APPROVED
COMMISSION ON UNDERGRADUATE
STUDIES AND POLICIES

COLLEGE OF ENGINEERING
DEPARTMENT OF MECHANICAL ENGINEERING
BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING
FOR STUDENTS GRADUATING IN CALENDAR YEAR 2018
131 CREDITS REQUIRED FOR GRADUATION

FALL SEMESTER FRESHMAN 2014	Credits
CHEM 1035 General Chemistry	3
CHEM 1045 General Chemistry Lab	1
ENGL 1105 First-Year Writing	3
MATH 1225 Calculus of a Single Variable	4
ENGE 1215 Foundations of Engineering (C-) or ENGE 1434 Fundamentals of Engineering (C-) (5)	2
CLE (Area 2, 3 or 7)	3
TOTAL	**16**

SPRING SEMESTER FRESHMAN 2015	Credits
ENGL 1106 First-Year Writing	3
MATH 1226 Calculus of a Single Variable (requires C- or better in MATH 1225)	4
MATH 2114 Linear Algebra (requires B in MATH 1225 or passing grade in MATH1226)	3
ENGE 1216 Foundations of Engineering (C-) or ENGE 1104 Exploration of Digital Future (C-) or ENGE 1434 Fundamentals of Engineering (C-) (5)	2
PHYS 2305 Found of Physics I w/lab	4
CLE (Area 6)	1
TOTAL	**17**

FALL SEMESTER SOPHOMORE 2015	Credits
ESM 2104 Statics	3
ISE 2214 Manufacturing Process Lab	1
MATH 2204 Intro Multivariable Calculus	3
PHYS 2306 Foundations of Physics I w/lab	4
ME 2024 Intro to Engineering Design and Engineering	3
Programming Elective (AOE 2074, CS 1044, CS 1054, CS 1114, CS 1124, CS 1064, ECE 1574, ENGE 2314,2514, ESM 2074, or ME 2004)	2-4
TOTAL	**16-18**

SPRING SEMESTER SOPHOMORE 2016	Credits
ECE 2054 Applied Electrical Theory or ECE 3054 Electrical Theory + ECE 2074 Electrical Circuit Analysis lab or ECE 2004 Electric Circuit Analysis + ECE 2074 Electrical Circuit Analysis lab	3-4
ESM 2204 Mech of Deformable Bodies	3
ESM 2304 Dynamics	3
MATH 2214 Differential Equations	3
STAT 3704 Engr Statistics or STAT 4604 (3) or STAT 4714 (3) or STAT 4705 (3)	2-3
ME 2124 Intro Thermal Fluid (C-)	2
TOTAL	**16-18**

FALL SEMESTER JUNIOR 2016	Credits
ECE 3254 Industrial Electronics	3
ME 3124 Thermodynamics	3
ME 3404 Fluid Mechanics	3
ME 3514 System Dynamics	3
ME 3614 Mechanical Design I	3
CLE (Area 2, 3, or 7)	3
TOTAL	**18**

SPRING SEMESTER JUNIOR 2017	Credits
MSE 2034 Elem of Materials Engineering	3
ME 3304 Heat & Mass Transfer	3
ME 3504 Dyn Sys Vibrations OR ME 4504 Control Engr I	3
ME 4005 ME Lab	3
Technical Elective from list	3
TOTAL	**15**

FALL SEMESTER SENIOR 2017	Credits
ME 4006 ME Lab	3
ME 4015 Engineering Design and Project	3
ME 4124 CAD of Thermal-Fluid Systems	3
Technical Elective from list	3
Technical Elective from list	3
CLE (Areas 2, 3, or 7)	3
TOTAL	**18**

SPRING SEMESTER SENIOR 2018	Credits
ME 4016 Engineering Design and Project	3
Technical Elective from list	3
Technical Elective from list	3
CLE (Area 2, 3, or 7)	3
CLE (Area 2, 3, or 7)	3
TOTAL	**15**

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Curriculum for Liberal Education (CLE) Consult the CLE Alphabetical Listing at: http://www.cle.prov.vt.edu/guides/alpha.html, CLE courses need to be completed prior to graduation				
CLE Area 1: Writing and Discourse (6 hrs)	**ENGL 1105**	**(3)**	**ENGL 1106**	**(3)**
CLE Area 2: Ideas, Cultural Traditions, Values Electives (6 hrs)		**(3)**		**(3)**
CLE Area 3: Society & Human Behavior electives (6 hrs)		**(3)**		**(3)**
CLE Area 4: Scientific Reasoning and Discovery (8 hrs)	**PHYS 2305**	**(4)**	**PHYS 2306**	**(4)**
CLE Area 5: Quantitative and Symbolic Reasoning (8 hrs)	**MATH 1225**	**(4)**	**MATH 1226**	**(4)**
CLE Area 6: Creativity & Aesthetic Experience elective (1 hr)				**(1)**
CLE Area 7: Global Issues Elective (3 hrs)				**(3)**
If a CLE course is double-counted to satisfy two different CLE areas, free elective(s) must be taken to maintain a minimum of 131 credits. **NOTE**: Area 7: A course taken to satisfy another area of the CLE that is listed within Area 7 will satisfy the Area 7 requirement simultaneously. Area 6: courses that are in both Area 2 and 6 CANNOT be used to count for both areas for an individual student				

Electives: The ME degree requires 15 credits of approved technical electives. A maximum of 6 credits of technical elective may be taken from List #2. Up to 12 credits of technical electives may be taken for a grade of Pass/Fail. Please see attached list for technical elective choices.

Change of Major Requirements: Please see http://www.enge.vt.edu/undergraduate-changing-majors.html .

Foreign Language Requirements: Students must have had 2 years of a foreign language in high school or one year at the college level (6 credit hours) of the same language. College-level credits used to meet this requirement do not count towards the degree.

Satisfactory Progress Towards Degree: University Policy 91 outlines university-wide minimum criteria to determine if students are making satisfactory progress towards the completion of their degrees. The ME Department fully supports this policy. Specific expectations for satisfactory progress for Mechanical Engineering majors are as follows:

- Each student must meet the minimum University-wide criteria as described in Policy 91 and summarized in the Undergraduate Catalog (under Academic Policies)
- Once a student is in the ME major, a student must:
  - Complete a minimum of 12 credits that apply toward the ME degree during each 12 month period
  - Maintain an in-major GPA (in-major is calculated using all courses taught under the ME and NSEG designators) of at least 2.00;
  - Maintain an extended in-major GPA (extended in-major is calculated using all courses taught under the ME and NSEG designators plus ESM 2104, 2204 and 2304) of at least 2.00
  - Complete ESM 2104, Math 2114 and MATH 2204 within 45 attempted required course credits (not to include CLE courses, technical electives or free electives)
  - Complete ESM 2304, ME 2124 and MATH 2214 within 60 attempted required course credits (not to include CLE courses, technical electives or free electives)
  - Complete ME 3124, 3514, and 3614 within 72 attempted required course credits (not to include CLE courses, technical electives or free electives)
  - Complete ME 4006, 4015, and 4124 within 90 attempted required course credits (not to include CLE courses, technical electives or free electives)

Prerequisites: For more information on pre-requisites, co-requisites, and non-degree courses, please consult the Undergraduate Course Catalog (http://www.undergradcatalog.registrar.vt.edu). There are no hidden pre-requisites.

Graduation Requirements: Each student must complete at least 131 semester credit hours with a minimum overall GPA of 2.00 and a minimum in-major GPA of 2.00. In-major GPA is determined from all courses with ME and NSEG (nuclear) designators.

Course Offerings: Sophomore- and junior-level ME courses are generally offered both in the semester when they are listed in this checksheet and in the following semester. Senior-level ME courses are generally offered only in the semester when they are listed in this checksheet. Students planning to take courses in semesters other than those listed in this checksheet should consult the ME undergraduate advising office.

Department of Mechanical Engineering Technical Elective Lists for Students Graduating in 2018

Technical electives must be selected from either List #1 or a combination of Lists #1 and List #2.
A maximum of 6 credits are allowed from List #2.

Department of Mechanical Engineering Technical Elective List #1

Aerospace and Ocean Engineering: Any 3000 or 4000 level AOE course except 3014, 3034, 3044, 3094, 4024, 4065, 4066, 4234, 4974*, 4984**, 4994*.

Biological Systems Engineering: 3324, 3334, 3504, 3524, 4304, 4344, 4544, 4604.

Biomedical and Veterinary Science: 4064.

Biomedical Engineering: Any non-duplicating 3000 or higher level BMES courses except 4974*, 4984**, 4994* & 5974*.

Building Construction: Any 3000 or 4000 level BC course except 4974*, 4984**, and 4994*.

Chemical Engineering: 3134, 3144, 3184, 4104, 4134, 4185, 4186, 4214, 4224, 4544.

Chemistry: 3114, 3124, 3615, 3616, 3625, 3626, 4074, 4114, 4124, 4404, 4424, 4524, 4534, 4554, 4615, 4616, 4634, 4734.

Civil and Environmental Engineering: Any 3000 or 4000 level CEE course except: 3304, 3684, 4034, 4804, 4974*, 4984**, and 4994*.

Computer Science: 3214, 3304, 3704, 3714, 3724, 3824, 4104, 4114, 4204, 4214, 4234, 4244, 4254, 4304, 4414, 4504, 4570, 4604, 4704, 4804.

Electrical and Computer Engineering: Any 3000 or 4000 level ECE course except 3054, 3204, 3254, 3274, 4324, 4405-4406, 4415, 4974*, 4984**, 4994*

Engineering: 3124, (3134 or 4134)

Engineering Science and Mechanics: 3054, 3064, 3124, 3154, 4024, 4044, 4084, 4105, 4106, 4114, 4154, 4204, 4224, 4234, 4245, 4246, 4304, 4444, 4614, 4734

Geological Sciences: 3104, 4164.

Industrial and Systems Engineering: 3004, 3414, 3614, 3624, 4004, 4015, 4016, 4204, 4264, 4304, 4404, 4414, 4424, 4624, 4644, 4654

Materials Science and Engineering: Any 3000 or 4000 level MSE course except 3094, 3884, 4075, 4076, 4085, 4086, 4095, 4096, 4894, 4900, 4974*, 4984**, 4994*.

Mathematics: 3034, 3214, 3224, 4124, 4225, 4226, 4234, 4245, 4246, 4404, 4425, 4426, 4445, 4446, 4564, 4574

Mechanical Engineering: Any non-required or non-duplicating 3000 or higher level ME course except 3114, 3134, 4454, 4974*, 4994*, and 5974*.

Mining and Minerals Engineering: Any 3000 and 4000 level MINE course except: 3074, 4124, 4144, 4535, 4536, 4554, 4974*, 4984**, 4994*.

Nuclear Engineering: Any non-duplicating 3000 or higher level NSEG course except: 4974*, 4984**, 4994*.

Physics: 3355, 3356, 3405, 3406, 3655, 3656, 3704, 4315, 4316, 4455, 4456, 4504, 4554, 4574, 4614, 4624, 4674, 4714.

Statistics: Any 3000 or 4000 level Stat course except: 3XXX, 3005, 3604, 3704, 3615, 4604, 4524, 4705, 4714, 4724, 4804, 4954, 4964, 4974*, 4984**, 4994*.

Urban Affairs and Planning: 4394

Department of Mechanical Engineering Technical Elective List #2 – Maximum of 6 credits from this list

Biological Systems Engineering: 2484.

Biomedical Engineering: 2104.

Chemistry: 2514, 2535, 2536, 2545, 2546.

Computer Science: 2505, 2114, 3114.

English: 3764, 3814, 4804, 4814, 4824.

Education, Curriculum & Instruction: 4454

Electrical & Computer Engineering: 2164

French: 2105, 2106, 3105, 3106. Credit is only granted if 9 additional engineering credits (taught in French) are earned at a foreign educational institution after completion of these language courses***.

German: 2105, 2106, 3105, 3106. Credit is only granted if 9 additional engineering credits (taught in German) are earned at a foreign educational institution after completion of these language courses***.

Industrial Design: 2044.

Industrial and Systems Engineering: 2014, 2204.

Mechanical Engineering: 4454, 4974*, 4994*, 5974*.

Russian: 2105, 2106, 3105, 3106. Credit is only granted if 9 additional engineering credits (taught in Russian) are earned at a foreign educational institution after completion of these language courses***.

Spanish: 2105, 2106, 3105, 3106. Credit is only granted if 9 additional engineering credits (taught in Spanish) are earned at a foreign educational institution after completion of these language courses***.

*Any 4974, 4994, and 5974 course from any department on List #1 or #2 other than ME must be approved on an individual course basis; see departmental advisor to request technical elective credit for these courses. All 4974, 4994, and 5974 courses (whether from ME or another department) count toward the 6 credit limit associated with List #2.

**Any 4984 course from any department on List #1 or #2 other than ME must be approved on an individual course basis; see departmental advisor to request technical elective credit for these courses. The approval process for non-ME 4984 courses will also determine whether they count toward the 6 credit limit associated with List #2. ME 4984 is an approved List #1 technical elective.

*** See departmental advisor to request technical elective credit for the foreign language courses after you have completed your 9 credits of technical courses in that language at a foreign institution.

NOTE #1: Students are responsible for checking the prerequisite courses for any listed technical elective course. Many courses on the lists require one or more prerequisite courses. Students may need to get permission from the department offering a course to sign up for non-ME courses.

NOTE #2: A student will not receive technical elective credit for more than one course covering essentially the same material. If two courses have similar descriptions or appear to partially duplicate material, students should check with their academic advisor before attempting to take both for technical elective credit (or if the technical elective partially duplicates material in any required ME course).