American University of Beirut
Faculty of Arts and Sciences
Department of Mathematics
Math 202: Differential Equations
Spring 2018-2019

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Office hours: M F 9 – 10:30 am
Class meetings: L5 MWF 8- 8:50 am L2 MWF 11-11:50 am
Recitations: W 9-9:50 am, 12-12:50 pm, 1-1:50pm, 2-2:50 pm

Textbooks:
Thomas' Calculus, 13th edition by Thomas, Weir, and Hass.
A First Course in Differential Equations with Modeling Applications, 10thed by Dennis G. Zill.

Description of the Course
The course will be centered around several main topics covering the notion of solution differential equation, linear and non-linear differential equations, initial and boundary-value problems, series solutions, Laplace transform and systems. At the beginning, a small part of the course will be devoted to the study of surface integrals and Stokes' theorem.

Topics covered
Surface integrals, Stoke's theorem, divergence theorem, first-order differential equations, linear differential equations, series solutions, Laplace transform, systems of linear differential equations.

Course Learning Outcomes

At the end of the course, students will have:

- Ability to use Calculus methods to integrate a differential equation.
- Ability to use infinite series methods, to solve a differential equation.
- Ability to use extended infinite series methods (Frobenius) to solve a differential equation.
- Ability to use linear algebra methods (eigenvalues, eigenvectors of a matrix) to solve a system of differential equations.
- Ability to use transform methods (Laplace transform) to solve a differential equation.
- Ability to combine transform methods and linear algebra methods to solve a system of differential equations.
- Ability to use the divergence and Stokes' theorems in the calculation of volumes and surface areas in three dimensions.

AUB strives to make learning experiences as accessible as possible. If you anticipate or experience academic barriers due to a disability (including mental health, chronic or temporary medical conditions), and in order to help establish reasonable accommodations and facilitate a smooth accommodations process, you are encouraged to contact the Accessible Education Office in West Hall 314.

Section	Assigned homework problems
Thomas' Calculus 13th edition by Thomas, Weir, and Hass.	
16.1	1-9, 11, 13, 15, 16, 17, 19, 21, 23, 25, 26, 27, 28,33
16.2	1, 3, 4, 5, 7, 9, 13, 15, 17, 19, 23, 25, 29, 33, 37
16.3	3, 5, 6, 7, 9, 12 - 22, 25, 28, 31, 33, 38
16.4	1-5,7,8, 9, 17, 19, 21, 23, 24, 26, 33, 35
16.5	1, 3, 5,13,14,15,17,20,23
16.6	17,19,21,23,25,27,29,31,33,35,37,39
16.7	1, 3, 5, 6,7,9,13,15, 17
16.8	5, 9, 11, 13, 15

Exam 1 (25% of course grade) Saturday, February 16, 1:30 pm

A First Course in Differential Equations with Modeling Applications	
1.1	2, 3, 12, 13, 16, 17, 20, 22, 23, 25, 26, 27, 29, 37, 43, 56, 58
1.2	1, 3, 6, 7, 9, 12, 15, 17, 19, 20, 22, 24, 29, 30
2.2	3, 7, 8, 12, 14, 15, 17, 20, 22, 24, 26, 28, 30
2.3	3, 7, 10, 15, 16, 19, 20, 22, 24, 26, 28, 31,33, 37
2.4	2, 3, 8, 9, 11, 12, 17, 18, 2, 22, 25-34, 38, 42(a),43
2.5	1, 8, 9, 13, 15, 16, 17, 20, 25, 26, 29, 30, 33, 35,36
4.1	2,3,5,7, 9, 10, 12,13, 15, 17,18 19, 20,25, 28, 31, 32, 35,38,39
4.2	1, 4, 5, 8, 9, 11, 13, 17, 19, 20
4.3	8,13, 16, 17, 20, 22, 23, 26, 27, 30, 31, 32, 34, 36, 38, 42, 49, 50, 51,59,60

Exam 2 (25% of course grade) Saturday, March 16, 1:30 pm

4.4	1, 5, 10, 15, 19, 21. 22, 25, 30, 35, 37, 38, 39,41
4.6	1,2.3, 6, 9,13-15, 21-24, 26,28
4.7	4,7,11, 14, 15, 17, 20, 22,26, 28, 30, 32,33, 34,35,36,37
6.1	5, 6, 8, 12, 14, 15, 16, 18, 19, 23, 24, 25, 27, 30, 31, 36, 37
6.2	4, 5, 7, 10, 15, 19, 22, 23, 24, 26, 27, 28
6.3	1, 2,3, 6, 7, 9, 11, 12, 14, 15,16,18,23,30,31,32
7.1	1, 5, 12, 13, 14, 15, 16, 17, 18, 23, 26, 27, 28, 29, 32, 33, 34, 35, 38,40
7.2	3, 4, 9, 13, 15, 17, 20, 24, 29, 30, 31, 32, 34, 35, 36, 39, 40
7.3	3,5,8,10,15,18,19,21,25,30,31,38,39,41,45, 47, 48, 49,50,51,53,56,59,63,67,70,
7.4	4, 6, 9, 11, 13, 19, 21, 25, 26, 28, 29, 31, 32, 33, 38, 40, 45, 46,49.52,53,59,60
7.5	1-12
7.6	1, 2, 5, 7, 9, 10, 12
Appendix II	1, 3, 8, 9, 13, 15, 19, 23, 27, 34, 38, 39, 47, 49, 51, 53, 55
8.1	1, 2, 6, 7, 13, 25
8.2	1, 2, 3, 4, 5, 6, 9, 13, 23, 25, 33, 34, 35, 39, 41, 42, 44, 45

Final Exam (50% of course grade) comprehensive