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

<table>
<thead>
<tr>
<th>APPROVALS</th>
<th>Approval of the Accelerated Degree Program: B.S./M.E./M.S./M.E. in the program (Major) of MECHANICAL ENGINEERING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name (Printed)</td>
<td>Signature</td>
</tr>
<tr>
<td>Rasim Guldiken</td>
<td>R. Guldiken</td>
</tr>
<tr>
<td>Rajiv Dubey</td>
<td>Approve</td>
</tr>
<tr>
<td>Sanjukta Bhanja</td>
<td>Approve</td>
</tr>
</tbody>
</table>

Accelerated Program Proposal Development Form
GS - CHC-2-28-12
ACCELERATED PROGRAM INFORMATION  | UNDERGRADUATE | GRADUATE |
---|---|---|
**Degrees**  
(e.g. B.A., B.S., M.A., M.S., M.U.R.P., etc.)  | B.S.M.E  | M.S.M.E  |
**Program Names**  
(a.k.a. "Major") (e.g. Biology, Math, etc.) | Mechanical Engineering  | Mechanical Engineering  |
**College[s]** | Engineering  | Engineering  |
**Department[s] (if applicable)** | Mechanical Engineering  | Mechanical 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.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 |

---

### Curriculum Requirements

<table>
<thead>
<tr>
<th><strong>GPA Requirements</strong></th>
<th><strong>GPA Requirements</strong></th>
</tr>
</thead>
</table>
| 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 Department 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 an 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.**  
**EML 6713, EML 6653**  
**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  
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

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.S.M.E. Degree:
DEGREE PROGRAM REQUIREMENTS

Total Minimum Program Hours: 30 credit hours

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 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**

**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:

EML 6713, EML 6653

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.