March 18, 2013

PRE-REGISTRATION FAQ FALL 2013

Mechanical Engineering (BSME) Requirements and Courses

What are the BSME degree requirements?
The best way for a student to track degree requirements is to look at a degree audit on DARS. This will include new courses that satisfy requirements from a previous catalog date. An advisor or student can request a degree audit at any time online at the link below. Degree requirements follow the catalog date when the student matriculated.
http://engineering.wustl.edu/Academics/DARS.asp

Are prerequisites strictly enforced?
Yes. However, requests for waiver of prerequisites or substitution of required courses may be submitted in writing to the Associate Department Chair for Mechanical Engineering and must be approved by the course instructor, the student's advisor, and the Associate Department Chair.

Are the ME introductory courses required?
Freshmen are encouraged but not required to take one or more of the introduction to mechanical engineering courses.

E37 MEMS	1001 Machine Shop Practicum
E37 MEMS	1003 Mechanical Engineering Design and Build
E37 MEMS	101 Intro to Mechanical Engineering and Mechanical Design

Do I have enough engineering topics courses?
Students who transfer in credit for engineering courses could be short of engineering topics. DARS does check for total topics units. A database of courses from other schools approved for transfer credit is available at the following link.
http://registrar.seas.wustl.edu/EVALS/evals.asp

When should I declare a major?
Students who have not declared a major should do so by the third semester.

Which courses are in the mechanics sequence?
MEMS 253 (or BME 240), 255 and 350. Students are encouraged to take E37 350 (350 is now offered both fall and spring) in the fourth semester.

Which of the required MEMS courses are offered only once a year?
MEMS 301, 311, 3410, 3411, 342, 411, 412, 4301, 4302 and 431.

What is the physical or life science elective?
A course from Bio, EPSc, EnSt, Phys, Chem taken for credit and graded: A suitable course is a 3 unit 2xx or greater course from Bio (L41), EPSc (L19), EnSt (L82), Phys (L31) or Chem (L07) with a NS attribute (natural science). Some suggested courses are:

E62 BME	314 Physics of the Heart
L31 Phys	350 Physics of the Heart
L19 EPSc	221A Human Use of the Earth

L82 EnSt	221A Human Use of the Earth
L07 Chem	112A Chemistry II
L41 Bio	2960 Biology
L41 Bio	2970 Biology
L41 Bio	303A Human Biology
L19 EPSc	323 Biogeochemistry
L31 Phys	217 Introduction to Quantum Mechanics
L19 EPSc	210A Epic of Evolution: Life, Earth, and the Cosmos

Which courses count as social science or humanities?
Washington University in St. Louis courses labeled with the EN:H or EN:S attribute in the semester course listings will count respectively toward the humanities or social sciences requirement for engineering degrees. In addition, all art courses (coded F10 and F20) will count toward the engineering school's humanities requirement. Other approved H&SS courses can be found at:
http://engineering.wustl.edu/ess/hss.aspx

How do I find social science and humanities courses in WEBSTAC?
WebSTAC has a search feature that will reveal courses with an H or S attribute. Go to: WebSTAC; Course Listings; by Semester Search; SP2013 Arts and Sciences; choose details (department, level, time, etc) and EN H or EN S.

Do the ethics and professional values courses count as social science or humanities?
Three one-unit courses, E60 4501, 4502 and 4503 are the ethics and professional values courses. Humanity or social science credit for these courses varies depending on the student's matriculation date.

2009 Freshmen and earlier may use 450X as H or SS credit
2010 Freshmen and later may use 450X only as SS credit

Which courses satisfy the control systems requirement?
ME's can take either MEMS 4301 Modeling Simulation and Control (spring) or MEMS 4302 Flight Dynamics and Control (spring) or ESE 441 Control Systems (fall and spring). Note that the ESE 441 prerequisite is ESE 351 or MEMS 431.

What is the computing requirement?
CSE 200 is the computing requirement (effective date is FL2009). The only prerequisite for CSE 200 is Math 132. Freshmen should take CSE 200 in the spring semester. Students taking CSE 131 or equivalent should take ESE 101 (a MATLAB review course).

What do I do if I have a conflict with Chem I Lab?
Fall sophomore students with a Chem 151 / ESE 230 conflict can take ESE 326 in the fall and ESE 230 in the spring.

Is Math L24 3200 equivalent to ESE 326?
Math L24 3200 (or L24 320) does NOT satisfy the ESE 326 requirement.

What are the new engineering math courses?
The Math Department has reduced Calculus III and Differential Equations by one unit to 3 units each. For FL2013 SEAS has replaced the 4-unit ESE 317 by two 3-unit courses, ESE 318 and 319.

What is the prerequisite for MEMS E37 411 Mechanical Engineering Design?
E37 311 Machine Elements is a prerequisite for E37 411 Mechanical Engineering Design Project.

In which extracurricular activities do ME's participate?
The faculty and administration encourage participation in extracurricular activities. Ask your advisor on how to get involved with ASME, EWB, FSAE, or IEEE (the dance floor for Vertigo has been a popular project that involves students from many departments). Take the first step to learn about the profession and apply your studies to "real-world" problems through extra curricular activities.

How do I become a professional engineer?
Professional licensure in engineering is an option for seniors to consider; the initial step in that process is the Fundamentals of Engineering exam. Apply to the Missouri Board of the NCEES to register for the exam. To be eligible one must have earned or expect to earn an ABET-accredited degree in engineering. More information on NCEES, licensure, the exam and registration can be found at
http://www.ncees.org/Exams/States/MO.php
http://www.ncees.org/About_NCEES.php

How many units can I take?
Full undergraduate tuition covers 12-21 units. Undergraduates must maintain full time status by taking a minimum of 12 units each semester.

What are the BSME requirements for my matriculation year?
See the department web site for the curriculum checklist by catalog year.
http://mems.wustl.edu/undergraduateprograms/Pages/bs-in-mechanical-engineering.aspx

When can I use the pass/fail option?
There are restrictions on when a student may use the pass/fail grading option.

- MEMS degree requirements that list specific courses are not satisfied with courses taken pass/fail.
- MEMS elective degree requirements are not satisfied with courses taken pass/fail.
- The Physical or Life Science Elective degree requirement is not satisfied with courses taken pass/fail.
- The pass/fail grading option may be used with the humanities/social sciences electives course requirement or with free electives.
- Engineering students are eligible to register each semester for up to 6 units on the pass/fail option, up to a maximum of 18 units attempted. The pass/fail grading option replaces the letter grades A-F with either P# or F#. Assigning the grade P# to a course means the student passed the course; assigning the grade F# means the

student did not pass the course. Neither grade affects the student's grade-point average. The units attached to a course assigned the grade P# may count towards the student's total cumulative units required.

How is a repeat course noted on my transcript?
If a student repeats a course, only the second grade is included in the calculation of the grade point average. Both enrollments and grades are shown on the student's official transcript. The symbol R next to the first enrollment's grade indicates that the course was later retaken. Credit toward the degree is allowed for the latest enrollment only.

Where can I find information on popular minors?
Information on popular technical minors may be found at the web sites below:
Energy Engineering Minor:
http://mems.wustl.edu/undergraduateprograms/Pages/MinorinEnergyEngineering.aspx
Aerospace Minor:
http://mems.wustl.edu/undergraduateprograms/Pages/MinorinAerospaceEngineering.aspx
Robotics Minor:
http://ese.wustl.edu/undergraduateprograms/Pages/MinorinRobotics.aspx
Mechatronics Minor:
http://ese.wustl.edu/undergraduateprograms/Pages/MinorInMechatronics.aspx

What are the requirements for the 9 units of senior electives?

Only 3 units of Independent Study (MEMS 400) are allowed as a MEMS 3xx/4xx elective. An independent study proposal must be submitted and approved *before the first day of classes* of the semester. Each section of the proposal must be filled out in detail including: a clear definition the project, an assessment of the student's background and skills to perform the required procedures and methods, and a firm set of expected deliverables and schedule. At the end of the semester a copy of the deliverables is to be submitted to the department to be filed with the student's records. For a 3-credit course a student is typically expected to spend 8-10 hours a week, meet weekly with his or her project supervisor, and submit a substantial report at the end of the project.

One of the MEMS (3xx/4xx) electives may be taken from another department with preapproved permission. Please see the list below for preapproved courses or see Prof Jerina for approval of non-MEMS courses.

Graduate courses (5xx) may be taken by undergraduates as electives. Seniors should venture into the graduate courses for their electives. Seniors are well qualified to take graduate classes with what they have taken in their undergraduate curriculum. Taking one or more of these courses will give students an opportunity to see that graduate education is an extension of undergraduate education. With that in mind, here is a list of possible electives. Other courses that enhance MEMS education can be considered a MEMS elective with prior approval. NOTE: These courses often do not list prerequisites, so the student should check with the instructor to determine the level of material to be covered. Contact Dr. Paris for permission to take his course. *WEBSTAC will reveal the 5XXX level courses if the 5XX level box is checked (the default is 100-400).*

Approved BSME senior elective courses:

E37 MEMS 3601 Materials Engineering

E37 MEMS	4101 Manufacturing Processes
E37 MEMS	5001 Optimization Methods in Engineering
E37 MEMS	5101 Analysis and Design of Fluid Power Systems
E37 MEMS	5102 Materials Selection in Design
E37 MEMS	5301 Nonlinear Vibrations
E37 MEMS	5302 Theory of Vibrations
E37 MEMS	5401 General Thermodynamics
E37 MEMS	5402 Radiation Heat Transfer
E37 MEMS	5403 Conduction and Convection Heat Transfer
E37 MEMS	5410 Fluid Dynamics I
E37 MEMS	5411 Fluid Dynamics II
E37 MEMS	5412 Computational Fluid Dynamics
E37 MEMS	5413 Advanced Computational Fluid Dynamics
E37 MEMS	5414 Aeroelasticity
E37 MEMS	5420 HVAC I Analysis and Design
E37 MEMS	5421 HVAC II Analysis and Design
E37 MEMS	5422 Solar Energy Thermal Processes
E37 MEMS	5423 Sustainable Environmental Building Systems
E37 MEMS	5424 Thermo-Fluid Modeling of Renewable Energy Systems
E37 MEMS	5500 Elasticity
E37 MEMS	5501 Mechanics of Continua
E37 MEMS	5504 Fracture Mechanics
E37 MEMS	5510 Finite Element Analysis
E37 MEMS	5520 Advanced Analytical Mechanics
E37 MEMS	5560 Interfaces and Attachments in Natural and Engineered Structures
E37 MEMS	5563 Orthopaedic Biomechanics-Bones and Joints
E37 MEMS	5564 Orthopaedic Biomechanics-Cartilage/Tendon
E37 MEMS	5601 Mechanical Behavior of Materials
E37 MEMS	5602 Non-metallics
E37 MEMS	5603 Materials Characterization I
E37 MEMS	5604 Materials Characterization II
E37 MEMS	5605 Mechanical Behavior of Composites
E37 MEMS	5606 Soft Nanomaterials
E37 MEMS	5607 Introduction to Polymer Blends and Composites
E37 MEMS	5608 Introduction to Polymer Science and Engineering
E37 MEMS	5609 Electronic Materials Processing
E37 MEMS	5610 Quantitative Materials Science and Engineering
E37 MEMS	5611 Principles and Methods of Micro- and Nanofabrication
E37 MEMS	5700 Aerodynamics
E37 MEMS	5701 Aerospace Propulsion
E37 MEMS	5703 Analysis of Rotary Wing Systems
E37 MEMS	5704 Aircraft Structures
E37 MEMS	5705 Wind Energy Systems
E37 MEMS	5801 Micro-Electro-Mechanical Systems I
E37 MEMS	5802 Micro-Electro-Mechanical Systems II
E35 ESE	337 Electronic Devices and Circuits
E35 ESE	405 Reliability and Quality Control
E35 ESE	415 Optimization
E35 ESE	446 Robotics Dynamics and Control
E35 ESE	447 Robotics Laboratory
E35 ESE	501 Mathematics of Modern Engineering I
E35 ESE	442 Digital Control Systems
E35 ESE	444 Sensors and Actuators
E35 ESE	437 Sustainable Energy Systems
E62 BME	463 Orthopaedic Biomechanics-Bones and Joints
E62 BME	464 Orthopaedic Biomechanics-Cartilage/Tendon

E62 BME	504 Light Microscopy and Optical Imaging
E62 BME	559 Intermediate Biomechanics
E63 ChE	526 Topics in Nanotechnology