COURSE OUTLINE: MTH654 - TECHNICAL MATHEMATIC

Prepared: Mathematics Department
Approved: Sherri Smith, Chair, Natural Environment, Business, Design and Culinary

Course Code: Title	MTH654: TECHNICAL MATHEMATICS
Program Number: Name	4061: AVIATION TECHNOLOGY
Department:	MATHEMATICS
Semesters/Terms:	19W
Course Description:	This course is a continuation of MTH626 and provides the student with a more advanced study of calculus. Topics of study include methods of integration, first and second order differential equations and series expansions.
Total Credits:	4
Hours/Week:	4
Total Hours:	60
Prerequisites:	MTH626
Corequisites:	There are no co-requisites for this course.
Substitutes:	OEL1003
Essential Employability Skills (EES) addressed in this course:	EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems.
Course Evaluation:	Passing Grade: 50%, D
Books and Required Resources:	Basic Technical Calculus with Analytic Geometry by A. J. Washington Publisher: Pearson Edition: 10

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Methods of Integration:	1.1 Use the General Power formula to integrate functions including transcendental integrands. 1.2 Integrate functions using the Basic Logarithmic form. 1.3 Integrate functions using the Exponential form. 1.4 Integrate functions using various trigonometric forms. 1.5 Integrate functions using the technique of integration by parts. 1.6 Integrate functions using the technique of trigonometric substitutions. 1.7 Integrate functions using the technique of partial fractions. 1.8 Integrate functions using a table of integrals.

Course Outcome 2	Learning Objectives for Course Outcome 2
2. Expansion of Functions in Series:	2.1 Understand what an infinite series is and identify convergent and divergent series. 2.2 Use the Maclaurin Series to expand various functions.

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	2.3 Perform operations with known series to find new series. 2.4 Use the Taylor Series to expand various functions. 2.5 Use formulas for constants and coefficients to find Fourier Series expansions for functions
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Differential Equations:	3.1 Prove that a given equation is a solution of a given differential equation. 3.2 Use the method of Separation of Variables to solve differential equations. 3.3 Use the method of Integrating Combinations to solve differential equations. 3.4 Solve linear first order differential equations. 3.5 Solve problems in physics and technology involving first order differential equations. 3.6 Solve second order homogeneous differential equations. 3.7 Solve second order heterogeneous differential equations. 3.8 Solve problems in physics and technology involving second order differential equations. 3.9 Solve differential equations, including applications, using Laplace Transforms.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight	Course Outcome Assessed
Test 1	25%	all
Test 2	25%	all
Test 3	25%	3.1 to 3.5
Test 4	25%	3.6 to 3.9

Date: June 25, 2018

Please refer to the course outline addendum on the Learning Management System for further information.