

Volgenau School of Engineering - Mechanical Engineering, BS

Catalog Year: 2019 - 2020		Grades		
Mason Core Requirements (18 credits)	Course Information	Credits	Earned	Needed
Written Communication:	ENGH 101 (100)	3		
*Oral Communication	*Satisfied by Major Requirements			
*Quantitative Reasoning	*Satisfied by Major Requirements			
*Information Technology	*Satisfied by Major Requirements			
Arts		3		
Global Understanding		3		
Literature		3		
*Natural Science	*Satisfied by Major Requirements			
*Social & Behavioral Science	*Satisfied by ECON 103			
Western Civ/World History		3		
**Written Communication	ENGH 302 - **Natural Science Section Only	3		
*Capstone/Synthesis	*Satisfied by Major Requirements			
Major Requirements (106-107 credits) Students must complete all math, science and Volgenau School of Engineering courses presented as part of the required 121 credits for the degree with a grade of C or better				
Mechanical Engineering Core Requirements (61 credits)		Credits	Earned	Needed
ECE 330	Circuit Theory	3		
ME 151	Practicum in Engineering	2		
ME 211	Statics	3		
ME 212	Solid Mechanics	3		
ME 221	Thermodynamics	3		
ME 231	Dynamics	3		
ME 311	Mechanical Experimentation I	1		
ME 313	Material Science	3		
ME 321	Mechanical Experimentation II	1		
ME 322	Fluid Mechanics	3		
ME 323	Heat Transfer	3		
ME 331	Mechatronics	3		
ME 341	Design of Mechanical Elements	3		
or ME 342	Design of Thermal Systems			
ME 352	Entrepreneurship in Engineering	3		
ME 432	Control Engineering	4		
ME 443	Mechanical Design I	3		
ME 444	Mechanical Design II (Mason Core)	3		
ME 453	Developing the Societal Engineer	2		
Technical Electives (12 credits) from: ME 431, 454, 471, 498, 499,		12		
Additional Support Coursework (45-46 credits)				
COMM 100 or 101	Public Speaking or Fundamentals of Communication	3		
ECON 103	Contemporary Microeconomic Principles	3		
CHEM 211/213 or CHEM 271/271	General Chemistry with Lab or General Chemistry for Engineers with Lab	4		
CS 112	Introduction to Computer Programming	4		
MATH 113	Analytic Geometry and Calculus I	4		
MATH 114	Analytic Geometry and Calculus II	4		
MATH 213	Analytic Geometry and Calculus III	3		
MATH 214	Elementary Differential Equations	3		
ME 351	Analytical Methods in Engineering	3		
PHYS 160/161	University Physics I	4		
PHYS 260/261	University Physics II	4		
One from the following: BIOI 213, 309; CHEM 212/214, 300, 333; CLIM 411, 412, 429; EVPP 210; GEOL 412; PHYS 262/263; PHYS 331; MATH 203, MATH 290, MATH 301, MATH 302, MATH 312, MATH 313, MATH 314, MATH 351, MATH 441; STAT 344, STAT 346		3-4		
Advisor Notes:				



Volgenau School of Engineering

MECHANICAL ENGINEERING, B.S. 2019 - 2020

Today, the role of the mechanical engineer is ever expanding in order to find innovative solutions for contemporary problems, and to address problems yet to be identified. To meet the growing demands of worldwide energy needs spurred by population growth and dwindling supplies of fossil fuels, for instance, mechanical engineers seek innovations in nuclear energy, biofuels, wind, and tidal energies to build an energy portfolio that exploits these seemingly limitless resources. From design to manufacturing, an awareness of stealth threats to product realization – due to an ever present cyber threat – is in the minds of mechanical engineers. Now more mechanical engineers oversee the operations and management of large systems along with the fiscal and human resources needed to run them.

James Michener once said, “Scientists dream about doing great things. Engineers do them.” Mechanical engineers use science to advance technologies and to develop products for the benefit of society, in a discipline which dates back to the earliest of times in civilization. The major in mechanical engineering has three program education objectives, namely:

- Graduates have demonstrated success as a mechanical engineer or their chosen career field;
- Graduates have advanced their educational pursuits through graduate education, professional registration, or similar means;
- Graduates have advanced their careers by engaging in professional society participation and community service outreach

Degree Requirements

Degree requirements include 121 credits distributed in three main areas: mathematics and basic science, humanities and social sciences, and mechanical engineering. Students must complete all math, science and Volgenau School of Engineering courses presented as part of the required 121 credits for the degree with a grade of C or better.

2019-2020 Sample Schedule for Undergraduate Mechanical Engineering Majors

First Semester

CHEM 211/213 or CHEM 271/272	4
ECON 103 Contemp. Microeconomic Prin.	3
MATH 113 Analytic Geometry and Calculus I	4
Mason Core*	3
Total	14

Second Semester

CS 112 Intro to Computer Programming	4
MATH 114 Analytic Geometry and Calculus II	4
ME 151 Practicum in Engineering	2
PHYS 160 University Physics I	3
PHYS 161 University Physics I Lab	1
Total	14

Third Semester

MATH 213 Analytic Geometry and Calculus III	3
ME 211 Statics	3
PHYS 260 University Physics II	3
PHYS 261 University Physics II Lab	1
Mason Core*	3
Mason Core*	3
Total	16

Fourth Semester

MATH 214 Elem. Differential Equations	3
ME 212 Solid Mechanics	3
ME 221 Thermodynamics	3
ME 231 Dynamics	3
Mason Core*	3
Total	15

Fifth Semester

ECE 330 Circuit Theory	3
ME 311 Mechanical Experimentation I	1
ME 313 Material Science	3
ME 322 Fluid Mechanics	3
ME 341 or ME 342 Design Elective	3
ME 351 Analytical Methods in Engr	3
Total	16

Sixth Semester

ENGH 302 Adv Comp (Nat Sci section) ***	3
Math/Science Elective	3
ME 321 Mechanical Experimentation II	1
ME 323 Heat Transfer	3
ME 331 Mechatronics	3
ME 352 Entrepreneurship in Engineering	3
Total	16

Seventh Semester

ME 432 Control Engineering	4
ME 443 Mechanical Design I	3
ME 453 Developing the Societal Engineer	2
Technical Elective	3
Technical Elective	3
Total	15

Eighth Semester

ME 444 Mechanical Design II	3
Technical Elective	3
Technical Elective	3
Mason Core*	3
Mason Core*	3
Total	15

* <http://masoncore.gmu.edu> One course from each Mason Core Categories: ENGH 101, Oral Communication, Literature, Arts, Western Civilization/World History, and Global Understanding. VSE students do not need to seek out IT, Quantitative Reasoning, Natural Science, and Social & Behavioral Sciences categories as they are built into the major curriculum.

*** ENGH 101 and Mason Core-Literature must be completed before taking ENGH 302.

For more information about this program:

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