MTH 335 Sec 102
Fall 2018

Course Title/Number	Ordinary Diff Equation MTH 335 Sec 102
Semester/Year	Fall 2018
Days/Time	TR 5:00-6:15pm;
Location	SH 516
Instructor	Dr. Michael Otunuga
Website for Past Question	http://science.marshall.edu/otunuga/
Office	WAEC 3229
Office Hours	MTWRF 10-12pm
Phone	304 696-3049
E-Mail	otunuga@marshall.edu
Text	A First Course in Differential Equations, 3rd Edition by J. David Logan; Springer
Calculator	Graphing calculator is required for the course. It may not be allowed in exam
Homework	Homework will be assigned in class.
University Policies	By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy be going to www.marshall.edu/academic-affairs and clicking on "Marshall University Policies." Or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802 Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment See the University Academic Calendar (http://www.marshall.edu/calendar/academic/) for course withdrawal dates.

Course Description

Introduction to Ordinary Differential Equations. Modeling, methods of solution, theory, and numerical approximation. Prerequisites: MTH 231

How each student learning outcome will be practiced and assessed in the course

MTH 335 Student Learning Outcomes	How students will practice each outcome in MTH 335	How student achievement of each outcome will be assessed in MTH 335
Students will employ quantitative as well as a qualitative study of dynamic	Students will attend class, work on homework, participate in class discussions, and ask questions.	Homework, quizzes, project and exams.

mathematical equations known as differential equations		
Students will demonstrate the ability to work with some fundamental analytical methods for solving particular classes of differential equations (D.E.)	Students will attend class, work on homework, participate in class discussions, and ask questions.	Homework, quizzes, project and exams.
Students will be able to utilize the definition of the solution of a differential equation to determine if a function is a solution of a D.E.	Student will work on homework, participate in class discussions, and ask questions, complete assigned mathematical projects.	Homework, quizzes, project and exams.
Students will be able to analyze real world problems in science, engineering and other field quantitatively.	Students will complete homework, classwork, and quizzes to get Practice on modeling questions.	Homework, quizzes, project and exams.
Student will be able to solve a differential equation using Laplace Transform	Students will work on homework, participate in class discussions, and ask questions to get practice on modeling questions.	Homework, quizzes, project and exams.
Students will be able to use mathematics to create a dynamic equation that can simulate the physical system it is modeling	Students will complete projects, homework and quizzes to get practice and feedback	Homework, quizzes, project and exams.
Students will be able to choose the appropriate method to solve certain models that belong to particular classes of differential equations.	Students will attend class, work on homework, participate in class discussions, and ask questions.	Homework, quizzes, project and exams.

Course Requirements / Due Dates

Attendance: Attendance is required and you must come with your text. Attendance will be taken every class day by sign-in-sheet. 2 points will be reduced for every missed class. Having more than **25%** absences (excused or unexcused) may result in a course grade of F! Absences which can be excused include illness, emergencies, or participation in another university activity. Documentation from an outside source must be provided.

Homework: Homework will be assigned in class every week from the textbook.

Projects: Projects will be assigned as a take-home/reading materials. Class will be divided into smaller groups. Each group will be asked to present their project/reading materials during class. Students will be expected to collaboratively discuss and clearly explain solutions to the problem assigned to their group.

Exams: There will be 3 in-class tests during the semester and a comprehensive Final Exam. If you know in advance that you will have an excused absence on a test date, please inform me on time and plan to take the test early. Make-up exams will only be given in the event of a university-excused absence.

Final Exam: The final exam will be on **Monday, Dec 10 from 5-7pm**. Please make travel arrangements accordingly. Make-up/early tests will not be available to accommodate individual travel plans.

Grading Policy

Attendance:	50pts		
Homework:	100pts	**Scale**	
Exam 1:	100pts	90.00 – 100%	A
Exam 2:	100pts	80.00 – 89.99%	B
Exam 3:	100pts	70.00 – 79.99%	C
Project:	100pts	60.00 – 69.99%	D
Final:	150pts	Below 60.00%	F

Homework

HW 1
Page 10: #4, 6, 8 and 16
Page 15: #1, 4
Page 19: #3, 4 and 8
Page 26: # 4a, f, #9, 15

HW 2
Page 32 #1,
Page 34 #2
Page 41 #1, 2e, 3

HW 3
Page 63: #1 (**complete the problem)**, 2(**a,b,h,i**), 3, 4(**complete the problem)**, 5, **7.**

Note: For question 1, use explanations on page 55 and equation 1.22 to derive the appropriate equation.

For 3b and d, solve for two cases: for case 1, use specific value of "a" for which equilibrium exists and for case 2, use specific value for which the equilibrium does not exist, if applicable)

For question 7a, use chain rule for the transformation and know that by chain rule, dp/dt=dp/dx * dx/d tau * d tau/dt.

HW 4
Page 70 #1 (b,d,e,f); 3 and 8
Page 76 #1, 2, 4, 5

HW 5
Page 90 #1, 2, 7
Page 94 #1 (b, c) and 2(b,c)
Page 99 # 1, 2
Page 111 # 2(b,g) and 8.

HW 6
Page 115 # 7
Page 120 # 1e,f,h; 2 (To solve question 2, reduce DE to first order using substitution u=v')
Page 124 #1a,d; 3,
Page 125 # 1, 3, 5, 6

HW 7
Page 145 # 4; 5; 8(a, c, d) (Use the definition of Laplace Transform, NOT THE TABLE, to answer all these questions)
Page 145 # 9b, c, d, e, h, i (You can use the TABLE for this part of the problem)
Page 156 #1; 2a, c, e, f; 3a, b, d, j; 6b, e, d