

THE MATHEMATICS REQUIREMENT

The mathematics requirements for departmental and School of Engineering majors are delineated in the detailed “Program Requirements” section at the back of the Handbook. In general, each program requires a number of specific and elective courses from the list of approved courses shown in Figure 3-1. Individually Designed Majors must include at least 21 units from the list. All engineering students should check the “Program Requirements” pages for their major to see which mathematics courses are recommended or required.

FIGURE 3-1. COURSES APPROVED FOR THE MATHEMATICS REQUIREMENT

| Course | Title | Units |
|---|--|---------|
| MATH 19, 20, 21 | Calculus of a Single Variable | 3, 3, 4 |
| MATH 41, 42 | Calculus of a Single Variable | 5, 5 |
| MATH 51, 52, 53 | Calculus of Several Variables | 5, 5, 5 |
| MATH 51H, 52H, 53H | Honors Calculus | 5, 5, 5 |
| MATH 103, 104 | Matrix Theory and Its Applications | 3, 3 |
| MATH 106 | Intro. to Theory of Functions of a Complex Variable | 3 |
| MATH 109 | Modern Algebra and Its Applications | 3 |
| MATH 113, 114 | Linear Algebra and Matrix Theory | 3, 3 |
| MATH 115 | Fundamental Concepts of Analysis | 3 |
| MATH 120, 121 | Modern Algebra I, II | 3 |
| MATH 130, 131, 132 | Differential Equations | 3, 3, 3 |
| <i>or more advanced Mathematics courses.</i> | | |
| STATS 60/160 | Introduction to Statistical Methods: Precalculus | 5 |
| STATS 110 | Statistical Methods in Engineering | 4 |
| STATS 116 | Theory of Probability | 3-4 |
| <i>or more advanced Statistics courses numbered over 100.</i> | | |
| AA 192 | Vector and Tensor Analysis | 3 |
| CHEMENG 220 | Applied Mathematics in Chemical Engineering | 3 |
| CEE 101D | Seminar on Mathematical Lab Applications in CEE | 2 |
| CEE 203 | Statistical Models in Civil Engineering | 4 |
| CS 137 | Introduction to Scientific Computing | 4 |
| CS 237A, B, C | Advanced Numerical Analysis | 3, 3, 3 |
| CS 260 | Concrete Mathematics | 3 |
| ENGR 62 | Introduction to Optimization | 4 |
| ENGR 154 | Introduction to Engineering Mathematics | 5 |
| ENGR 155A, 155B, 155C | Mathematical and Computational Methods for Engineers | 5,5,4 |
| ENGR 160 | Ordinary Differential Equations and Their Applications | 3 |
| GES 160 | Statistical Methods for Earth and Environmental Sciences | 4 |
| MS&E 120 | Probabilistic Analysis | 5 |
| MS&E 121 | Intro to Stochastic Modeling | 4 |
| MATSCI 191 | Mathematical Methods in Materials Science | 3 |