, equal employment selection, employee retention and turnover, performance management, employment law, diversity and global talent management.

**EGRM 6133 Internship in Engineering** Supervised professional experience in industry at the graduate level. This course provides the structure and focus for a graduate intern field assignment, ensuring that the internship experience is appropriate and consistent with the students course of study and professional development.

**EGRM 6143 Industrial Material Handling** An introduction to the field of material handling, including systems analysis, equipment selection, and the relationship of material handling to other activities and operations of the industrial plant or warehouse. You will learn how to plan and analyze material handling systems; how to improve material handling operations; and when to apply material handling automation.

**EGRM 6153 Facilities Management** Methods of designing new facilities and expanding or renovating existing facilities. Planning facility layout, facility location, and activities are presented. Topics such as analysis of work space, work flow, material handling systems, facility planning data collection methods, process flow-charting, the supply chain management, and economics are covered.

**EGRM 6163 Logistics and Supply Chain** This course is an introduction to logistics in transportation and distribution channels. It offers a description of logistics operations in transportation, concepts of facilities and methods used in supply chain. Third party logistics, fleet management, physical distribution and a number of other concepts are introduced. The course includes highlights on the transportation and distribution business in a local and global scenario.