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. 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