B.S.M.E. Mechanical Engineering | Eight Semester Plans | Catalog Year...

http://www.ugs.usf.edu/eight-semester-plans/?display=plan&progcode...

Eight Semester Plans | Catalog Year 2016-2017
Mechanical Engineering (BME)

Degree: Bachelor of Science in Mechanical Engineering | Total Hours: 128 | CIP Code: 14.1901

Students pursuing the Bachelor of Science in Mechanical Engineering program take coursework in thermodynamics, heat transfer, instrumentation, measurements, solid and fluid mechanics, dynamics, machine analysis and design, mechanical design, manufacturing processes, vibrations and controls. This is supplemented by elective coursework in such areas as sustainability, internal combustion engines, refrigeration and air conditioning, mechanical design, robotics, propulsion, computer-aided design, manufacturing, bio-engineering, alternative energy, thermal design, composite materials, and tribology. Laboratories are available for basic instrumentation, thermal and fluid sciences, solid mechanics, data acquisition, controls, CAD/CAM, and vibrations.

Graduates of this program are employed in design, manufacturing, contracting, operations, marketing, and management in virtually all segments of industry and government, including, but not limited to: aeronautics, aerospace and propulsion; automotive, internal combustion engines, fuel cells and transportation; propulsion systems; power generation; heating, ventilation and air conditioning; structures and machinery design; mining and oil exploration; paper, food, and petrochemical industries; processing/manufacturing; micro and nano materials and semiconductors; and biomaterials and biotechnology. There are abundant career opportunities in a wide range of industries because mechanical equipment is required in every aspect of modern industry.

The B.S.M.E. degree explores thermodynamics, heat transfer, instrumentation, measurements, solid and fluid mechanics, dynamics, machine analysis and design, manufacturing, vibrations and controls, sustainability, internal combustion engines, refrigeration and air conditioning, robotics, propulsion, computer-aided design, bio-engineering, alternative energy, thermal design, composite materials, and tribology.

Recommended Semester Plan:

Note: Items that are critical are marked with a [ ] and are included in the plan for a student to stay on track.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit Hours</th>
<th>Semester 2</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MAC 2381 or MAC 2311</td>
<td>4</td>
<td>MAC 2382 or MAC 2312</td>
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<tr>
<td>CHM 2405 or CHS 2440</td>
<td>3</td>
<td>ENC 1102 Composition II</td>
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<td>ENC 1101 Composition I</td>
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<td>CAPA PKL Gen Ed Fine Arts</td>
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<td>GEDH General Education Core Humanities</td>
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<td>PHY 2048 General Physics I - Calculus Based</td>
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<td>CHM 2045L or CHS 2440L</td>
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<td>PHY 2048L General Physics I Laboratory</td>
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<td>EGN 3000L Foundations of Engineering Lab</td>
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<td><strong>Total Semester Hours:</strong></td>
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<td><strong>Total Semester Hours:</strong></td>
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**Summer**

**Semester 3**

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<tr>
<td>MAC 2381 or MAC 2313</td>
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<td>EGN 3321 Dynamics</td>
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<td>EGN 3615 Engineering Economics with Social and Global Implications</td>
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<td>EML 3500 Mechanics of Solids</td>
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<tr>
<td>PHY 2042 General Physics II - Calculus Based</td>
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<td>EGN 3343 Thermodynamics I</td>
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<td>EGN 3311 Statics</td>
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<td>SDES General Education Core Social Sciences</td>
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<td>PHY 2049L General Physics II Laboratory</td>
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<td>MAP 2302 Differential Equations</td>
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**Semester 5**

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<td>ENC 3441 Communication for Engineers</td>
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<td>CAHU PKL Gen Ed Human and Cultural Diversity in a Global Context</td>
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<td>EML 3041 Computational Methods</td>
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<td>EGN 3373 Introduction to Electrical Systems I</td>
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<td>EML 3262 Kinematics and Dynamics of Machinery</td>
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<td>EML 4501 Machine Design</td>
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<td>EML 3701 Fluid Systems</td>
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<td>EML 3103 Mechanical Engineering Lab I</td>
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<td>EML 4325 Mechanical Manufacturing Processes</td>
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<td>EML 41066 Thermal Systems and Economics</td>
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**Semester 7**

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<td>EML 4392 Mechanical Engineering Laboratory II</td>
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<td>EML 4551 Capstone Design</td>
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<tr>
<td>EML 4121 Heat Transfer</td>
<td>3</td>
<td>EML 4212 Mechanical Controls</td>
</tr>
<tr>
<td>EML 4320 Vibrations</td>
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<tr>
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<tr>
<td>Major Upper-Level Department Elective</td>
<td>3</td>
<td>CAHU PKL Gen Ed Humanities (with HHCP)</td>
</tr>
<tr>
<td><strong>Total Semester Hours:</strong></td>
<td><strong>15</strong></td>
<td><strong>Total Semester Hours:</strong></td>
</tr>
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</table>

**Potential Entry Level Job Titles:**

- Aeronautics, Aerospace and Propulsion Engineer
- Automotive, Fuel Cells and Transportation Engineer
- Propulsion Systems, Electronic Systems, Power Generation Engineer
- Heating, Ventilation, and Air Conditioning Engineer
- Structures and Machinery Design Engineer
- Micro and Nano Materials, Semiconductors Engineer

**Potential Entry Level Salary Range:**

- $50,000 - $125,000

**Contact Information:**

College of Engineering | Department of Mechanical Engineering | Phone: 813-974-2280 | Website: http://www.usf.edu/engineering/undergraduate/majors.aspx
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

<table>
<thead>
<tr>
<th>APPROVALS</th>
<th>Approval of the Accelerated Degree Program: BS/MS in the program (Major) of Mechanical Engineering / Biomedical Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name (Printed)</td>
<td>Signature</td>
</tr>
<tr>
<td>Faculty Name and Email</td>
<td>Dr. Robert Frisina</td>
</tr>
<tr>
<td>Dept. Chair, ME</td>
<td>Dr. Rajiv Dubey</td>
</tr>
<tr>
<td>Dept. Chair, Medical Engineering</td>
<td>Dr. Robert Frisina</td>
</tr>
<tr>
<td>School Committee Chair or other required approval (if applicable)</td>
<td></td>
</tr>
<tr>
<td>College Committee Chair</td>
<td></td>
</tr>
<tr>
<td>College Dean/designees, EN</td>
<td>Sanyukta Bhayde</td>
</tr>
<tr>
<td>Undergraduate Council (UGC) Chair/designees</td>
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<tr>
<td>Undergraduate Studies’ Dean/designees</td>
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<tr>
<td>Graduate Council (GC) Chair/designees</td>
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<tr>
<td>Graduate School Dean/designees</td>
<td>Dr. Ruth Bahr</td>
</tr>
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ACCELERATED PROGRAM
INFORMATION

<table>
<thead>
<tr>
<th>Degree's (e.g. B.A., B.S., M.A., M.S., M.U.R.P., etc.)</th>
<th>B.S. in Mechanical Engineering</th>
<th>M.S. in Biomedical Engineering</th>
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<tbody>
<tr>
<td>Program Names (a.k.a. &quot;Major&quot;) (e.g. Biology, Math, etc.)</td>
<td>Mechanical Engineering</td>
<td>Biomedical Engineering</td>
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<td>College(s)</td>
<td>Engineering</td>
<td>Engineering</td>
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<tr>
<td>Department(s) (If applicable)</td>
<td>Mechanical Engineering</td>
<td>Medical Engineering</td>
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<tr>
<td>Proposed Effective Date for first admissions</td>
<td>August 2017</td>
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</table>

Program Description (Provide a brief description of the program. Do not include requirements, just what the program is about, highlights, etc.)

This program would allow a Mechanical engineering major to double count 3 ME electives when they take 3 master level BME courses (6000 level and up). Therefore, entering the BME Master's program as an accelerated student.

Is this a single pathway option (e.g. thesis only) or a multi-path option (e.g. thesis and non-thesis, etc.)?

This is a multi-path option, thesis or non-thesis.

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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).

Policy for where a student earns less than a "B" in a graduate Course: The new accelerated program will allow 1 grade below a B (B-, C+, C) in 1 of the double counted courses. The student must still maintain a 3.0 GPA to remain in good standing in the BME Master's Program.

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.

The request is for 9 hours of graduate credit be shared between the graduate and undergraduate degrees.

The courses to be replaced by the 3 master level BME courses would be 3 Technical/Design/Science Electives.

1) Year 4: Fall semester: ME Technical/Design/Science Elective
2) Year 4: Spring semester: ME Technical/Design/Science Elective
3) Year 4: Spring semester: ME Technical/Design/Science Elective

List the undergraduate courses that will be replaced by graduate courses

Ex:
BIO 2100, satisfied by BIO 6245
BIO 2200, satisfied by BIO 6600

Program of Study

Attach a representative example. Be certain it matches the degree

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*Accelerated Program Proposal Development Form*  
GS – CHC-2-28-12
Programs must complete a Program of Study, develop a plan for academic advising, and tracking of students, including notation of potential financial aid impact.

PROGRAM OF STUDY

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

Undergraduate Degree Requirements:
List the current degree requirements for the Undergraduate Degree. **Total minimum hours: 119**

**Total Major Hours: 104 Hours**

Note: Department prefers students take EGN 3615 to fulfill one of the FKL Social and Behavioral Sciences Elective requirement, otherwise it will fulfill one of the Upper-Level (Technical/Design) Departmental Electives.

**Major Core Courses - 92 Hours**

**Math and Science (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
- CHS 2440 General Chemistry for Engineers or CHM 2045 General Chemistry I
- CHS 2440L General Chemistry for Engineers Laboratory or CHM 2045 General Chemistry I Laboratory
- PHY 2048 General Physics I
- PHY 2048L General Physics I Laboratory
- PHY 2049 General Physics II
- PHY 2049L General Physics II Laboratory

**Basic Engineering (19 credit hours)**

- EGN 3000 Foundations of Engineering
- EGN 3000L Foundations of Engineering Laboratory
- EGN 3311 Statics
- EGN 3321 Dynamics
- EGN 3615 Engineering Economics with Social and Global Implications
- EGN 3365 Materials Engineering I
- EGN 3373 Introduction to Electrical Systems I
- EGN 3343 Thermodynamics I
- EGN 3443 Probability & Statistics for Engineers

**Specialization (43 credit hours)**

- EML 3035 Programming Concepts for Mechanical Engineers
- EML 3500 Mechanics of Solids
- EML 3022 Computer Aided Design and Engineering (CAD)
- EML 3041 Computational Methods
- EML 3262 Kinematics and Dynamics of Machinery
- EML 3701 Fluid Systems
- EML 4325 Mechanical Manufacturing Processes
• EML 3303 Mechanical Engineering Lab I
• EML 4123 Heat Transfer
• EML 4501 Machine Design
• EML 4106C Thermal Systems and Economics
• EML 4220 Vibrations
• EML 4302 Mechanical Engineering Laboratory II
• EML 4312 Mechanical Controls
• EML 4551 Capstone Design (CPST)

Technical Writing (3 credit hours)

• ENC 3246 Communication for Engineers (WRIN)

**Major Elective Courses - 12 Hours**

12 hours of Upper-Level Departmental Electives (Technical Design Elective) from the list below:

• BME 4332 Cell and Tissue Engineering
• BME 4440 Introduction to Bioastronautics
• EAS 4121 Hydro and Aerodynamics
• EGN 4366 Materials Engineering II
• EML 4141 Thermal Management of Electronic Systems
• EML 4230 Introduction to Composite Materials
• EML 4246 Tribology
• EML 4310 Microcontrollers
• EML 4326 Advanced Materials Processing
• EML 4414 Power Plant Engineering
• EML 4419 Propulsion I
• EML 4421 Internal Combustion Engines
• EML 4450 Alternative & Renewable Energy
• EML 4503 Sustainable Design and Materials
• EML 4552 Senior Mechanical Design
• EML 4575 Principles of Fracture Mechanics
• EML 4593 Haptics
• EML 4601 Air Conditioning Design
• EML 4702 Fluid Dynamics II
• EML 4703 Mechanics of Compressible Fluids
• EML 4995 Independent Study
• EML 4930 Special Topics in Mechanical Engineering
• OSE 4601 Optical Product Technology

**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.
Degree: Master of Science in Biomedical Engineering (M.S.B.E.)

- Program (Major): Biomedical Engineering (EBI)
- CIP Code: 14.0501
- Major/College Code: EBMEN
- Total Program Hours: 30
- Specific Course Requirements - 5 electives, and these 5 required courses:
  - GMS 6440 Basic Medical Physiology or BME 6409 Engineering Physiology
  - GMS 6605 Basic Medical Anatomy
  - PHC 6051 Biostatistics II
  - BME 6000 Biomedical Engineering I
  - BME 6931 Biomedical Engineering II


Thesis is not required for non-Thesis Masters students

6 credits of Thesis required, for Thesis students

For the BME Master's program, students can get a C, C+ or B-, as long as their GPA stays above 3.0. GPA below 3.0 results in Probation, or eventually can result in Dismissal.

Note 1: Any 2 or 3 of the BME courses listed above or the electives can be double-counted.

Note 2: This proposed Mechanical Engineering Major/BME accelerated program is modeled after our current, approved BME accelerated programs.

Proposed Accelerated Program of Study

1) A Mechanical Engineering Major would pursue the normal 8 semester sequence attached from the current USF Undergrad Catalog, but 3 of the ME Department Technical/Design/Science Elective courses would be replaced with 3 BME Masters, 6000 level and up, courses which are double counted. Then, upon their BS graduation, they would complete the USF Accelerated Program Progression Form, and enter the BME Master's Program. They would have 7 graduate courses remaining, so they can finish their BME Masters in only 2 semesters or 1 calendar year (Instead of the usual 3 semesters); and save tuition dollars on 3 graduate level courses.

2) Academic Advising: Once declaring an interest in the Accelerated Mechanical Engineering/BME Program, the student would have an undergrad Mechanical Engineering Advisor and a BME Program Advisor (currently the BME Program Director).

3) Tracking of Students: The Accelerated Student will meet with both the undergrad and BME Advisors each semester to ensure successful completion of the Program requirements.

4) Possible Impact on Financial Aid: The regular undergrad financial aid is generally not affected. When the student is planning to graduate with the BS, the financial aid can be affected after that. When completing the Application Form for the Accelerated Mechanical Engineering/BME 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.

Thank you for considering our proposal.
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

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<tr>
<th>APPROVALS</th>
<th>Approval of the Accelerated Degree Program: __B.S./M.E/ M.M.E ____ in the program (Major) of __MECHANICAL ENGINEERING ___________ (e.g. BS/MS in Biology)</th>
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<tbody>
<tr>
<td>Faculty Name and Email</td>
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<tr>
<td>Rasim Guldiken</td>
<td>Email: <a href="mailto:guldiken@usf.edu">guldiken@usf.edu</a></td>
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<tr>
<td>Dept. Chair</td>
<td></td>
</tr>
<tr>
<td>Rajiv Dubey</td>
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<td>Sanjukta Bhanja</td>
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<tr>
<td>Graduate School Dean/designee</td>
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</table>
Students pursuing a B.S.M.E. in Mechanical Engineering will earn M.M.E. in Mechanical Engineering in an accelerated manner by sharing 2 EML-prefixed graduate courses (6 credit hours) taken as upper-level departmental (Technical) electives as part of B.S. program. The B.S.M.E. requires a total of 128 hours and the M.M.E requires 30 hours. By sharing 6 credit hours, the total credit hours earned will be 152 hours.

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 "B" or higher count toward graduate degree requirements, with an overall and program GPA requirement of 3.00).

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.M.E in Mechanical Engineering (CIP 14.1901) requires 128 hours
(a) total includes 12 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.M.E. degree in Mechanical Engineering requires 30 hours. The total credit hours after sharing 2 courses (6 credit hours) is 152. Students can take 2 approved EML-prefixed courses at the 6000-level that meet the upper-level Technical elective
Proposed Accelerated Program of Study

(1): A Mechanical 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 Program, the student will meet with an undergraduate Mechanical Engineering Advisor and graduate Mechanical Engineering Advisor. The student will complete “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.M.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.M.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.M.E graduation, students will complete the USF Accelerated Program Progression Form, and enter the Mechanical Engineering 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.M.E. 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.

Major requirements for the B.S.M.E. Degree:

Major Core (92 hours)
Note: Department prefers students take EGN 3615 to fulfill one of the FKL Social and Behavioral Sciences Elective requirement, otherwise it will fulfill one of the Upper-Level (Technical/Design) Departmental Electives.

Math and Science (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
CHS 2440 General Chemistry for Engineers or CHM 2045 General Chemistry I
CHS 2440L General Chemistry for Engineers Laboratory or CHM 2045 General Chemistry I Laboratory
PHY 2048 General Physics I
PHY 2048L General Physics I Laboratory
PHY 2049 General Physics II
PHY 2049L General Physics II Laboratory

Basic Engineering (19 credit hours)
EGN 3000 Foundations of Engineering
EGN 3000L Foundations of Engineering Laboratory
EGN 3311 Statics
EGN 3321 Dynamics
EGN 3615 Engineering Economics with Social and Global Implications
EGN 3365 Materials Engineering I
EGN 3373 Introduction to Electrical Systems I
EGN 3343 Thermodynamics I
EGN 3443 Probability & Statistics for Engineers

Specialization (43 credit hours)
EML 3035 Programming Concepts for Mechanical Engineers
EML 3500 Mechanics of Solids
EML 3022 Computer Aided Design and Engineering (CAD)
EML 3041 Computational Methods
EML 3262 Kinematics and Dynamics of Machinery
EML 3701 Fluid Systems
EML 4325 Mechanical Manufacturing Processes
EML 3303 Mechanical Engineering Lab I
EML 4123 Heat Transfer
EML 4501 Machine Design
EML 4106C Thermal Systems and Economics
EML 4220 Vibrations
EML 4302 Mechanical Engineering Laboratory II
EML 4312 Mechanical Controls
EML 4551 Capstone Design (CPST)

Technical Writing (3 credit hours)
ENC 3246 Communication for Engineers (WRIN)

Major Electives (12 hours)
12 hours of Upper-Level Departmental Electives (Technical Design Elective) from the list below:
BME 4332 Cell and Tissue Engineering
BME 4440 Introduction to Bioastronautics
EAS 4121 Hydro and Aerodynamics
EGN 4366 Materials Engineering II
EML 4141 Thermal Management of Electronic Systems
EML 4230 Introduction to Composite Materials
EML 4246 Tribology
EML 4310 Microcontrollers
EML 4326 Advanced Materials Processing
EML 4414 Power Plant Engineering
EML 4419 Propulsion I
EML 4421 Internal Combustion Engines
EML 4450 Alternative & Renewable Energy
EML 4503 Sustainable Design and Materials
Entrance and Continuation Requirements for the Mechanical Engineering Department

College of Engineering students who have fully met the below admission requirements and are in good academic standing, may declare a major in Mechanical Engineering. Prior to being admitted to a department, a student may be permitted to take no more than two departmental engineering courses.

Minimum Admission Requirements for Department of Mechanical Engineering
1. Completion of the following courses with a cumulative 3.0 GPA based on best attempt and a minimum grade of C in each course:
   - Calculus I (MAC 2311 or MAC 2281)
   - Calculus II (MAC 2312 or MAC 2282)
   - Calculus-based Physics I with Lab (PHY 2048 and PHY 2048L)
2. A minimum overall GPA of 2.0
3. A minimum USF GPA of 2.0

Minimum Continuation Requirements for Department of Mechanical Engineering
Completion of EML 3500 Mechanics of Solids and EGN 3343 Thermodynamics I with a minimum grade of C in each course (C- is insufficient).

GPA and Grade Requirements
The minimum acceptable grade in all BSME required math and science courses is a C or higher (C- is insufficient). The minimum acceptable grade in engineering and specialization courses which are prerequisites to other degree required courses is a C-, excepted as stated in the Department Continuation Requirements. The passing grade for terminal engineering and specialization courses is a D-. Students must have and maintain a minimum 2.0 Math and Science GPA, 2.0 Engineering GPA, 2.0 Specialization GPA, 2.0 USF GPA, and 2.0 Overall GPA.

Residency Requirement
Transfer students must complete a minimum number of approved specialization courses in the major at USF. The minimum number of USF specialization credit hours required is established by the respective academic department. In no case will this be less than 18 hours. Basic engineering courses are not considered specialization courses. The University residency requirement must also be met.

A dual degree student must meet the requirements of each major and have a minimum of 18 approved specialization hours taken in the degree granting department beyond those specialization hours required for the first degree.

Gordon Rule Requirement
The Writing (Communication) and Mathematics (Computation) Requirement, formerly known as Gordon Rule, is fully met through the mathematics courses above, ENC 1101, ENC 1102, ENC 3246 and by selecting one Foundation of Knowledge and Learning elective that is an approved Writing (Communication) and Mathematics (Computation), formerly known as Gordon Rule, course or by completing an AA degree at a Florida College System institution.

Foundations of Knowledge and Learning (FKL) Requirement
The math and science courses required for this major fully meet the math and science requirements of the Foundations of Knowledge and Learning core curriculum. Students in the College of Engineering may substitute a second "Physical Science" course for the required "Life Science" course. The credits earned for chemistry required by this major may count toward the FKL science requirement.
Foundations of Knowledge and Learning (FKL) Exit Requirement
EML 4551 Capstone Design (CPST)
ENC 3246 Communication for Engineers (WRIN)

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.

Major requirements for the M.M.E. Degree:
Degree Program Requirements

Total Minimum Program Hours: 30 credit hours

Core Requirements – 9 credit hours
All Master’s Program students must complete a total of 9 core credit hours from each of the following specialization areas.

Fluid and Thermal Science - 3 credit hours
EML 6105: Advanced Thermodynamics and Statistical Mechanics
EML 6154: Advanced Conduction Analysis
EML 6713: Advanced Fluid Mechanics
EML 6930: Convection Heat Transfer

Mechanics, Manufacturing, and Materials 3 credit hours
EML 6653: Applied Elasticity
EML 6930: Advanced Manufacturing
EML 6930: Advanced Materials
EML 6570: Fracture Mechanics
EML 6290: Micro and Nano Manufacturing

Dynamical Systems and Controls 3 credit hours
EML 6273: Advanced Dynamics of Machinery
EML 6930: Advanced Controls
EML 6930: Advanced Vibrations
EML 6801: Robotic Systems

All Masters Program students must also complete either EML 6931: Advanced Mathematics or EML 6930: Advanced Mathematics II in order to satisfy core requirements.
Additional Coursework  

In addition to the 12 credit hours, the MME degree requires a minimum of 18 credit hours of approved coursework, for a total of 30 semester hours.

Comprehensive Exam

MME students must also pass a final Comprehensive Oral Examination.

Shared B.S.M.E/M.S.M.E Requirements

The shared courses are listed below:

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

Policy for less than a “B” grade in a graduate class

Students must maintain an overall and program requirement of 3.0 in the two shared 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. For the non-shared graduate courses taken as part of M.M.E degree, students can get a C, C+ or B- as long as their GPA stays above 3.0. GPA below 3.0 results in probation, and eventually can result in Dismissal.
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 cvnthlab@usf.edu or the Graduate School at cdh@usf.edu

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<tr>
<td>Faculty Name and Email</td>
<td></td>
</tr>
<tr>
<td>Rasim Guldiken</td>
<td>R. Guldiken Email: <a href="mailto:guldiken@usf.edu">guldiken@usf.edu</a></td>
</tr>
<tr>
<td>Dept. Chair</td>
<td></td>
</tr>
<tr>
<td>Rajiv Dubey</td>
<td></td>
</tr>
<tr>
<td>School Committee Chair or other required approval (if applicable)</td>
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<td>College Committee Chair</td>
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<td>College Dean/designee</td>
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<td>Sanjukta Bhanja</td>
<td>Sanjukta Bhanja Date: 3/10/17</td>
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Accelerated Program Proposal Development Form
GS–CHC-2-28-12
**ACCELERATED PROGRAM INFORMATION**

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<td>Mechanical Engineering</td>
<td>Mechanical Engineering</td>
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**Program Names**

(a.k.a. "Major") (e.g. Biology, Math, etc.)

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**Department(s) (if applicable)**

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<thead>
<tr>
<th>Mechanical Engineering</th>
<th>Mechanical Engineering</th>
</tr>
</thead>
</table>

**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.M.E. in Mechanical Engineering will earn M.S.M.E. in Mechanical Engineering in an accelerated manner by sharing 2 EML-prefixed graduate courses (6 credit hours) taken as upper-level departmental (Technical) electives as part of B.S. program. The B.S.M.E. requires a total of 128 hours and the M.S.M.E requires 30 hours. By sharing 6 credit hours, the total credit hours earned will be 152 hours.

**Is this a single pathway option (e.g. thesis only) or a multi-path option (e.g. thesis and non-thesis, etc.)?**

Thesis only

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### 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)

**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 shared 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. For the non-shared graduate courses taken as part of M.S.M.E degree, students can get a C, C+ or B- as long as their GPA stays above 3.0. GPA below 3.0 results in probation, and eventually can result in Dismissal.

**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.M.E in Mechanical Engineering (CIP 14.1901) requires 128 hours**

(a) total includes 12 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.M.E degree in Mechanical Engineering requires 30 hours.**

The total credit hours after sharing 2 courses (6 credit hours) is 152.

Students can take 2 approved EML-prefixed courses at the 6000-level that meet the upper-level Technical elective
PROGRAM OF STUDY
Note the requirements for both undergraduate and graduate programs, as published in the respective Catalog.

Proposed Accelerated Program of Study

(1): A Mechanical 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 Program, the student will meet with an undergraduate Mechanical Engineering Advisor and graduate Mechanical Engineering Advisor. The student will complete “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.M.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.M.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.M.E graduation, students will complete the USF Accelerated Program Progression Form, and enter the Mechanical Engineering 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.M.E. 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.

Major requirements for the B.S.M.E. Degree:
Major Core (92 hours)
Note: Department prefers students take EGN 3615 to fulfill one of the FKL Social and Behavioral Sciences Elective requirement, otherwise it will fulfill one of the Upper-Level (Technical/Design) Departmental Electives.

Math and Science (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  
CHS 2440 General Chemistry for Engineers or CHM 2045 General Chemistry I  
CHS 2440L General Chemistry for Engineers Laboratory or CHM 2045 General Chemistry I Laboratory  
PHY 2048 General Physics I  
PHY 2048L General Physics I Laboratory  
PHY 2049 General Physics II  
PHY 2049L General Physics II Laboratory  

Basic Engineering (19 credit hours)  
EGN 3000 Foundations of Engineering  
EGN 3000L Foundations of Engineering Laboratory  
EGN 3311 Statics  
EGN 3321 Dynamics  
EGN 3615 Engineering Economics with Social and Global Implications  
EGN 3365 Materials Engineering I  
EGN 3373 Introduction to Electrical Systems I  
EGN 3343 Thermodynamics I  
EGN 3443 Probability & Statistics for Engineers  

Specialization (43 credit hours)  
EML 3035 Programming Concepts for Mechanical Engineers  
EML 3500 Mechanics of Solids  
EML 3022 Computer Aided Design and Engineering (CAD)  
EML 3041 Computational Methods  
EML 3262 Kinematics and Dynamics of Machinery  
EML 3701 Fluid Systems  
EML 4325 Mechanical Manufacturing Processes  
EML 3303 Mechanical Engineering Lab I  
EML 4123 Heat Transfer  
EML 4501 Machine Design  
EML 4106C Thermal Systems and Economics  
EML 4220 Vibrations  
EML 4302 Mechanical Engineering Laboratory II  
EML 4312 Mechanical Controls  
EML 4551 Capstone Design (CPST)  

Technical Writing (3 credit hours)  
ENC 3246 Communication for Engineers (WRIN)  

Major Electives (12 hours)  
12 hours of Upper-Level Departmental Electives (Technical Design Elective) from the list below:  
BME 4332 Cell and Tissue Engineering  
BME 4440 Introduction to Bioastronautics  
EAS 4121 Hydro and Aerodynamics  
EGN 4366 Materials Engineering II  
EML 4141 Thermal Management of Electronic Systems  
EML 4230 Introduction to Composite Materials  
EML 4246 Tribology  
EML 4310 Microcontrollers  
EML 4326 Advanced Materials Processing  
EML 4414 Power Plant Engineering  
EML 4419 Propulsion I  
EML 4421 Internal Combustion Engines  
BML 4450 Alternative & Renewable Energy  
EML 4503 Sustainable Design and Materials
Entrance and Continuation Requirements for the Mechanical Engineering Department

College of Engineering students who have fully met the below admission requirements and are in good academic standing, may declare a major in Mechanical Engineering. Prior to being admitted to a department, a student may be permitted to take no more than two departmental engineering courses.

Minimum Admission Requirements for Department of Mechanical Engineering

1. Completion of the following courses with a cumulative 3.0 GPA based on best attempt and a minimum grade of C in each course:
   - Calculus I (MAC 2311 or MAC 2281)
   - Calculus II (MAC 2312 or MAC 2282)
   - Calculus-based Physics I with Lab (PHY 2048 and PHY 2048L)
2. A minimum overall GPA of 2.0
3. A minimum USF GPA of 2.0

Minimum Continuation Requirements for Department of Mechanical Engineering

Completion of EML 3500 Mechanics of Solids and EGN 3343 Thermodynamics I with a minimum grade of C in each course (C- is insufficient).

GPA and Grade Requirements

The minimum acceptable grade in all BSME required math and science courses is a C or higher (C- is insufficient). The minimum acceptable grade in engineering and specialization courses which are prerequisites to other degree required courses is a C-, excepted as stated in the Department Continuation Requirements. The passing grade for terminal engineering and specialization courses is a D-. Students must have and maintain a minimum 2.0 Math and Science GPA, 2.0 Engineering GPA, 2.0 Specialization GPA, 2.0 USF GPA, and 2.0 Overall GPA.

Residency Requirement

Transfer students must complete a minimum number of approved specialization courses in the major at USF. The minimum number of USF specialization credit hours required is established by the respective academic department. In no case will this be less than 18 hours. Basic engineering courses are not considered specialization courses. The University residency requirement must also be met. A dual degree student must meet the requirements of each major and have a minimum of 18 approved specialization hours taken in the degree granting department beyond those specialization hours required for the first degree.

Gordon Rule Requirement

The Writing (Communication) and Mathematics (Computation) Requirement, formerly known as Gordon Rule, is fully met through the mathematics courses above, ENC 1101, ENC 1102, ENC 3246 and by selecting one Foundation of Knowledge and Learning elective that is an approved Writing (Communication) and Mathematics (Computation), formerly known as Gordon Rule, course or by completing an AA degree at a Florida College System institution.

Foundations of Knowledge and Learning (FKL) Requirement

The math and science courses required for this major fully meet the math and science requirements of the Foundations of Knowledge and Learning core curriculum. Students in the College of Engineering may substitute a second "Physical Science" course for the required "Life Science" course. The credits earned for chemistry required by this major may count toward the FKL science requirement.
Foundations of Knowledge and Learning (FKL) Exit Requirement
EML 4551 Capstone Design (CPST)
ENC 3246 Communication for Engineers (WRIN)

**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.
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- 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.

**Major requirements for the M.S.M.E. Degree:**

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<th>DEGREE PROGRAM REQUIREMENTS</th>
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<tbody>
<tr>
<td>Total Minimum Program Hours:</td>
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</table>

All Master’s Program students must complete a total of 9 core credit hours from two categories. Students should choose 3 credit hours of course work from each of the following specialization areas:

**Fluid and Thermal Science**

- EML 6105: Advanced Thermodynamics and Statistical Mechanics
- EML 6154: Advanced Conduction Analysis
- EML 6713: Advanced Fluid Mechanics
- EML 6930: Convection Heat Transfer

**Mechanics, Manufacturing, and Materials**

- EML 6653: Applied Elasticity
- EML 6930: Advanced Manufacturing
- EML 6930: Advanced Materials
- EML 6570: Fracture Mechanics
- EML 6290: Micro and Nano Manufacturing

**Dynamical Systems and Controls**

- EML 6273: Advanced Dynamics of Machinery
- EML 6930: Advanced Controls
- EML 6930: Advanced Vibrations
- EML 6801: Robotic Systems

Accelerated Program Proposal Development Form
GS – CHC-2-28-12
All Masters Program students must also complete either EML 6931: Advanced Mathematics or EML 6930: Advanced Mathematics II in order to satisfy core requirements.

Additional Coursework 12 credit hours
In addition to these 12 credit hours, the MSME degree requires a minimum of 12 credit hours of approved coursework and a minimum of 6 thesis hours for a total of 30 semester hours. MSME students must present a typed final draft to the Supervisory Committee and Graduate Advisor one week before the final oral examination.

Comprehensive Exam
A student must pass the final Oral Comprehensive Examination after the student has presented his/her thesis to the Supervisory Committee.

Thesis 6 credit hours
EML 6971 Thesis: Master’s

Shared B.S.M.E/M.S.M.E Requirements
The shared courses are listed below:

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

Policy for less than a “B” grade in a graduate class
Students must maintain an overall and program requirement of 3.0 in the two shared 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. For the non-shared graduate courses taken as part of M.S.M.E degree, students can get a C, C+ or B- as long as their GPA stays above 3.0. GPA below 3.0 results in probation, and eventually can result in Dismissal.

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GS—CHC-2-28-12
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.

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

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<tr>
<td>Faculty Name and Email</td>
<td>Venkat R. Bhethanabotla</td>
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<td>Program Director</td>
<td>Venkat R. Bhethanabotla</td>
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<tr>
<td>Chair, Mechanical Engineering</td>
<td>Rajiv Dubey</td>
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## ACCELERATED PROGRAM INFORMATION

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<td>Department/Program(s) (if applicable)</td>
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### 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.M.E. in Mechanical Engineering will earn an M.S.M.S.E in Materials Science and Engineering in an accelerated manner by sharing 2 EML-preixed graduate courses (6 credit hours) taken as upper-level departmental (Technical) electives as part of B.S. program. The B.S.M.E. 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.

### 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

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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
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<td>BIO 2200, satisfied by BIO 6600</td>
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<tr>
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<tr>
<td>(b) student enters B.S. in major after completing the state mandated common core prerequisites – typically the first semester of the second year.</td>
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<tr>
<td>Students can take 2 approved EML-prefixued courses at the 6000-level that meet the upper-level Technical elective requirement.</td>
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<tr>
<td>No required major or state mandated common core prerequisite undergraduate course are being replaced by any graduate courses</td>
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<thead>
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<tbody>
<tr>
<td>Programs must complete a Program of Study, develop a plan for academic advising, and tracking of students, including notation of potential financial aid impact.</td>
</tr>
<tr>
<td>Attach a representative example. Be certain it matches the degree requirements listed below.</td>
</tr>
</tbody>
</table>

**PROGRAM OF STUDY**

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

**Proposed Accelerated Program of Study**

(1): A Mechanical 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 BSME/MS-MSE Program, the student will meet with an undergraduate Mechanical Engineering Advisor and graduate Materials Science and Engineering Advisor. The student will complete “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.M.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.M.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.M.E. graduation, students will complete the USF Accelerated Program Progression Form, and enter the Materials Science and Engineering 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.M.S.E 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

- MECHANICAL ENGINEERING/M.S. MATERIALS SCIENCE AND ENGINEERING

Students pursuing a B.S.M.E. in Mechanical Engineering will earn an M.S. in Materials Science and Engineering in an accelerated manner by sharing 2 EML-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.M.E. program with high overall and major GPA will be targeted for the accelerated program. Expected outcomes are that the increase in M.S.M.S.E. degrees granted, increase in graduate SCH, and enhancement of the quality of the graduate program by addition of academically accomplished students. In addition, some of these M.S.M.S.E students will continue on to Ph.D. programs in Engineering and Physical Science and enhance the doctoral programs as well.

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.M.E. in Mechanical Engineering (128 Credit Hours)

All Mechanical Engineering major students will complete the following:

- All State Mandated Common Course Prerequisites (as noted in the Mechanical Engineering major catalog information)
- All Entrance Requirements for the Mechanical Engineering Program (as noted in the Mechanical Engineering major catalog information)
- Departmental Policies (as noted in the Mechanical Engineering major catalog information)
- GPA Requirements (as noted in the Mechanical Engineering major catalog information)
- Residency Requirement (as noted in the Mechanical Engineering major catalog information)
- Foreign Language Entrance Requirement (FLENT)
- Summer Enrollment Requirement
- Foundations of Knowledge and Learning (FKL) Core Curriculum (General Education) Coursework
  36 credit hours of FKL coursework, to include meeting the State's General Education Core Requirement
- FKL Capstone Learning Experience

Major requirements for the B.S.M.E. Degree:

Major Core (92 hours)

Note: Department prefers students take EGN 3615 to fulfill one of the FKL Social and Behavioral Sciences Elective requirement, otherwise it will fulfill one of the Upper-Level (Technical/Design) Departmental Electives.

Math and Science (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
CHS 2440 General Chemistry for Engineers or CHM 2045 General Chemistry I
CHS 2440L General Chemistry for Engineers Laboratory or CHM 2045 General Chemistry I Laboratory
PHY 2048 General Physics I
PHY 2048L General Physics I Laboratory
PHY 2049 General Physics II
PHY 2049L General Physics II Laboratory

Basic Engineering (19 credit hours)

EGN 3000 Foundations of Engineering
EGN 3000L Foundations of Engineering Laboratory
EGN 3311 Statics
EGN 3321 Dynamics
EGN 3615 Engineering Economics with Social and Global Implications
EGN 3365 Materials Engineering I
EGN 3373 Introduction to Electrical Systems I
EGN 3343 Thermodynamics I
EGN 3443 Probability & Statistics for Engineers

Specialization (43 credit hours)

EML 3035 Programming Concepts for Mechanical Engineers
EML 3500 Mechanics of Solids
EML 3022 Computer Aided Design and Engineering (CAD)
EML 3041 Computational Methods
EML 3262 Kinematics and Dynamics of Machinery
EML 3701 Fluid Systems
EML 4325 Mechanical Manufacturing Processes
EML 3303 Mechanical Engineering Lab I
EML 4123 Heat Transfer
EML 4501 Machine Design
EML 4106C Thermal Systems and Economics
EML 4220 Vibrations
EML 4302 Mechanical Engineering Laboratory II
EML 4312 Mechanical Controls
EML 4551 Capstone Design (CPST)

Technical Writing (3 credit hours)

ENC 3246 Communication for Engineers (WRIN)

Major Electives (12 hours)

12 hours of Upper-Level Departmental Electives (Technical Design Elective) from the list below:

BME 4332 Cell and Tissue Engineering
BME 4440 Introduction to Bioaeronautics
EAS 4121 Hydro and Aerodynamics
EGN 4366 Materials Engineering II
EML 4141 Thermal Management of Electronic Systems
EML 4230 Introduction to Composite Materials
EML 4246 Tribology
EML 4310 Microcontrollers
EML 4326 Advanced Materials Processing
EML 4414 Power Plant Engineering
EML 4419 Propulsion I
EML 4421 Internal Combustion Engines

Note: The undergraduate degree program will not exceed 128 credit hours.

Shared B.S./M.S. Requirements

The shared courses are listed below:

Two (2) approved EML-prefixed courses at the 6000-level to replace six credit hours of the

Accelerated Program Proposal Development Form
GS – CHC-2-28-12
undergraduate upper-level departmental (Technical) electives.

**Graduate Degree Requirements for Accelerated M.S. in Materials Science and Engineering**

**PROGRAM REQUIREMENTS**

**Total Minimum Program Hours:** 30 hours

- post-bachelors Core Requirements – 5 hours
- Course Requirements – 18 hours

This M.S. degree requires an undergraduate degree in Engineering or Natural Sciences.

**Course Requirements**

**Core Requirements** - 5 credit hours

- EMA 6510 Characterization of Materials 3 credit hours
- ECH 6931 Graduate Seminar or PHY 6938 Graduate Seminar 2 credit hours

Approved electives - 19 credit hours minimum; will be structured upon consultation with graduate coordinator based on focus area of student interest. Must be approved by the graduate coordinator.

**Thesis Option**

The thesis option requires the completion of 24 credit hours of graduate level courses (5 credit hours core and 19 hours of electives) and 6 credit hours of thesis.

XXX 6971 Thesis

**Non-Thesis Option**

The non-thesis option requires 30 credit hours, with 5 credit hours core and 25 credit hours of electives. The thesis defense serves as the comprehensive exam for the thesis option. A comprehensive/critical review on a materials topic approved and graded by the graduate coordinator serves as the comprehensive exam for the non-thesis option.

**Timeline and benchmarks:**

1. To be considered for acceptance into the Accelerated B.S.M.E./M.S.M.S.E. Materials Science and Engineering program, students must have completed a minimum of 15 credit hours in the mechanical 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.M.E. and M.S.M.S.E. 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 Department of Mechanical Engineering’s Undergraduate Program.
4. To be promoted to graduate status, students must meet all admission requirements of the M.S.M.S.E. in Materials Science and Engineering.
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.M.E./M.S.M.S.E. program will be developed with the guidance of an advisor and a faculty member.
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 cynthia.h@usf.edu or the Graduate School at cdh@usf.edu

<table>
<thead>
<tr>
<th>APPROVALS</th>
<th>Approval of the Accelerated Degree Program: BS / MS in the program (Major) of Mechanical Engineering / Engineering Management</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>(e.g. BS/MS in Biology)</td>
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<tr>
<td>Name (Printed)</td>
<td>Signature</td>
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<tr>
<td>Faculty Name and Email</td>
<td>Dr. Patricia Anzalone</td>
</tr>
<tr>
<td>Dept. Chair, Mechanical Eng</td>
<td>Dr. Rajiv Dubey</td>
</tr>
<tr>
<td>Dept. Chair, Industrial and Management Systems Eng</td>
<td>Dr. Tapas Das</td>
</tr>
<tr>
<td>School Committee Chair or other required approval (if applicable)</td>
<td>☐ Approve ☐ Disapprove</td>
</tr>
<tr>
<td>College Committee Chair</td>
<td>☐ Approve ☐ Disapprove</td>
</tr>
<tr>
<td>College Dean/designee</td>
<td>Dr. Sanjukta Bhanja</td>
</tr>
<tr>
<td>Undergraduate Council (UGC) Chair/designee</td>
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<td>Undergraduate Studies Dean/designee</td>
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<tr>
<td>Graduate Council (GC) Chair/designee</td>
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<td>Graduate School Dean/designee</td>
<td>Dr. Ruth Bahr</td>
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<td>ACCELERATED PROGRAM INFORMATION</td>
<td>UNDERGRADUATE</td>
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<td>Degrees (e.g. B.A., B.S., M.A., M.S., M.U.R.P., etc.)</td>
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<td>Program Names (a.k.a. &quot;Major&quot;) (e.g. Biology, Math, etc.)</td>
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<td>College(s)</td>
<td>Engineering</td>
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<td>Department(s) (if applicable)</td>
<td>Mechanical Engineering</td>
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<tr>
<td>Proposed Effective Date for first admissions</td>
<td>Fall 2017</td>
</tr>
<tr>
<td>Program Description (provide a brief description of the program. Do not include requirements, just what the program is about, highlights, etc.)</td>
<td>Students pursuing a B.S.M.E. in Mechanical Engineering will earn an M.S.E.M. in Engineering Management in an accelerated manner by sharing 2 EME-prefixed graduate courses (6 credit hours) taken as upper-level departmental (Technical) electives as part of B.S. program. The B.S.M.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.</td>
</tr>
</tbody>
</table>

| 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 |

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**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)**

**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

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**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.**

**R.S.M.E. in Mechanical Engineering (CIP 14.1901) requires 128 hours**

(a) total includes 12 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**
**PROGRAM OF STUDY**

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

**Proposed Accelerated Program of Study**

1. **A Mechanical 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 BSME/MSEM Program, the student will meet with an undergraduate Mechanical 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.M.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.M.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.M.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.M.E. 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 is the policy for situations where a student earns less than a “B” in a graduate class.

Optional Accelerated Program

B.S.M.E. - MECHANICAL ENGINEERING / M.S.E.M. - ENGINEERING MANAGEMENT

Students pursuing a B.S.M.E. in Mechanical 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.M.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.M.E. in Mechanical Engineering (128 Credit Hours)

All Mechanical Engineering major students will complete the following:

• All State Mandated Common Course Prerequisites (as noted in the Mechanical Engineering major catalog information)
• All Entrance and Continuation Requirements for the Mechanical Engineering Program (as noted in the Mechanical Engineering major catalog information)
• Departmental Policies (as noted in the Mechanical Engineering major catalog information)
• GPA and Grade Requirements (as noted in the Mechanical Engineering major catalog information)
• Residency Requirement (as noted in the Mechanical 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)
EML 4551 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
CHS 2440 General Chemistry for Engineers or CHM 2045 General Chemistry I
CHS 2440L General Chemistry for Engineers Laboratory or CHM 2045 General Chemistry I Laboratory
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 (19 credit hours)

EGN 3000 Foundations of Engineering
EGN 3000L Foundations of Engineering Laboratory
EGN 3311 Statics
EGN 3321 Dynamics
EGN 3615 Engineering Economics with Social and Global Implications
EGN 3365 Materials Engineering I
EGN 3373 Introduction to Electrical Systems I
EGN 3343 Thermodynamics I
EGN 3443 Probability & Statistics for Engineers

Specialization Coursework (43 credit hours)

EML 3035 Programming Concepts for Mechanical Engineers
EML 3500 Mechanics of Solids
EML 3022 Computer Aided Design and Engineering (CAD)
EML 3041 Computational Methods
EML 3262 Kinematics and Dynamics of Machinery
EML 3701 Fluid Systems
EML 4325 Mechanical Manufacturing Processes
EML 3303 Mechanical Engineering Lab I
EML 4123 Heat Transfer
EML 4501 Machine Design
EML 4106C Thermal Systems and Economics
EML 4220 Vibrations
EML 4302 Mechanical Engineering Laboratory II
EML 4312 Mechanical Controls
EML 4551 Capstone Design (CPST)

Technical Writing (3 credit hours)
ENC 3246 Communication for Engineers (WRIN)

Major Electives (12 hours)
12 hours of Upper-Level Departmental Electives (Technical Design Elective) from the list below:
BME 4332 Cell and Tissue Engineering
BME 4440 Introduction to Bioastronautics
EAS 4121 Hydro and Aerodynamics
EGN 4366 Materials Engineering II
EML 4141 Thermal Management of Electronic Systems
EML 4230 Introduction to Composite Materials
EML 4246 Tribology
EML 4310 Microcontrollers
EML 4326 Advanced Materials Processing
EML 4414 Power Plant Engineering
EML 4419 Propulsion I
EML 4421 Internal Combustion Engines
EML 4450 Alternative & Renewable Energy
EML 4503 Sustainable Design and Materials
EML 4552 Senior Mechanical Design
EML 4575 Principles of Fracture Mechanics
EML 4593 Haptics
EML 4601 Air Conditioning Design
EML 4702 Fluid Dynamics II
EML 4703 Mechanics of Compressible Fluids
EML 4905 Independent Study
EML 4930 Special Topics in Mechanical Engineering
OSE 4601 Optical Product Technology

Shared B.S. / M.S. Requirements
The shared courses are listed below:
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.M.E. Mechanical Engineering / M.S.E.M. Engineering Management program, students must have completed a minimum of 15 credit hours in the Mechanical 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, the Department of Mechanical Engineering’s Graduate Program, and the Industrial and Management Systems Engineering’s 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.C.E. Mechanical Engineering / M.S.E.M. Engineering Management program will be developed with the guidance of an advisor and a faculty member.