COURSE: Introduction to Differential Equations
Section 02: Tu Th 1:00pm-2:15pm in Math/Psychology Building #101

PROFESSOR: Hye-Won Kang
Office: Math/Psychology Building #424
Email: hwkang@umbc.edu
Office Hours: Tuesday 2:15pm-3:15pm, Thursday 12pm-1pm, or by appointment.
I will try to respond to all emails in the same day. However during the weekends, I am not available to answer them.

GRADER: Kelsey Coyle
Email: kcoyle1@umbc.edu

TEXT: An Introduction to Differential Equations and Their Applications, by Stanley J. Farlow; Dover Publications, 2006. Please bring your textbook with you to every class. A list of errata of this textbook can be found at
http://www.math.umbc.edu/∼rouben/farlow-errata.html.
Print a copy of the list of errata and bring it with your textbook all the time.

COURSE CONTENTS:

Topics of this course include solutions of first- and second order linear differential equations, non-linear exact and separable equations, integrating factors, homogeneous equations, higher-order linear equations, initial value problems, solutions as functions of the equation parameters, and Laplace transforms.

PREREQUISITE:

You must have completed MATH 142 or MATH 152 with a grade of "C" or better. You are recommended to have completed MATH 251 before taking this class.

GRADING POLICY:

Grades are based on homework, two midterm exams, and a cumulative final exam. Your two lowest homework scores will be dropped. Final letter grade is decided based on the total grade as follows:

Letter Grade	**Total Scores**
A	$90 \leq \text{Total} \leq 100$
B	$80 \leq \text{Total} < 90$
C	$70 \leq \text{Total} < 80$
D	$60 \leq \text{Total} < 70$
F	$\text{Total} < 60$

However, factors such as overall distributions of grades or consistency in homework and midterm exams will affect on the final letter grade. Contributed portions of the total score are as follows:

	HOMEWORK	**2 MIDTERMS**	**FINAL EXAM**	**TOTAL**
Percentage	20%	50%	30%	100%

HOMEWORK:

There will be weekly assignments and it is due every Thursday. You are required to turn in your homework to me before the class, which are assigned on Tuesday in the same week and on Thursday a week before. Selected problems in every homework will be graded. You are encouraged to work together but you should write the answer in your OWN way. Late homework will not be accepted.

MIDTERM EXAMS:

Two midterms will be taken in class (October 3 and November 7). Chapters for each midterm are given in the schedule of the course. You are NOT allowed to bring any cheat sheet or calculator during the exam.

FINAL EXAM:

All Math 255 students are required to take a cumulative final examination covering all the topics listed on this syllabus. The final exam is set on Dec 17, 2013 starting at 1:00pm for two hours. This time is arranged by University, and cannot be changed. Students with conflicting exam schedule may be permitted to take an alternate final exam AFTER the regularly scheduled exam. In the final exam, you must bring your student ID, and are required to show it when you submit the exam. You are NOT allowed to bring any cheat sheet or calculator during the exam.

SCHEDULE OF EXAMS:

Exam 1: October 3, 2013 during the lecture
Exam 2: November 7, 2013 during the lecture
Final: December 17, 2013, Location will be announced later.

MAKE UP EXAM AND MISSED EXAM POLICY:

In very emergency case only, you can ask for a make-up exam. You must notice to the instructor at least 10 days before the original exam date. Make-up exams will be taken before the original exam date (for midterms). In case, you do not notice for a make-up exam and missed it, there will be no make-up exam AT ANY CASE. When there is serious excuse you could not notice me in advance and could not take the exam (ex. sickness with written statement from a doctor, funeral with written statement, etc), your grade will be calculated as follows: In case you missed one midterm exam, I will give 80% of the other midterm score for the one missed exam. If you miss the final exam or two midterm exams, I do not think you can pass the course.

ATTENDANCE:

The attendance is not mandatory, but is highly recommended. Based on the previous experience, students who attend every lecture have a very higher tendency to get a higher score at the end. When you come to the class, you are expected to participate in the class. I ask that you bring a textbook, you are on time, and pay attention to the class. No excuse for being habitually late and the use of smartphones during class is strongly discouraged. Please do not distract yourselves and other students.

CALCULATOR:

During exams, you are NOT allowed to use any calculator.

INCOMPLETE:

If you do complete the course successfully except for a very small portion or a final exam due to very extraordinary and emergence situation (such as to stop attending school for the rest of the semester due to injury in an accident), you will be considered to get Incomplete. You are required to submit a written statement and evidence describing reason to get Incomplete. If the reason to get Incomplete is because you are behind in the course, I would recommend to drop the course, instead.

GETTING HELP:

There are lots of places you can get help. Tutoring is available through the Learning Resources Center (http://www.umbc.edu/lrc/), Student Support Services (http://www.umbc.edu/sss/), and for athletes, the Athletic Department.

ACADEMIC INTEGRITY:

By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of disciplinary action that may include, but is not limited to, suspension or dismissal. To the Faculty Handbook, or the UMBC Policies section of the UMBC directory.
http://www.umbc.edu/undergrad_ed/ai/

APPROXIMATE COURSE SCHEDULE:

This course will cover various topic. The below if the approximate schedule of the course which is subject to change. The changed schedule will be updated regularly on the course web page in Blackboard.

WEEK	DATES	SECTIONS	TOPICS
1	Tu Aug 27		No class on August 27.
	Th Aug 29	1.1	Basic Definition and Concepts
		1.2	Some Basic Theory
2	Tu Sep 3	1.2	(cont.)
		2.1	First-Order Linear Equations
	Th Sep 5	2.1	(cont.)
		2.2	Separable Equations
Wednesday, September 11, is the last day to withdraw from the course without receiving a 'W' on your transcript.			
3	Tu Sep 10	2.3	Growth and Decay Phenomena
	Th Sep 12	2.4	Mixing Phenomena
		2.5	Cooling and Heating Phenomena
4	Tu Sep 17	2.6	More Applications
	Th Sep 19	2.7	The Direction Field and Euler's Method
5	Tu Sep 24	3.1	Introduction to Second-Oder Linear Equations
	Th Sep 26	3.2	Fundamental Solutions of the Homogeneous Equation
		3.3	Reduction of Order

WEEK	DATES	SECTIONS	TOPICS
6	Tu Oct 1	3.4	Homogeneous Equations with Constant Coefficients: Real Roots
	Th Oct 3	**EXAM 1**	**1.1-1.2, 2.1-2.7, 3.1-3.3**
7	Tu Oct 8	3.5	Homogeneous Equations with Constant Coefficients: Complex Roots
		3.6	Nonhomogeneous Equations
	Th Oct 10	3.6	(cont.)
		3.7	Method of Undetermined Coefficients
8	Tu Oct 15	3.7	(cont.)
	Th Oct 17	3.8	Variation of Parameters
9	Tu Oct 22	3.9	Mechanical Systems and Simple Harmonic Motion
	Th Oct 24	3.10	Unforced Damped Vibrations
10	Tu Oct 29	3.11	Forced Vibrations
	Th Oct 31	5.1	Definition of the Laplace Transform
11	Tu Nov 5	5.2	Properties of the Laplace Transform
	Th Nov 7	**EXAM 2**	**3.4-3.11, 5.1**
Tuesday, November 12, is the last day to withdraw from the course with receiving a 'W' on your transcript.			
12	Tu Nov 12	5.3	The Inverse Laplace Transform
		5.4	Initial-Value Problems
	Th Nov 14	5.4	(cont.)
		5.5	Step Functions and Delayed Functions
13	Tu Nov 19	5.6	Differential Equations with Discontinuous Forcing Functions
		5.7	Impulse Forcing Functions
	Th Nov 21	5.7	(cont.)
		6.1	Introduction to Linear Systems
14	Tu Nov 26	6.2	Review of Matrices (Read p. 323-328 before this class)
		6.3	Basic Theory of First-Order Linear Systems
	Th Nov 28		No class on November 28.
15	Tu Dec 3	6.4	Homogeneous Linear Systems with Real Eigenvalues
	Th Dec 5	6.5	Homogeneous Linear Systems with Complex Eigenvalues
16	Tu Dec 10		Review
	Th Dec 12		No class on December 12.
17	**Tu Dec 17**	**FINAL EXAM**	**1pm-3pm, Cumulative**