New Jersey Institute of Technology
Otto H. York Department of Chemical, Biological and Pharmaceutical Engineering

Course:	PHEN 500 Pharmaceutical Engineering Fundamentals I
Semester:	Fall 2017
Instructor:	Dr. Praveen K. Sharma Adjunct Professor Otto H. York Department of Chemical, Biological and Pharmaceutical Engineering Phone: (732) 421-7728 Email: psharma@njit.edu
Teaching Assistant:	Chadakarn Sirasitthichoke, Ph.D. Candidate Chemical Engineering Office: Please contact the TA for this information Tel: N/A Email: cs437@njit.edu
Course Description:	This course is a required bridge course for those students who are admitted to the Pharmaceutical Engineering MS program without an undergraduate engineering degree. This course is not counted toward degree credit related to the Pharmaceutical Engineering MS program. Material covered in the course includes a review of general mathematics, differentiation, integration, differential equations, sequences and series, vectors, calculus with more than one variable and partial differentiation. The material focuses on learning the methods and techniques associated with these topics rather than the pure math derivations and proofs behind them. The course aims to prepare students for later courses in Pharmaceutical Engineering by developing their ability to apply these mathematical methods to solve engineering problems.
Learning Outcomes:	• Students will learn and become familiar with the mathematical methods needed to solve engineering problems, including differentiation, integration, differential equations, sequences, series and vectors. • Students will gain practice in using the mathematical methods and techniques taught in video lectures by successfully completing assigned homework questions. • Students will demonstrate proficiency in using the methods and techniques taught in video lectures by successfully completing exam questions.
Course Prerequisites:	Prior to taking this course, students are expected to have studied a basic level of mathematics. This includes arithmetic, algebra, equations, graphs, functions and trigonometry. Students without these prerequisites will find the course material extremely challenging.

Hardware/ Software Requirements:	• NJIT UCID and password to access Moodle and NJIT email account
	• Computer with internet access.
	• Access to a scanner and/or associated software which can scan documents into PDF format and output a single PDF file from multiple original pages
	• Internet explorer, Safari or another web browser to view video lectures
	• Adobe Acrobat Reader to open and view PDF files
	• WebEx may be used for office hours with the instructor
	    o available free from http://www.webex.com/
	    o Note: students do <u>not</u> need to open an account to attend a WebEx meeting
	• Microphone
	    o Note: most laptops have a built-in microphone, desktops typically don't
	• Camera (optional)
	    o Note: most laptops have a built-in camera, desktops typically don't

Textbook:	Engineering Mathematics, 7th Edition by K.A. Stroud (with additions by Dexter J. Booth) 2013, Industrial Press, Inc. ISBN: 978-0-8311-3470-9

Course Schedule:		
	Week	**Topic**
	1	Review of general mathematics
	2	Review of general mathematics
	3	Differentiation
	4	Differentiation
	5	*Midterm Exam 1*
	6	Integration
	7	Integration
	8	*Midterm Exam 2*
	9	Differential Equations
	10	Differential Equations
	11	*Midterm Exam 3*
	12	Determinants, Matrices and Vectors
	13	Sequences and Series
	14	Multiple integrals, partial differentiation and Laplace transforms
	15	*Final Exam*

Course Website:	Video lectures, homework assignments and other pertinent information and tools will be available on the class website. Go to http://moodle.njit.edu to access the site.
Lectures:	Video Lectures will be posted every week according to the class schedule. Video lectures can be played using an internet web browser.
Office Hours:	*Teaching assistant:* TBA, or by appointment *Instructor:* The instructor does not reside in New Jersey so office hours will be by web conference. Help sessions will be held on Wednesday evenings at 8pm-9pm (go to http://njit.webex.com, the meeting number will be provided on moodle). Students must email the instructor by 5pm on the day of the help session to confirm that they will be joining/attending. If no students have emailed the instructor by this time, then there will be no help session that week.
Homework Assignments:	• Homework due dates will be outlined on the moodle website • Completed homeworks must be scanned to a PDF file and submitted via moodle no later than 11:55pm on the due date. • **Late homework will not be accepted for grading** • Arrange problems in numerical order • Use 8½ x 11 inch letter size paper and SCAN the work to a single PDF file • **PRINT YOUR NAME** at the top of each page and **NUMBER EACH PAGE** like this: "Page 2 of 6" • Graded homeworks will be scanned to PDF and returned by the TA via either moodle or email
Exam Policy:	• According to NJIT policy, all students taking DL classes but living within 50 miles of NJIT must take the required exams at the NJIT main campus in Newark, NJ. • Students living outside this area can take exams at predefined testing locations. The National College Testing Association (NCTA) lists the participating institutions nationwide where students can take proctored tests according to the rules set up by the NJIT course instructor (e.g., closed-book). o http://www.ncta-testing.org/cctc/find.php) • Students should visit this website, identify the testing location where they plan to take the exams, and inform the course instructor within two weeks from the beginning of classes of which testing location they have selected. • Students should be aware that they will be **required to pay a fee to the chosen testing center** for each exam that they will take there. Such a fee is typically on the order of $25-$50 per exam, depending on the testing center.

	• Prior to each exam, students should make arrangements with the selected testing center to ensure that they can take the exam at the predefined location at a given day and time.
Assessment Criteria and Grading:	The course has been designed so that video lectures, homework assignments, midterm and final exams are integral and essential parts of the learning process. Final grades will be determined from scores as follows:

Assessment Component	Percentage of Final Grade
Homework	10%
Midterm Exam 1	20%
Midterm Exam 2	20%
Midterm Exam 3	20%
Final Exam	30%

Overall Score	Grade
90% or better	A
85 – 89%	B+
80 – 84%	B
75 – 79%	C+
70 – 74%	C
69% or less	F

A missed exam will be averaged into the final grade as *zero* unless permission for a make-up exam is obtained from the instructor **prior** to the exam date. Such permissions may be granted only for extenuating circumstances. In this case, documentation attesting to extenuating circumstances (e.g. medical documents, etc) should **not** be sent to the instructor. The student will be referred to the Dean of Students, who will make a determination of whether extenuating circumstances exist or not. The instructor will then follow the guidance of the Dean of Students on whether to grant permission to the student.

The NJIT Honor Code and standards of academic integrity will be <u>strictly enforced</u> in this course. Any student(s) found to be violating the honor code will be brought to the immediate attention of the Dean of Students. It is strongly advised that ALL STUDENTS OBTAIN A COPY OF AND READ THE HONOR CODE CAREFULLY AS THEY ARE EXPECTED TO UNDERSTAND AND FOLLOW IT.