

Materials Science and Engineering BS Curriculum Flow Chart

	I Fall	II Spring	III Fall	IV Spring	V Fall	VI Spring	VII Fall	VIII Spring
Mathematics Foundations	Math 221 Calc I ⁵	Math 222 Calc II ⁴ (Math 221)	Math 234 MultiVarCalc ⁴ (Math 222)	Math ³ 319 or 320 ODE's Linear Alg. (Math 222)				
Physics Foundations	Intro to Engineering MSE 260 preferred ²	Physics I ⁵ Phys 201, 207 or 247 (Math 221)	Computer Sciences ³⁻⁴ Choose from list	Physics II ⁵ Phys 202, 208 or 248 (Phys I)		Statistics ³ 324 (Math 221)		
Chemistry Foundations	General Chemistry ⁴⁻⁵ Chem 109 or 103 & 104	Science Elective ³⁻⁵ Choose from list			Chem ³ 343 or 341 O-Chem (Gen Chem)		Tech Emphasis Elective ³	
Structure-Property Rel's			MSE 351 ³ Intro MSE (Gen Chem & Math 222)	MSE 352 ³ Phys Mat (MSE 351)	MSE 451 ³ Ceramics (MSE 352 & 330 Concur)	Tech Emphasis Elective ³	MSE 421 ³ Polymer Materials (O Chem)	MSE 441 ³ Deformation (MSE 352)
Emphasis Areas			MSE 360 ² Intro Lab 351 Concur	MSE 361 ² Lab 2 (MSE 351 & MSE 360)	MSE 362 ³ Lab 3 (MSE 361)	MSE 331 ³ Transport (MSE 330, Math 319/320)	MSE 456 ³ EOM Props (MSE 351, Physics II)	MSE 460 ³ Computation (MSE 352)
Thermo. Transport, Processing			MSE 330 ⁴ Thermo (Gen Chem & Math 222)		MSE 332 ³ Macro- Processing (MSE 351)	MSE 333 ³ Micro- Processing (MSE 351)	MSE ³ Emphasis Elective	MSE ³ Emphasis Elective
Professional Skills	Comm A ³ ENG 100, LSC 100, CA 100 or ESL 118				*Free Elective if credits are needed ²		MSE 470 ¹ Capstone Project I (MSE 352, 331, 362 concur)	MSE 471 ³ Capstone Project II (MSE 470)
Liberal Studies	Liberal Studies ³	Liberal Studies ³		Liberal Studies ³	Liberal Studies ³	Liberal Studies ⁴	*Free Elective if credits are needed ²⁻³	EPD/Inter EGR 397 Technical Writing ³
Credits	17-18	15-17	16-17	16	15-17	16	13-16	15

*Requites pending approval

Materials Science and Engineering BS Degree Requirements

for students beginning in or after Fall 2019

Underpinning Mathematics/Science: (min 40 cr)

Mathematics (16 cr)

Math 221	Calculus and Analytical Geometry
Math 222	Calculus and Analytical Geometry
Math 234	Calculus-Functions of Several Variables
Math 319	Ordinary Differential Equations (DEQs)
or Math 320	Linear Algebra and DEQs

Statistics (3 cr)

Stat 324	Introductory Applied Statistics for Engineers
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Physics (10 cr)

Phys 201	or Phys 207 or Phys 247 General Physics I
or EMA 201 and EMA 202	
Phys 202	or Phys 208 or Phys 248 General Physics II

Chemistry (min 8 cr)

Chem 109	Advanced General Chemistry
or Chem 103 & 104	General Chemistry
Chem 343	Introductory Organic Chemistry
or Chem 341,	also Intro Organic Chemistry

Science Elective (min 3 cr) Select one of:

Chem 311	Chemistry Across the Periodic Table
Chem 327	Fundamentals of Analytical Science
Chem 329	Fundamentals of Analytical Science
Chem 345	Intermediate Organic Chemistry
Phys 205	Modern Physics for Engineers
Phys/ECE 235	Introduction to Solid State Electronics
Phys 241or244	Intro to Modern Physics
Biology 101	Animal Biology
Biology 151	Introductory Biology
Zoology 153	Introductory Biology

Engineering Foundation: (min 4 cr)

Intro to Engineering Elective:

Select from CoE Intro to Eng. Courses, MSE 260 preferred 2 cr.

Computer Science* (min 3 cr) Select one of:

- CS 220 or 320 Data Programming I (recommended) or II
- CS 200, 300 or 400 Programming I, II or III*

- Among CS options, 220 is most recommended. 300 may alternatively be of interest to students emphasizing computational materials science. 200 or 400 may be substituted for 300 depending on prior CS experience.

Notes:

- Except for the liberal studies requirements, the same course credits may be applied to only degree elective requirement. MS&E follows the College of Engineering policies with regard to application of liberal studies credits across the liberal studies requirements.

MSE Disciplinary Core Courses: (43 cr)

MSE 330	Thermodynamics of Materials
MSE 331	Transport Phenomena in Materials
MSE 332	Macroprocessing of Materials
MSE 333	Microprocessing of Materials
MSE 351	Mat Sci-Structure Property Relationships
MSE 352	Materials Science-Transformation of Solids
MSE 360	Materials Laboratory I
MSE 361	Materials Laboratory II
MSE 362	Materials Laboratory III
MSE 421	Introduction to Polymer Materials
MSE 441	Deformation of Solids
MSE 451	Introduction to Ceramic Materials
MSE 456	Electrical, Optical and Magnetic Properties
MSE 460	Introduction to Computational Mat Sci
MSE 470	Capstone Project I
MSE 471	Capstone Project II

Emphasis Electives: (12 cr)

Select 6 credits of MSE courses numbered 400 or above, BME 400, ME 417, ME 418, and ME 419. These courses constitute the MSE portion of the Emphasis Electives on the curriculum flow chart. #

#Independent study MSE 699 does not count towards these credits

Select 6 additional credits of engineering, science, and math/statistics coursework related to your chosen Emphasis area. These can come from MSE courses numbered 400 or above and other engineering, science, math, and statistics courses numbered 300 or above. These courses constitute the Tech Emphasis Electives on the flow chart%.

%At most, 3 of these credits may come from MSE 699, MSE 001 co-op, and independent study courses in other engineering departments

All emphasis electives must be chosen in consultation with and approved by your MSE faculty advisor before the advisor consent on your DARS is satisfied.

Additional College and University Requirements: (22 cr)

Communications (6 cr)

EPD 397	Technical Communication
Comm A	ENG 100, LSC 100, COM ARTS 100 or ESL 118

Liberal Studies Electives (16 cr).

Same as College of Engineering Liberal Studies Elective requirements.

Credit Minimum for Graduation: 128 cr

The above subject requirements can be met with 123 credits of UW courses. Students must complete 128 credits of course work to earn the Bachelor of Science degree. The 5 elective credits may be earned by choosing elective courses that carry more credits than the requirement's minimum credit load or by taking any additional courses of the student's choice.