Fifth Math Option courses

Announced Fall 2004 (updated information 02/26/2014)

MAD3401, MAD3703, MAP3306, MAP3341/MAP4341, MAS3103/MAS3105 or MAT3930, STA3034/STA3032, EML4930

FAMU #	FSU #
MAD 3401. Numerical Analysis (3). Prerequisite: MAC 2313. Programming skills required. Major topics: solutions to scalar nonlinear and finite difference equations; numerical differentiation and integration; error and convergence; general interpolation problems, interpolation and quadrature, numerical solutions of algebraic and transcendental equations. Recommended for ME students interested in computational mechanics or following Dynamic Systems and Thermal Fluids tracks.	
	MAD 3703. Numerical Analysis I (3). Prerequisites: MAC 2312 (Recommended: MAS 3105); competence in a programming language suitable for numeric computations such as C, C++, FORTRAN JAVA, or PASCAL. Root finding, interpolation and polynomial approximation, numerical differentiation and integration, direct and iterative methods for systems of linear equations Recommended for ME students interested in computational mechanics or following Thermal Fluids Track.
MAP 3306. Engineering Mathematics II (3). Prerequisite MAP 3305. Major topics: vector calculus, solution of partial differential equations by separation of variables, Sturm-Louisville problems, Fourier series, complex numbers, Cartesian tenors. Strongly recommended for ME students intending to pursue a PhD in Mechanical Engineering, Magnet Science and Technology, Materials, Thermal Fluids tracks	**MAP 3306. Engineering Mathematics II** (3). Prerequisites: MAC 2313; MAP 2302 or MAP 3305. Not open to students having credit in MAP 4341. Fourier series and Fourier transforms, introduction to partial differential equations.
MAP 3341. Partial Differential Equations (3). *Prerequisite: MAC 2313. Major topics: solution of first-order partial differential equations, classification of linear second-order partial differential equations, separation of variables, initial value and initial boundary value problems.* Recommended for ME students following Thermal Fluids Track.	**MAP 4341. Elementary Partial Differential Equations I** (3). Prerequisites: MAC 2313; MAP 2302 or 3305. Separation of variables, Fourier Series, Sturm-Liouville problems, multidimensional initial boundary value problems, nonhomogeneous problems, Bessel functions and Legendre polynomials.
MAS 3105. Linear Algebra (3). Prerequisite: MAC 2312. Major topics: investigation of systems of linear equations, matrices, vector spaces, linear transformations determinants, eigenvalues, inner product spaces. Recommended for ME students following Dynamic Systems Track, Robotics.	**MAS 3105. Applied Linear Algebra I** (4). Prerequisite: MAC 2312. Gaussian elimination, vector spaces, least squares problems, determinants, eigenvalues and eigenvectors, linear transformations, applications. **MAT3930 Comp/Linear Algebra** (3) Prerequisites: MAC2313 and MAP2302 or MAP3305. Programing Experience Helpful New Engineering Linear Algebra. Required for transfer students entering with Differential Equations.
	STA 3032 Applied Statistics for Engineers and Scientists (ME students take for 3). Prerequisite: MAC 2312. This course will cover calculus-based probability, discrete and continuous random variables, joint distributions, sampling distributions, and central limit theorem. Topics include descriptive statistics, interval estimates and hypothesis tests, ANOVA, correlation, simple and multiple regression, analysis of categorical data, and statistical quality control. Recommended for ME students interested in Materials or who will be entering industry jobs upon completion of their BS in ME. ***Required for BSMS students***
STA 3034 Mathematical Statistics (3). Prerequisite: MAC 2311. Major topics: probability, random variables, hypothesis testing, estimation Recommended for ME students who will be entering industry jobs upon completion of their BS in ME.	

EML 4930. Numerical Methods for Engineers (3). Prerequisite MAP 3305. The objective of the Numerical Methods for Engineers class is to teach programming and numerical methods to solve engineering/scientific problems in an effective and efficient manner to meet the needs of industry, government, and academia. To achieve the objective, the course will leverage on the use of MATLAB which is now the de facto standard for scientific computing. This teaching style is intended to keep students engaged and have them develop practical programming skills. The students should have completed Calculus I, II, and III (MAC2311, 2312, & 2313), and differential equations or engineering math (MAP3305 or 2302). We do not assume expert knowledge of programming for students entering this class.

Strongly recommended for ME students interested in computational mechanics or following Dynamic Systems and Thermal Fluids tracks.