

September 18, 2012

To Whom It May Concern:

The proposed Engineering Management Minor has been reviewed and has received approval through appropriate governance procedures in the Ira A. Fulton Schools of Engineering. I support implementation of this minor effective fall 2013.

If you have any questions regarding this matter, please feel free to contact Jeremy Helm ([Jeremy.Helm@asu.edu](mailto:Jeremy.Helm@asu.edu)) in my office.

Sincerely,



James S. Collofello  
Associate Dean of Academic and Student Affairs  
Ira A. Fulton Schools of Engineering

cc: Jeremy Helm, Director, Academic Administration & Student Success

August 31, 2012

To Whom It May Concern:

Attached please find the documentation describing an Engineering Management Minor that we are proposing to establish within the School of Computing, Informatics, and Decision Systems Engineering (CIDSE).

The proposed minor has been reviewed and approved by the Faculty of Industrial Engineering within CIDSE. In addition, this minor has the approval of the School administration.

The proposed courses for the minor already exist as part of the B.S.E. in Engineering Management and/or B.S.E. in Industrial Engineering degree programs. The unit has already allocated resources to support these degrees and hence has the resources to support the minor as presented in the proposal.

Sincerely,



Ronald G. Askin, Director  
School of Computing, Informatics and Decision Systems Engineering,  
Arizona State University  
[Ron.Askin@asu.edu](mailto:Ron.Askin@asu.edu)  
(480) 965 2567

**DEFINITION**

*These are the minimum requirements for approval. Individual undergraduate minors may have additional requirements.*

A minor is an approved, coherent focus of academic study in a single discipline, other than the student's major, involving substantially fewer hours of credit than a corresponding major. Certain major and minor combinations may be deemed inappropriate either by the college or department of the major or minor. Inappropriate combinations include (but would not be limited to) ones in which an excessive number of courses in the minor are simultaneously being used to fulfill requirements of the student's major. (2002-03 General Catalog)

A minor:

- Requires a minimum of 15 semester hours of which at least 9 semester hours must be upper division
- Is not intended for students pursuing a major in the department which offers the minor

**PROPOSAL PROCEDURES CHECKLIST**

Before academic units can advertise minors or include them in their offerings as described in the university catalogs, they must be recommended for approval by the Curriculum and Academic Programs Committee and approved by the appropriate Vice Provost.

A complete proposal should include:

- 1. A supporting letter from the chair of the academic units verifying that:
  - A. The proposed minor has been reviewed and has received faculty approval through appropriate governance procedures in the unit.
  - B. The unit has the resources to support the minor as presented in the proposal, without impacting core course resources.
- 2. A supporting letter from the office of the supervising dean verifying that the minor has been reviewed and has received approval through appropriate governance procedures in the college.
- 3. A statement concerning demand for the program (student/community/market).
- 4. A list of the knowledge, competencies, and skills (learning outcomes) students should have when they complete this proposed minor. Examples of program learning outcomes can be found at (<http://www.asu.edu/oue/assessment.html>).
- 5. A description of the requirements for this minor. Be specific in listing required courses and specify the total minimum number of hours required for the minor.
  - Are any new courses required? If so, provide course syllabi and Proposal for Curriculum Action forms.
- 6. A description of advising procedures as well as measures for verification of completion of the minor.
- 7. A minimum residency requirement: How many hours of the minor must be ASU credit?
- 8. A completed Appendix document. This information is to be used during the implementation phase to ensure this program appears correctly and completely on Degree Search.
- 9. Attach other information that will be useful to the review committees and the Office of the Provost.

**STATEMENT CONCERNING THE DEMAND FOR THE PROGRAM**

The School has received multiple inquiries from students asking if an engineering management minor is available. In addition the Associate Dean for Academic Affairs in Engineering has received requests from students for such a minor and requested that this minor be created. At an open question-and-answer session this past year for Engineering students, students in attendance expressed a strong interest in having such a minor available. It is expected that the students in other engineering majors will pursue this minor in preparation for their career progression. Historically, a significant number of students receiving B.S.E. degrees enter MBA programs within a few years of graduation with the intent of becoming managers within high-tech organizations or of engineering functions within other industrial companies. This minor will provide an alternative for such students and allow them to obtain a significant portion of the relevant knowledge for managing engineering functions while still pursuing an undergraduate engineering degree. This will also support students intending on pursuing entrepreneurial activities.

**LIST OF THE KNOWLEDGE, COMPETENCIES, AND SKILLS STUDENTS SHOULD HAVE UPON COMPLETING THE MINOR**

Upon completion of the minor students will have

- 1) an understanding of the role of engineering management and how the engineering function interacts with other functional areas in manufacturing, research, and service organizations and the critical functions of engineering management including financial, legal, personnel administration, technology assessment and project management.
- 2) the ability to perform a financial and feasibility analysis of engineering projects,
- 3) an understanding of the impact of humans on organizations and the corresponding management/leadership/entrepreneurial techniques, and
- 4) knowledge of the available techniques and tools used to guide planning and control of technical engineering activities.

**DESCRIPTION OF REQUIREMENTS FOR THE MINOR**

The program of study for a minor in Engineering Management requires a minimum of 18 credit hours. Note that Industrial Engineering majors will NOT be eligible for the minor. Prior to enrolling in the minor students must have completed MAT 265 and MAT 266 (or an equivalent calculus sequence) with a grade of C or better in each.

The minor requires completion of four core courses (12 credits) and two elective courses (6 credits). All courses must be passed with a C or better. At least 12 units must be completed in residency at ASU or through ASU Online.

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PRESIDENT AND PROVOST OF  
THE UNIVERSITY

The required core courses include:

IEE 220 Business/Industrial Engineering  
IEE 300 Economic Analysis for Engineers  
IEE 431 Engineering Administration  
IEE 458 Project Management **OR** CEE 481\*Civil Engineering Project Management

\*CEE481 may not be used for both the Civil Engineering degree (major) and the Engineering Management minor

The two elective courses must be selected from the following list:

IEE 305 Information Systems Engineering  
IEE 369 Work Analysis and Design  
IEE 376 Operations Research Deterministic Techniques/Applications  
IEE 381 Lean Six Sigma Methodology  
IEE 454 Risk Management  
IEE 456 Introduction to Systems Engineering  
IEE 474 Quality Control  
IEE 498 Analysis of Decision Processes  
IEE 498 Fundamentals of Financial Engineering

\*\*\*Please note that some of the courses listed above may not show on the course catalog yet under the listed numbers. However, all of the courses have been offered at least once, and they have all been submitted and approved in ChangeMaker to take effect in fall 2013.

All of the courses have been fully developed and are currently offered by the Industrial Engineering program faculty. Hence, no new courses need to be developed for the minor.

#### **MINIMUM RESIDENCY REQUIREMENT**

The minimum residency requirement is twelve hours of ASU credit including on-campus and ASU online courses.

#### **ADVISING PROCEDURES AND MEASURES FOR VERIFICATION OF COMPLETION OF THE MINOR**

Students may meet with a CIDSE Academic Advisor to discuss the requirements for this minor. CIDSE Advisors will maintain the DARS for students in the minor and will process exceptions to the minor with approval of Program Chair as necessary.

## **APPENDIX - PROPOSAL TO ESTABLISH A NEW UNDERGRADUATE MINOR**

(This information is used to populate the [Degree Search](#)/catalog website.  
Please consider the student audience in creating your text.)

### **1. Program Description (150 word maximum)**

The minor in engineering management is designed to provide the student with skills for effective management and leadership of engineering-driven enterprises. The minor curriculum supplements the student's major by adding to the breadth of engineering science and design, and equips the student with additional management and design skills. This knowledge is augmented with an understanding of business practices, organizational behavior and management skills to enable the graduate to succeed in the management of a scientific or engineering enterprise. Topics such as project and resource management, financial engineering, risk management, configuration management, service plans, product liability, entrepreneurship and operations management are covered, in addition to product design and process development.

### **2. Contact and Support Information**

Office Location (Building & Room): BYENG 208  
699 S. Mill Ave. Tempe, AZ 85281  
Campus Telephone Number: 480/965-3199  
Program email address: [cidse.advising@asu.edu](mailto:cidse.advising@asu.edu)

To schedule an appointment, please visit:  
<https://fultonapps.asu.edu/advising/>

Program website address: <http://engineer.asu.edu/programs/esemgbse>

### **3. Program Requirements** Provide applicable information regarding the degree such as curricular restrictions or requirements, specific course lists, or academic retention requirements. (450 word maximum)

The program of study for a minor in engineering management requires a minimum of 18 credit hours. Note that industrial engineering majors will NOT be eligible for the minor. Prior to enrolling in the minor, students must have completed MAT 265 and MAT 266 (or an equivalent calculus sequence) with a grade of C or better in each.

The minor requires completion of four core courses (12 credits) and two elective courses (6 credits). All courses must be passed with a C or better. At least 12 units must be completed in residency at ASU or through ASU Online. The required core courses include:

IEE 220 Business/Industrial Engineering  
IEE 300 Economic Analysis for Engineers  
IEE 431 Engineering Administration  
IEE 458 Project Management **OR** CEE 481\* Civil Engineering Project Management  
\*CEE 481 may not be used for both the Civil Engineering degree (major) and the Engineering Management minor

The two elective courses must be selected from the following list:

IEE 369 Work Analysis and Design