See curriculum revisions approved in GC meeting below

USF TAMPA
New Accelerated Program Development Form
Bachelor's to Master's

Accelerated Programs allow academically qualified students to complete an undergraduate Bachelor's degree and a graduate master's degree on an accelerated timeline, graduating sooner than in traditional programs.

Development Process:

1) Review the Accelerated Program Guidelines
2) Contact the Undergraduate Studies office or Graduate School for consultation
3) Complete this form and create the Catalog Copy
4) Submit through internal college processes for approval
5) Submit to Undergraduate Council for review and approval
6) Submit to Graduate School for Graduate Council approval

For questions, contact either Undergraduate Studies cynthiab@usf.edu or the Graduate School at cdh@usf.edu

APPROVALS	**Approval of the Accelerated Degree Program:** _BS_ / _MS_ in the program (Major) of _Industrial Engineering_ / _Engineering Management_ *(e.g. BS/MS in Biology)*			
	Name (Printed)	**Signature**	**Action**	**Date**
Faculty Name and Email	**Dr. Patricia Anzalone**		**Email: panzalone@usf.edu**	**03-10-2017**
Dept. Chair, Industrial and Management Systems Eng	**Dr. Tapas Das**		☑ **Approve** ☐ **Disapprove**	3/12/2017
School Committee Chair or other required approval (if applicable)			☐ **Approve** ☐ **Disapprove**	
College Committee Chair			☐ **Approve** ☐ **Disapprove**	
College Dean/designee	**Dr. Sanjukta Bhanja**		☑ **Approve** ☐ **Disapprove**	3/13/17
Undergraduate Council (UGC) Chair/designee			☐ **Approve** ☐ **Disapprove**	
Undergraduate Studies Dean/designee			☐ **Approve** ☐ **Disapprove**	
Graduate Council (GC) Chair/designee			☐ **Approve** ☐ **Disapprove**	
Graduate School Dean/designee	**Dr. Ruth Bahr**		☐ **Approve** ☐ **Disapprove**	

ACCELERATED PROGRAM INFORMATION	UNDERGRADUATE	GRADUATE
Degrees *(e.g. B.A., B.S., M.A., M.S., M.U.R.P., etc.)*	B.S. in Industrial Engineering	M.S. in Engineering Management
Program Names *(a.k.a. "Major") (e.g. Biology, Math, etc.)*	Industrial Engineering	Engineering Management
College(s)	Engineering	Engineering
Department(s) (if applicable)	Industrial and Management Systems Engineering	Industrial and Management Systems Engineering
Proposed Effective Date for first admissions	Fall 2017	
Program Description (provide a brief description of the program. Do not include requirements, just what the program is about, highlights, etc.)	Students pursuing a B.S.I.E. in Industrial Engineering will earn an M.S.E.M. in Engineering Management in an accelerated manner by sharing 2 EIN or ESI-prefixed graduate courses (6 credit hours) taken as upper-level departmental (Technical) electives as part of B.S. program. The B.S.I.E. requires a total of 128 hours and the M.S.E.M. requires 30 hours. By sharing 6 credit hours, the total credit hours earned will be 152 hours. see curriculum below	
Is this a single pathway option (e.g. thesis only) or a multi-path option (e.g. thesis and non-thesis, etc.)?		Multi-path as the M.S. degree can be thesis or non-thesis

Curriculum Requirements	
GPA Requirements Programs must establish a minimum undergraduate GPA requirement of at least 3.33 overall and a minimum GPA requirement of 3.50 in the major, having taken a minimum of 15 hours in the undergraduate major, for students to be admitted to an accelerated program. **Note what your Program requirements will be (may be more restrictive, but not less than what's noted above)** Students must have a minimum of a "B" (3.00) in each graduate course. Consequences for not obtaining at least a "B" in each graduate course must be noted in the Departmental Accelerated Program requirements. **Note what the Program's policy will be for students who earn less than a "B" in a graduate course (University Policy allows for courses with "C" or higher count toward graduate degree requirements, with an overall and program GPA requirement of 3.00)**	**GPA Requirements** **3.33 overall and 3.5 in the major** **Policy for where a student earns less than a "B" in a graduate Course:** ***Students must maintain an overall and program requirement of 3.0 in the two graduate electives taken as part of accelerated program. In the case a grade lower than a "B" is obtained, the student must take another approved graduate elective and obtain a grade of "B" or higher.***
List courses to be shared Typically, up to twelve (12) hours of graduate credit may be shared between the graduate and undergraduate degree. Although, with Graduate Council and Graduate School approval, programs may offer accelerated programs with more shared credits. List the undergraduate courses that will be replaced by graduate courses Ex: BIO 2100, satisfied by BIO 6245 BIO 2200, satisfied by BIO 6600	**B.S.I.E. in Industrial Engineering (CIP 14.3501) requires 128 hours** **(a) total includes 5 credit hours of upper-level departmental (technical) electives** **(b) student enters B.S. in major after completing the state mandated common core prerequisites – typically the first semester of the second year.** **M.S.E.M. degree in Engineering Management requires 30 hours. The total credit hours after sharing 2 courses (6 credit hours) is 152.** see specific courses below **Students can take 2 approved EIN or ESI-prefixed courses at the 6000-level that meet the upper-level Technical elective**

	requirement. **No required major or state mandated common core prerequisite undergraduate course are being replaced by any graduate courses**
Program of Study Programs must complete a Program of Study, develop a plan for academic advising, and tracking of students, including notation of potential financial aid impact.	Attach a representative example. Be certain it matches the degree requirements listed below.

PROGRAM OF STUDY

Note the requirements for both undergraduate and graduate programs, as published in the respective Catalog.

Proposed Accelerated Program of Study

(1): An Industrial Engineering Major will pursue the normal semester plan sequence listed from the current USF Undergraduate Catalog, replacing six credit hours of upper-level departmental (Technical) electives with six credit hours of graduate coursework.

(2): Academic Advising: Once declaring an interest in the Accelerated BSIE/MSEM Program, the student will meet with an undergraduate Industrial Engineering Advisor and the graduate Engineering Management Advisor. The student will complete the "Application Form" as provided by the Graduate School.

Plan of Study: At the time the application is completed, a plan of study template with shared courses will be completed and signed by both undergraduate and graduate advisors. With the help of the advisors, the student will identify two approved graduate courses to be shared that also meet the departmental (Technical) upper-level elective requirement in the attached sample semester plan for the B.S.I.E. degree. Typically, these two electives will be taken in semesters 5 and 6.

(3) Possible Impact on Financial Aid: The regular undergraduate financial aid is generally not affected. When the student is planning to graduate with the B.S., the financial aid can be affected after that. When completing the Application Form for the Accelerated Program, the applicant will be required to take their entire course/semester plan to the USF Financial Aid office and discuss the financial aid implications with them in detail.

(4) Tracking of Students: During the B.S.I.E. program, Accelerated Student applicant will meet with both the undergraduate and graduate advisors each semester to ensure successful completion of the Program requirements. When applying for their B.S.I.E. graduation, students will complete the USF Accelerated Program Progression Form, and enter the Engineering Management Master's Program and be advised by the graduate advisor for the remaining degree requirements (see attached).

(5) Benefits: The sharing of 2 courses or 6 credit hours will mean that only 24 hours out the 30 required for M.S.E.M. will be remaining, so a student can potentially finish their degree in only 2 semesters or 1 calendar year (instead of the minimum of 3 semesters), save tuition dollars on 2 graduate level courses, and enhance the quality of graduate program by attracting high performing students.

Undergraduate Degree Requirements:

List the current degree requirements for the Undergraduate Degree. Include Total minimum hours.

Listed in the above proposal

Graduate Degree Requirements:

List the current degree requirements for the Graduate Degree as listed in the Graduate Catalog, highlighting which Graduate Courses will be applied to the undergraduate degree (recommend to copy/paste as presented). Copy should include:

- ☐ **Total Program Minimum Hours Required**
- ☐ **Specific course requirements, noting which graduate courses will replace which undergraduate courses.**
- ☐ **Concentration Requirements (if applicable)**
- ☐ **Elective Requirements**
- ☐ **Comprehensive Exam Requirements (if the thesis is used in lieu of the exam, note this accordingly)**
- ☐ **Is a thesis, special-project, or internship required?**
- ☐ **Total number of thesis hours required (if applicable)**

- ☐ **Other requirements**
- ☐ **What the policy is for situations where a student earns less than a "B" in a graduate class.**

Optional Accelerated Program
B.S.I.E. - INDUSTRIAL ENGINEERING / M.S.E.M. - ENGINEERING MANAGEMENT
Students pursuing a B.S.I.E. in Industrial Engineering will earn an M.S.E.M. in Engineering Management in an accelerated manner by sharing 2 EIN or ESI-prefixed graduate courses (6 credit hours) taken as upper-level Technical electives as part of B.S. program. The B.S. requires a total of 128 hours and the M.S. requires 30 hours. By sharing 6 credit hours, the total credit hours earned will be 152 hours.

Target Students and Expected Outcomes
Academically high achieving undergraduate students in the B.S.I.E. program with high overall and major GPA will be targeted for the accelerated program. Expected outcomes are that the increase in M.S.E.M. degrees granted, increase in graduate SCH, and enhancement of the quality of the graduate program by addition of academically accomplished students.

Description and Requirements
For admission to the program a student must:
1. Have completed 15 hours in the undergraduate major
2. Have a minimum 3.33 GPA overall; and
3. Have a minimum undergraduate 3.50 GPA in the major.

Undergraduate Degree Requirements for the B.S.I.E. in Industrial Engineering (128 Credit Hours)
All Industrial Engineering major students will complete the following:
- All State Mandated Common Course Prerequisites (as noted in the Industrial Engineering major catalog information)
- All Entrance Requirements for the Industrial Engineering Program (as noted in the Industrial Engineering major catalog information)
- Departmental Policies (as noted in the Industrial Engineering major catalog information)
- GPA Requirements (as noted in the Industrial Engineering major catalog information)
- Residency Requirement (as noted in the Industrial Engineering major catalog information)
- Foreign Language Entrance Requirement (FLENT)
- Summer Enrollment Requirement
- Foundations of Knowledge and Learning (FKL) Core Curriculum (General Education) Coursework
- FKL Capstone Learning Experience
  ENC 3246 Communication for Engineers (WRIN)
  EIN 4891 Capstone Design (CPST)

Math and Science Coursework (27 credit hours)
MAC 2281 Engineering Calculus I or MAC 2311 Calculus I
MAC 2282 Engineering Calculus II or MAC 2312 Calculus II
MAC 2283 Engineering Calculus III or MAC 2313 Calculus III
MAP 2302 Differential Equations or EGN 3433 Modeling and Analysis of Engineering Systems
CHS 2440 General Chemistry for Engineers or CHM 2045 General Chemistry I
CHS 2040L General Chemistry for Engineers Laboratory or CHM 2045L General Chemistry I Lab
PHY 2048 General Physics I
PHY 2048L General Physics I Laboratory
PHY 2049 General Physics II
PHY 2049L General Physics II Laboratory

Basic Engineering Coursework (24 credit hours)
EGN 3000 Foundations of Engineering
EGN 3000L Foundations of Engineering Lab
EGN 3443 Probability & Statistics for Engineering
EGN 4450 Introduction to Linear Systems
EGN 1113 Introduction to Design Graphics
EGN 3311 Statics
EGN 3373 Introduction to Electrical Systems I
EGN 3365 Materials Engineering I
EGN 3343 Thermodynamics I
EGN 3615 Engineering Economics with Social and Global Implications (required FKL Social and Behavioral Elective)

Specialization Coursework (48 credit hours)
ESI 2009 Introduction to Engineering Programming
EIN 4312C Work Analysis
EIN 4621 Manufacturing Processes
ESI 4312 Deterministic O.R.
EIN 4333 Production Control
ESI 4221 Statistical Quality Control
ESI 4313 Probabilistic O.R.
ESI 4620 Design of Industrial Information Systems

ESI 4606 Engineering Analytics I
EIN 4364 Facilities Design and Cost Analysis
ESI 4244 Design of Experiments
ESI 4523 Systems Simulation
EIN 4243C Human Factors
EIN 4601C Automation and Robotics
EIN 4891 Capstone Design (CPST)
ESI 4607 Engineering Analytics II

Technical Writing (3 credit hours)

ENC 3246 Communication for Engineers (WRIN)

Major Electives (5 hours)

Five (5) credit hours of Departmental Upper-Level Electives (Industrial Engineering Technical Elective)

EIN 4142 Project Management
EIN 4172 ISO 9000/14000
EIN 4173 Quality Systems Management
EIN 4180 Principles of Engineering Management
EIN 4200 Creativity in Technology
EIN 4213 Engineering Systems Safety
EIN 4214 Occupational Safety Engineering
EIN 4385 Management of Technical Change
EIN 4453 Advanced Lean Six Sigma
EIN 4933 Special Topics in Industrial Engineering
ESI 4326 Engineering the Supply Chain
ESI 5236 Reliability Engineering

Shared B.S. / M.S. Requirements

The shared courses are listed below:

EIN 5182 and EIN 6386 replace

~~Two (2) approved EIN or ESI-prefixed courses at the 6000-level to replace~~ six credit hours of the undergraduate upper-level departmental (Technical) electives.

Graduate Degree Requirements for the M.S.E.M. in Engineering Management (30 Credit Hours)

Major: Engineering Management (EMA)
CIP Code: 15.1501
Major/College: EMA EN

PROGRAM REQUIREMENTS

Total Minimum Program Hours: 30 hours post-bachelors
Core Requirements - 18 hours
Electives - 12 hours
This degree requires an undergraduate degree in Engineering
Two years of professional experience are preferred or internship may be required as part of the program

Course Requirements - 18 hours

General Core Area - 12 hours

EIN 5182 Principles of Engineering Management
EIN 6386 Management of Technological Change
EIN 5350 Technology and Finance
EIN 6183 Engineering Management Policy & Strategy

Quantitative Core Area - 3 hours

3 hours must be selected from the following options, as approved by advisor.
The other courses may be taken as electives.

ESI 5306 Operations Research for Engineering Managers
ESI 5219 Statistical Methods for Engineering Managers
ESI 6247 Statistical Design Models

Job Design Core Area - 3 hours

3 hours must be selected from the following options, as approved by advisor.
The other course may be taken as an elective.

EIN 6108 Engineering Management: Human Relations
EIN 6319 Work Design, Motivation & Productivity

Electives - 12 hours

12 hours minimum must be selected from the following options, as approved by advisor.
(Other Graduate Courses may be taken, with approval of the Graduate Program Director.)

EIN 5174 Total Quality Management (TQM) Concepts
EIN 5201 Creativity in Technology
EIN 5510 Manufacturing Systems Analysis
EIN 6106 Technology and Law

EIN 6112 Information Systems Design for Engineering
EIN 6145 Project Management
EIN 6178 ISO 9000/14000
EIN 6154 Technical Entrepreneurship
EIN 6215 Systems Safety Engineering
EIN 6216 Occupation Safety Engineering
EIN 6217 Construction Safety Engineering
EIN 6275 Design Controls for Medical Devices
EIN 6324 Engineering the Supply Chain
EIN 6336 Production Control Systems
EIN 6392 New Product Development
EIN 6420 Non-Linear Programming
EIN 6430 Overview of Regulated Industries
EIN 6431 Regulatory Quality Systems & Controls for Medical Devices
EIN 6432 Regulated Product Approval Process
EIN 6433 Human Factors Engineering in Medical Devices
EIN 6435 International Regulations for Medical Devices
EIN 6934 Systems Integration
EIN 6935 Lean Six Sigma
EIN 6936 Advanced Lean Six Sigma
ESI 5236 Reliability Engineering
ESI 5522 Computer Simulation
ESI 6213 Stochastic Decision Models I
ESI 6448 Integer Programming
ESI 6491 Linear Programming & Network Optimization

Note: A Master's degree must have a minimum of 16 hours at the 6000 level.

Students in the MSEM Master's program can get a C, C+ or B- grade in a course, as long as their GPA stays above 3.0.
GPA below 3.0 results in Probation, or eventually can result in Dismissal from the program.

Thesis Option- 6 hours minimum
EIN 6971 Thesis
A thesis option is available to M.S.E.M. students who are interested in applied research. In the thesis option, 18 hours of core coursework, 6 hours of electives, and 6 hours of thesis are the minimum requirements.
Students in the Thesis option are required to have a Thesis Defense.

Timeline and benchmarks:
1. To be considered for acceptance into the Accelerated B.S.I.E. Industrial Engineering / M.S.E.M. Engineering Management program, students must have completed a minimum of 15 credit hours in the Industrial Engineering undergraduate major.
2. Students must have a minimum undergraduate GPA of 3.33 overall, and a minimum GPA of 3.50 in the major.
3. Following completion of a minimum of 15 hours in the undergraduate major, students may be considered for acceptance into the accelerated program through faculty nomination or student self-nomination, via submission of an *Accelerated Program Application Form*. Both B.S.C.E. and M.S.E.M. majors will review the applications and approve the nominations. All applications require the approval of USF's Office of Graduate Studies, the College of Engineering's Graduate Program, and the Industrial and Management Systems Engineering's Undergraduate and Graduate Program.
4. To be promoted to graduate status, students must meet all admission requirements of the M.S.E.M. in Engineering Management.
5. Students must earn a minimum of a "B" (3.00) in all shared graduate courses. Failure to earn at least a "B" in a shared graduate course will result in academic review by the graduate program. Failure to maintain good standing as a graduate student will result in academic probation, according to the procedures of the USF Office of Graduate Studies.
A comprehensive plan of study to complete the Accelerated B.S.I.E. Industrial Engineering / M.S.E.M. Engineering Management program will be developed with the guidance of an advisor and a faculty member.