

B.S.M.E. DEGREE IN MECHANICAL ENGINEERING AND ENGINEERING SCIENCE

FRESHMAN YEAR

ENGR 1201	INTRO TO ENGR I	2	ENGR 1202	INTRO TO ENGR II	2
MEGR 1100 or CHEM 1251/1251L*	INTRO MATH & SCI FOR ENGR or CHEMISTRY I & CHEM I LAB	4	PHYS 2101	PHYSICS I	3
MATH 1241	CALCULUS I	3	PHYS 2101L	PHYSICS I LAB	1
SCIENCE ELECTIVE ³		3	MATH 1242	CALCULUS II	3
LBST 110x ⁴	ARTS AND SOCIETY	3	UWRT 1103/1104	WRITING & INQUIRY	3/4
			LBST 2101, 2102 or 221x ⁴		3
* MEGR freshmen are required to take either MEGR 1100 ⁸ or CHEM 1251/1251L.		15			15/16

SOPHOMORE YEAR

PHYS 2102	PHYSICS II	3	MEGR 2180	MANUF. SYSTEMS	3
PHYS 2102L	PHYSICS II LAB	1	MEGR 2156	DESIGN PROJ. LAB I	2
MEGR 2141	ENGR MECHANICS I	3	MEGR 2144	SOLID MECHANICS	3
MATH 2171	DIFF. EQUATIONS	3	MATH 2241	CALCULUS III	3
ECON 2101 or 2102	ECONOMICS	3	ECGR 2161	BASIC ELECT. ENGR	3
LBST 2301 ⁴	CRITICAL THINKING & COMM.	3	MEGR 2240	COMPUTATIONAL METHODS	3
MEGR 2299 ⁵	INTRO TO MOTORSPORTS ENG	1	MEGR 2499 ⁵	INTRO TO ENERGY ENG	1
MEGR 2279 ⁵	INTRO TO BIOMEDICAL ENG	1			
		16/17			17/18

JUNIOR YEAR

MEGR 3111	THERMODYNAMICS I	3	MEGR 3112	THERMODYNAMICS II	3
MEGR 3121	DYNAMIC SYSTEMS I	3	MEGR 3122	DYNAMIC SYSTEMS II	3
MEGR 3161	ENGR MATERIALS	3	MEGR 3114	FLUID MECHANICS	3
MEGR 3171	MEAS. & INSTRUM.	2	MEGR 3156	DESIGN PROJ. LAB II	2
MEGR 3171L	INSTRUM. LAB	2	MEGR 3116	HEAT TRANSFER	3
ME TECHNICAL ELECTIVE ^{2,5}		3	MEGR 3152	MECHS & MATRLS LAB	2
		16			16

SENIOR YEAR

MEGR 3X55/3275 ⁵	SENIOR DESIGN I ⁶	2	MEGR 3X56/3276 ⁵	SENIOR DESIGN II ⁶	2
MEGR 3251	THERMAL/FLUIDS LAB	2	ME TECHNICAL ELECTIVE ^{2,5}		3
ME TECHNICAL ELECTIVE ^{2,5}		3	ME TECHNICAL ELECTIVE ^{2,5}		3
MATH ELECTIVE ¹		3	LBST 2101, 2102 or 221x ⁴		3
MEGR 3221 or MEGR 3216 ⁷	DESIGN ELECTIVE	3	ENGR 3295	PROF. DEVELOPMENT	1
		13			12

**TOTAL REQUIRED HOURS: 120
(121 with optional concentration)**

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¹ All Mechanical Engineering students must meet the Statistics requirement described on the back of this page.

² Technical electives are described on page 2. At least three of the technical electives must be within the major. One technical elective may be outside the major if it has appropriate technical content and has prior approval.

⁶ Senior Design I for non-concentration is MEGR 3255; for Motorsports, MEGR 3355; for Energy, MEGR 3455; for Biomedical, MEGR 3275.

⁸ MEGR 1100 - Foundations of Math and Science for Engineers; pre-/co-requisite: ENGR 1201; a blend of chemistry, math and science

PROGRAM ELECTIVES

MATH and STATISTICS¹

All MEGR students are required to complete: a) a math elective and b) a course with appropriate statistics content. Option 1 for fulfilling the combination of the math elective and the statistics requirement is STAT 3128. Option 2 is to use the technical elective MEGR 3282 to fulfill the statistics requirement while also taking MATH 2164 or MATH 3171 as the math elective. The math elective will not also count as a technical elective. For either option, five courses are required to fulfill the requirements of math, statistics and technical electives.

Option 1 – STAT 3128 fulfills math elective and statistics requirements (plus students will need four technical electives).

Option 2 – MEGR 3282 plus MATH 2164 or MATH 3171 (plus students will need three additional technical electives).

SCIENCE ELECTIVE³

The courses available to fulfill the science elective are PHYS 1130 (Astronomy), BIOL 1110, CHEM 1252, or GEOL 1200. A lab is not required for the science elective. Students who wish to pursue a concentration in Biomedical Engineering should choose BIOL 1110 for the science elective.

DESIGN ELECTIVE⁷

The courses available to fulfill the design elective are MEGR 3216 (Thermal Fluids Design) or MEGR 3221 (Machine Analysis and Design). Students must select one of these two options to fulfill the design elective and meet the required prerequisites to enroll. Students who elect to take both MEGR 3216 and MEGR 3221 will satisfy a technical elective requirement in addition to the design elective requirement.

TECHNICAL ELECTIVES²

Students must take four Technical Electives. Mechanical Engineering technical electives include:
(B- Biomedical, E- Energy, M- Motorsports)

MEGR 309X: Designated as approved technical electives	MEGR 3242: Applied Vehicle Aerodynamics - <i>M</i>
MEGR 3210: Automotive Power Plants - <i>M, E</i>	MEGR 3243: Automotive Powertrain Lab - <i>M</i>
MEGR 3211: Road Vehicle Dynamics - <i>M</i>	MEGR 3244: Tire Mechanics - <i>M</i>
MEGR 3214: Refrigeration and A/C - <i>E</i>	MEGR 3245: Advanced Experimental Methods - <i>M</i>
MEGR 3225: Introduction to Finite Element Analysis - <i>B, E, M</i>	MEGR 3260: Clean Coal Technology - <i>E</i>
MEGR 3231: Advanced CAD/CAM - <i>M</i>	MEGR 3261: Sustainable Energy - <i>E</i>
MEGR 3232: Plastic Part Design - <i>B</i>	MEGR 3262: Turbomachinery - <i>E</i>
MEGR 3233: Introduction to Biomaterials - <i>B</i>	MEGR 3270: Biomedical Fluidics: Microfluidics - <i>B</i>
MEGR 3234: Introduction to Biodynamics - <i>B</i>	MEGR 3271: Biomedical Manufacturing: 3D Biofabrication - <i>B</i>
MEGR 3235: Waves and Optics	MEGR 3282: Statistical Process Control and Metrology - <i>M, E</i>
MEGR 3236: Introduction to Nanoscale Science and Engineering	MEGR 3283: Metrology and Precision Engineering
MEGR 3237: Introduction to Control Systems - <i>M, E</i>	MEGR 3451: Stationary Power Plant Systems - <i>E</i>
MEGR 3238: Microscopy for Engineering - <i>B</i>	MEGR 3452: Introduction to Nuclear Engineering - <i>E</i>
MEGR 3240: Advanced Automotive Power Plants - <i>M</i>	MEGR 4143: Discrete Mechanical Vibrating Systems
MEGR 3241: Motorsports Instrumentation - <i>M</i>	

LIBERAL STUDIES⁴

UNC Charlotte's General Education program requires students to satisfy the general education Liberal studies core curriculum with appropriate courses from the following: LBST 110x, LBST 2101, LBST 2102, LBST 221x, and LBST 2301. Students on the fall 2017 catalog of general education requirements will need to complete: LBST 110x, LBST 2301 and two different courses chosen from LBST 2101, LBST 2102, and LBST 221x. Transfer students and students on older general education catalogs may have different requirements. All students should consult the University Catalog for official requirements for general education.

CONCENTRATIONS⁵

BSME students may elect to complete an optional concentration requiring a one credit hour introductory course, technical electives approved for the chosen concentration, and a senior design sequence focused in the concentration area.

Motorsports Engineering Concentration	Energy Engineering Concentration	Biomedical Engineering Concentration
<ul style="list-style-type: none"> • MEGR 2299 Intro to Motorsports Engineering • MEGR 3355 Motorsports Senior Design I • MEGR 3356 Motorsports Senior Design II 	<ul style="list-style-type: none"> • MEGR 2499 Intro to Energy Engineering • MEGR 3455 Energy Senior Design I • MEGR 3456 Energy Senior Design II 	<ul style="list-style-type: none"> • MEGR 2279 Intro to Biomedical Engineering • MEGR 3275 Biomedical Senior Design I • MEGR 3276 Biomedical Senior Design II