# MATH 238: Differential Equations

# SyllabusWinter 2021

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building #4 office #210

Credits: 5

Class Time: TBD, & Canvas online classroom

Office Hours:

***NWIC MISSION STATEMENT***

*Through education, Northwest Indian College promotes
Indigenous self-determination and knowledge*

**Course Prerequisites:** MATH 126

# Required Text

None.

# Course Description

Presents the study of first- and second-order differential equations. Topics include techniques for solving differential equations, series solutions, Laplace transforms, numerical approaches, and matrix methods to solve systems of linear differential equations. Real-life modeling is emphasized using applications and data visualization using appropriate technology are emphasized.

# Course Outcomes

# At the completion of this course students will be able to:

1. Write differential equations using appropriate mathematical notations, symbols and graphs
2. Classify differential equations by order, linearity and homogeneity
3. Solve first- and second-order linear differential equations using appropriate techniques
4. Solve linear equations that have constant coefficients
5. Determine whether a system of functions is linearly independent using the Wronksian

# NWIC Institutional Outcomes

 1. Effectively communicate in diverse situations, from receiving to expressing information, both verbally and non-verbally

1. Meet the technological challenges of a modern world
2. Work cooperatively toward a common goal

**Course Requirements and Expectations**

Students who have a valid issue that prevents them from attending class need to notify the instructor prior to the start of class, email messaging is preferred but phone message is acceptable. It is understood in some situations an absence will be unavoidable. In those situations students will be given the opportunity to make up attendance and participation by watching recordings of the class session that has been missed. Embedded in the recorded class session will be participation questions. If those questions are answered and submitted to the instructor within 1 week of the scheduled class session, attendance and participation points will be awarded based on the agreement reached between student and instructor.

Any exceptions to this attendance policy must be approved by the Department Chair and the instructor in writing before the start of the quarter.

***It will not be possible to earn a passing grade if a student misses more than 30% of this class without notifying the instructor.***

**Evaluation & Assessment**

|  |  |
| --- | --- |
| Homework Problem Presentations | 20% |
| Mastering Engineering Homework/Canvas | 20% |
| Quizzes | 10% |
| Midterms | 30% |
| Final Exam | 20% |

Grading will be on a percentage system as detailed below:

* 1. Homework Problem Presentations – Each homework assignment will require that select problems are worked out in detail and submitted in class. Late assignments will receive a 10% deduction for each late day past the due date. weight – 20%
	2. Mastering Engineering Homework/Canvas – Homework will be completed online via MyLab. See calendar for due dates. Online assignments in Canvas will be included in this grade. See Canvas for due dates. weight – 20%
	3. Quizzes – There will be daily quizzes at the beginning of class covering topics from the previous class period, excluding exam days. Students must be in class to take the quiz. The lowest score will be dropped at the end of the quarter. No makeups. weight – 10%
	4. Midterm Exams – There will be 3 midterm exams throughout the quarter – see Canvas for expected dates. No makeups will be allowed without prior permission given by instructor. weight – 30%
	5. Final Exam – Comprehensive exam at the end of the quarter. No makeups will be allowed without prior permission given by instructor. weight – 20%

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# Course and Assignment Schedule:

**Tentative schedule**

**Week 1-4 :**

Introduction to differential equations, slope fields, Euler’s method and numerical solutions,

ordinary differential equations, solutions to first order differential equations,

applications of first order differential equations,

**Week 4-8**:

Second order differential equations,

applications of second order differential equations

**Week 8-9**

Laplace transforms

systems of differential equations, matrix methods

**Instructor(s) Discretion:**

Should it be deemed necessary, the instructor(s) of this course reserves the right to make alterations, at any time, to the course materials or what is contained within this syllabus in order to improve the course itself, the learning environment or the opportunity for student success. If such a change is made, it will be made in a timely manner so as not to impede the learning process or interfere, in any way, with student success.