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 review of complex numbers, multivariate calculus and analytic geometry. Study of polar, cylindrical, and spherical coordinates, vector differential calculus, vector integral calculus, and vector integral theorems. Examples are provided from electromagnetic, fluid mechanics, physics and geometry. Prerequisite: MATH 2415 or MATH 2419. (3-0) 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