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/pmf 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