

COURSE IMPLEMENTATION DATE: September 1994
 COURSE REVISED IMPLEMENTATION DATE: September 2006
 COURSE TO BE REVIEWED: November 2009
 (Four years after UPAC final approval date) (MONTH YEAR)

OFFICIAL COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
 Shaded headings are subject to change at the discretion of the department and the material will vary
 - see course syllabus available from instructor

FACULTY/DEPARTMENT:	Faculty of Science, Health & Human Services / Engineering	
ENGR 257		3
COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS
	Mathematical Physics	
COURSE DESCRIPTIVE TITLE		

CALENDAR DESCRIPTION:

This course will give students a wide arsenal of mathematical techniques and tools to increase their ability in setting up and solving problems. The solution of partial differential equations with applications to many areas of physics is the biggest single theme of the course.

NOTE: This course is offered as PHYS 381, MATH 381, and ENGR 257. Students may take only one of these for credit.

PREREQUISITES: MATH 211, one of (PHYS 221, MATH 255) and either PHYS 112 or any other second year Math course.
 COREQUISITES:

SYNONYMOUS COURSE(S)	SERVICE COURSE TO:
(a) Replaces: <u>n/a</u> (Course #)	(Department/Program)
(b) Cannot take: <u>MATH 381, PHYS 381</u> for further credit. (Course #)	(Department/Program)

TOTAL HOURS PER TERM:	75	TRAINING DAY-BASED INSTRUCTION
STRUCTURE OF HOURS:		LENGTH OF COURSE: _____
Lectures:	75 Hrs	HOURS PER DAY: _____
Seminar:	Hrs	
Laboratory:	Hrs	
Field Experience:	Hrs	
Student Directed Learning:	Hrs	
Other (Specify):	Hrs	

MAXIMUM ENROLLMENT:	24
EXPECTED FREQUENCY OF COURSE OFFERINGS:	once per year
WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	<input type="checkbox"/> Yes <input type="checkbox"/> No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	<input type="checkbox"/> Yes <input type="checkbox"/> No

AUTHORIZATION SIGNATURES:

Course Designer(s): _____ Tim Cooper/Peter Mulhern	Chairperson: _____ Gillian Mimmack (<i>Curriculum Committee</i>)
Department Head: _____ Norm Taylor	Dean: _____ Jackie Snodgrass
UPAC Approval in Principle Date: _____	UPAC Final Approval Date: May 26, 2006

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

To give the student the ability to model a system, physical or otherwise, as a series of mathematical equations. To give the student the ability to solve these equations.

METHODS:

Lecture, demonstration, small group practice, discussion, audiovisual presentation, computer simulation, use of models and charts.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

Credit can be awarded for this course through PLAR (Please check:) Yes No

METHODS OF OBTAINING PLAR:

Please see the Physics PLAR policy on the department's webpage

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

C. Ray Wylie and Louis C. Barrett, Advanced Engineering Mathematics

Murray R. Spiegel, Advanced Mathematics for Scientists and Engineers

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assignments	20%
Midterm	30%
Final exam	50%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

Complex numbers: Leibnitz rule and apps to integration

Ordinary Differential Equations with constant co-efficients using operator techniques

Fourier Series

Waves on Strings, Separate Variables

One Dimensional Heat Flow, Leplace's equation in cartesian and polar co-ordinates for finite systems

Special functions of physics (δ , $e^{i(x)}$, $\text{erf}(x)$, etc.)

Fourier Transforms, basic theorem, application to integration, Parseval

One dimensional heat flow and Laplace's equation for infinite systems

Laplace equation in three dimensions and solutions as expansions; Sturm Liouville systems