

Engineering

[ENGR 2300](#) Linear Algebra for Engineers (3 semester credit hours) Matrices, vectors, linear systems of equations, Gauss-Jordan elimination, LU factorization and rank. Vector spaces, linear dependence/independence, basis, and change of basis. Linear transformations and matrix representation; similarity, scalar products, orthogonality, Gram-Schmidt procedures, and QR factorization. Determinants: eigenvalues, eigenvectors, and diagonalization. Introduction to problem solving using MATLAB. This course includes a required laboratory. Credit cannot be received for both courses, [ENGR 2300](#) and [MATH 2418](#). Prerequisite or Corequisite: [MATH 2414](#) or [MATH 2419](#). (2-1) S

[ENGR 3300](#) Advanced Engineering Mathematics (3 semester credit hours) Survey of advanced mathematics topics needed in the study of engineering. Topics include use of complex numbers, properties of complex-valued functions, scalar and vector fields, introduction to partial differential equations, and Fourier series. Examples are provided from electromagnetics, fluid mechanics, thermodynamics, and engineered systems. This course includes a required laboratory. Prerequisites: ([MATH 2415](#) or [MATH 2419](#) or equivalent) and [ENGR 2300](#). Prerequisite or Corequisite: [MATH 2420](#). (3-1) S

[ENGR 3341](#) Probability Theory and Statistics (3 semester credit hours) Axioms of probability, conditional probability, Bayes theorem, random variables, probability density/mass function (pdf/pmf), cumulative distribution function, expected value, functions of random variables, joint, conditional and marginal pdfs/pmfs for multiple random variables, moments, central limit theorem, elementary statistics, empirical distribution correlation. Credit cannot be received for both courses, ([CS 3341](#) or [SE 3341](#) or [STAT 3341](#)) and [ENGR 3341](#). Recommended Corequisite: [MATH 2420](#). Prerequisite: [MATH 2414](#) or [MATH 2419](#). (3-0) S