



## I. COURSE DESCRIPTION:

This course will:

1. Review the analytic geometry of the straight line and conic sections
2. Study various methods of finding empirical equations from raw lab data
3. Study methods of integration
4. Study first and second order differential equations

## II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

### A. Learning Outcomes and Elements of the Performance:

Upon successful completion of this course, students will demonstrate the ability to:

1. Lay out graphs and find the general equations of various straight lines, circles, parabolae, ellipses and hyperbolae
2. Find the empirical equations for any set of raw lab data by various methods, two point method, method of averages for linear relationships, method of selected points on general polynomials
3. Differentiate and integrate various trig, log exponential and other functions
4. First and second order differential equations

## III. TOPICS:

<u>Topics</u>	<u>Time Allotted</u>
1. Analytic Geometry	6
2. Empirical Equations	11
3. Methods of Integrating Trig, Log Exp. Functions, etc.	24
4. Differential Equations	23

## IV. REQUIRED RESOURCES / TEXTS / MATERIALS:

1. Basic Technical Calculus with Analytic Geometry. A. J. Washington, Sixth Edition, Benjamin Cummings
2. Calculator: (Recommended) SHARP Scientific Calculator EL-531G. *The use of some kinds of calculators may be restricted during tests.*

**V. LEARNING ACTIVITIES:**

<b>Topic No.</b>	<b>Periods</b>	<b>Description</b>	<b>Required Resources</b>
1	6	Analytic Geometry:  Properties, formulae and applications of the straight line, circle, parabola ellipse and hyperbola	Washing Test - Chapter 21, pp. 536-583 Problems from: Exercise 21.1, 21.2, 21.3, 21.4, 21.5, 21.6, 21.7  Review Exercise pp. 580-582
	11	Empirical Equations:  Linear empirical equations Two point method and method of averages Non-linear empirical equations 1. General polynomial function - method of selected points 2. Power function - Two point method - Method of averaging logs - Graphical method	Handout notes, Teacher-Assigned problems, Assignments
	24	Methods of Integration: Power Formula Basic logarithmic form Exponential form Various trigonometric forms  Integration by parts Integration by trigonometric substitutions Integration by use of tables  Differential Equations: Solutions of ODEs Separation of variables Integrable combination Linear ODEs of first order Elementary applications Second order homogenous ODEs Auxiliary equation with repeated roots Solutions of non-homogenous equations Applications of second order ODEs	Washington, Chapter 28 Exercise 28-1, p. 796 Ex. 28-2, p. 800 Ex. 28-3, p. 803 Ex. 28-4, p. 806 Ex. 28-5, p. 810 Ex. 28-6, p. 814 Ex. 28-7, p. 818 Ex. 28-8, p. 821  Ex. 28-9, p. 823 Review exercises  Washington, Chapter 30 Ex. 30-1, p. 859 Ex. 30-2, p. 863 Ex. 30-3, p. 865 Ex. 30-4, p. 868 Ex. 30-5, p. 872 Ex. 30-6, p. 878  Ex. 30-7, p. 881 Ex. 30-8, p. 885 Ex. 30-9, p. 891

## VI. EVALUATION PROCESS / GRADING SYSTEM:

### MAJOR ASSIGNMENTS AND TESTING

While regular tests will normally be scheduled and announced beforehand, there may be an unannounced test on current work at any time. Such tests, at the discretion of the instructor, may be used for up to 30% of the overall mark.

At the discretion of the Instructor, there may be a mid-term exam and there may be a final exam, each of which can contribute up to 30% of the overall mark.

The instructor will provide you with a list of test dates. Tests may be scheduled out of regular class time.

### ATTENDANCE

It is your responsibility to attend all classes during the semester. Research indicates there is a high correlation between attendance and student success.

If you are absent from class, it is your responsibility to find out what work was covered and assigned and to complete this work before the next class. Your absence indicates your acceptance of this responsibility.

**Unexcused absence from a test may result in a mark of zero ("0").** Absence may be excused on compassionate grounds such as verified illness or bereavement. On return from an excused absence, you should ask your instructor to schedule the writing of a make-up test. Failure to do so will be considered as an unexcused absence.

### METHOD OF ASSESSMENT ( GRADING METHOD )

A+	Consistently outstanding	(90% -100%)
A	Outstanding achievement	(80% - 89%)
B	Consistently above average achievement	(70% - 79%)
C	Satisfactory or acceptable achievement in all areas subject to assessment	(55% - 69%)
X or R	A temporary grade, limited to situations with extenuating circumstances, giving a student additional time to complete course requirements <b>(See Below)</b>	(45% - 54%)
R	Repeat - The student has not achieved the objectives of the course, and the course must be repeated	(0% - 44%)
CR	Credit exemption	

The method of calculating your weighted average will be defined by your instructor. Since grades are based upon averages, it follows that good marks in some tests can compensate for a failing mark in another test.

**V. EVALUATION PROCESS / GRADING SYSTEM (cont'd):****Make-Up Test (if applicable)**

An "X" grade may be assigned at the end of the regular semester if you have met **ALL** of the following criteria:

- an overall average between 45% and 54% was achieved
- at least 50% of the tests were passed
- at least 80% of the scheduled classes were attended
- all of the topic tests were written

If you are assigned an "X" grade, you may convert it to a "C" grade by writing a make-up test on topics agreed to by the instructor. This test will be available at the time agreed to by your instructor.

At the end of the regular term, it is your responsibility to obtain your results from your instructor and, in the event of an "X" grade, to inquire when the make-up test will be available.

The score you receive on this make-up test will replace your original test score and be used to re-calculate your weighted average. If the re-calculated average is 55% or greater, a "C" grade will be assigned. If the re-calculated average is 55% or greater, a "C" grade will be assigned. If the re-calculated average is 54% or less, an "R" grade will be assigned.

**"R" and "X" Grades at the end of the Semester**

A student with a failing grade and poor attendance (less than 80% attendance) may be given an "R" at any time during the semester.

**VI. SPECIAL NOTES;**Special Needs

Students with special needs (e.g. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations with the professor and/or contact the Special Needs Office.

Advanced Standing

Students who have completed an equivalent post-secondary course must bring relevant documents to the Coordinator, Mathematics Department:

- a copy of course outline
- a copy of the transcript verifying successful completion of the equivalent course

Note: A copy of the transcript must be on file in the Registrar's Office.

**VII. PRIOR LEARNING ASSESSMENT**

Students who have related employment-centered experience should see the Prior Learning Assessment (PLA) Coordinator.