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|  | FORMAN CHRISTIAN COLLEGE (A Chartered University)Spring 2023CSCS203: Differential Equations |

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| Instructor Information: | |
| Name | Ali Faheem |
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| Course Information: | |
| Code | CSCS 203 |
| Credits | 3 |
| Title | Differential Equations |
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| Introduction | The laws of nature are typically expressed in differential equations, which are equations with derivatives in them. Understanding of differential equations and their solutions is therefore important |
| Text Book | - Differential Equations with Boundary-Value Problems, 7th Ed. Dennis. G. Zill, Michael, R. Cullen. |
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| Important to know | * Due Dates: All assignments are to be submitted on time. Late activities will not be graded, unless previous accommodations have been made with the course instructor * Missed Quizzes: There will be no retake for the quiz, unless previous accommodations have been made with the course instructor. Quiz schedule is provided in the course outline. Quizzes may also be announced in class. Make sure to check both. * Attendance: Students are advised to attend all lectures. In-class activities are heavily weighted towards grade calculation. There will be no compensation for missed class activities. It is entirely the students' responsibility to recover any information or announcements presented in the class they have missed. * Academic Honesty: All work that you submit in this course must be your own. Unauthorized group efforts are considered academic dishonesty. You may discuss homework (Assignments, Projects) in a general way with others, but you may not consult anyone else's written work. You are guilty of academic dishonesty if you examine the solution of another student, allow (actively or passively) another student to examine your solution, or copy from the Internet without complete understanding of the work. University Policy of plagiarism and will be applicable in the case. All cases, no matter how trivial, will be reported to AIC. Cheating or violation of academic integrity in any exam will cause F grade * Course Group: Your earned marks will be posted on course group regularly, please remain aware of your status in class. It is important that you get access to the course group. * Class Participation: Lectures are meant to summarize the readings and stress the important points. You are expected to come to class having already critically read corresponding reading material. Your active participation in class is crucial to making the course successful. |
| Assessment Criteria | 20% - Quizzes  15% - Assignments  30% - Mid Term  35% - Final |

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| Week 01 | Basic Concepts, Calculus Revision | Chapter 1 |  |
| Week 02 | Separable variable, Linear Equation | Chapter 2 |  |
| Week 03 | Exact Equation, Bernoulli Equation | Chapter 2 |  |
| Week 04 | Modeling with linear models, Nonlinear Models | Chapter 3 |  |
| Week 05 | Higher order linear differential equation Homogeneous Linear Equations with Constant Coefficients | Chapter 4.1- 4.3 |  |
| Week 06 | Method of Undetermined Coefficients Superposition Approach  Undetermined Coefficient Annihilator Operator Approach | Chapter 4.4, 4.5 |  |
| Week 07 | Variation of Parameter  Variation of Parameters Method for Higher-Order Equations | Chapter 4.6 |  |
| Week 08 | Revision / Midterm |  |  |
| Week 09 | Differential Equations with Variable Coefficients  Cauchy-Euler Equation: Alternative Method of Solution | Chapter 4.7 |  |
| Week 10 | Modeling with higher order differential equation -Linear models  -Non linear Models | Chapter 5 |  |
| Week 11 | Power Series  Solution about Ordinary Point | Chapter 6 |  |
| Week 12 | Solution about Singular point  Bessel’s Equation | Chapter 6.3 , |  |
| Week 13 | The Laplace transform / Inverse Transform  Solving Differential Equation using Laplace Transform | 7.1,7.2 |  |
| Week 14 | Operational Properties I  Operational Properties II | 7.3,7.4 |  |
| Week 15 | Revision / Final Exams |  |  |