

## Approved alternatives for some MSE required courses

Listed in the following are some courses on Homewood campus that the MSE department has approved *a priori* as choices for satisfying the MSE requirements. These are alternatives that each has a title very similar, or a content roughly equivalent, to the courses we require, such that a separate substitution/waiver form is *not* necessary (although you may choose to keep one for your record). In other words, the student and his/her faculty advisor can simply fill the slot in the check/sign-off list (see Advising Manual) with one of these pre-approved choices.

To use other relevant courses as substitution, i.e., candidate classes that are not equivalent to our courses, you need to obtain permission from the faculty advisor and UG Committee using the Substitution/Waiver form.

This list will be updated as needed by the MSE faculty and posted on the MSE website.

### BASIC SCIENCES AND ENGINEERING

- Letter grade of C- or higher
- 28 total credits

Course #	Course name and credits	Alternative	Dept.	Credits to receive	Notes
171.101	General Physics I (4)				
171.102	General Physics II (4)				
173.111	General Physics I Lab (1)				
173.112	General Physics II Lab (1)				
030.101	Intro Chem I (3)				
030.102	Intro Chem II (3)				
030.105	Intro Chem Lab I (1)				
030.106	Intro. Chem Lab II (1)				
030.205	Intro. Organic Chemistry I (4)				
500.114	Gateway Computing (3)	510.112 GC Java + (recommended) Matlab bootcamp	WSE	3+1	
		510.113 GC Python + (recommended) Matlab bootcamp	WSE	3+1	
660.363	Leadership & Management for MSE (3)	660.361 Engineering Business and Management (MechE version)	CLE	3	

### MATHEMATICS

- Letter grade of C- or higher
- 20 total credits

Course #	Course name & credits	Alternative	From dept.	Credits to receive	Notes
110.108	Calculus I (4)				
110.109	Calculus II (4)				
110.202	Calculus III (4)				
553.291	Linear Algebra & Differential Equations (4)	110.201 or 110.202 LA (4) + 110.302 DE (4)  i.e., take two separate from Math, not the combined one from Appl Math	Math	4+4	Use excess credits for General Math elective
553.310	Probability & Statistics for Phys. Sci. Eng. (4)	553. 311 Probability and Statistics for the Biological Sciences and Engineering (4)  or  560.348 Probability & Statistics for Engineers (3)	Appl. Math   Civil	4   3	   Need to find one more Math credit

#### GENERAL MATHEMATICS, SCIENCE AND ENGINEERING ELECTIVES

- Three courses of 200-level or above in engineering, natural sciences or mathematics
- 9 credits
- At least one of the three electives must be from another department in WSE

Course #	Course name & credits	Alternative	From dept.	Credits	Notes	WSE Dept.
580.221	Biochemistry and Molecular Engineering (4), required for Biomater. track	AS.020.306 Cell Biology (4) + AS.020.305 Biochemistry (4)  or  EN.540.307 Cell Biology for Engineers (3) + AS.020.305 Biochemistry (4)	Biology   ChemBE + Biology	4+4   3+4	   use the excess credits to satisfy General Science elective	No. They are from Krieger   Yes, the first one is from WSE