Math 321: Differential Equations

Spring 2023 – Section 001

Course number: 97738
Credit hours: 4
Instructor: Tuan Pham, email: tnpham@eou.edu
Office: Loso Hall 225, telephone: 541-962-3465
Office hours: Monday, Friday 10:00-11:45 AM and Tuesday, Thursday 2:00-3:00 PM or by appointment
Time and place: M,T,Th,F 1:00 - 1:50 PM at Loso Hall 116.
Canvas: https://eou.instructure.com/courses/37826
Textbook: "*An Introduction to Ordinary Differential Equations*" by James Robinson, available online through EOU Library:

https://alliance-eou.primo.exlibrisgroup.com/permalink/01ALLIANCE_EOU/q10mp1/
cdi_askewsholts_vlebooks_9781139637046

Prerequisite: Math 252 with a grade of C- or better.

Catalog description: This course examines techniques of solution for ordinary differential equations including first order differential equations, linear differential equations of higher order, Euler's method, linear systems of differential equations and applications.

Learning Outcomes: Upon successful completion of this class, a student should be able to:

1. Solve certain types of differential equations using methods such as separation of variables, integrating factor, power series, Euler's method, and graphical representation.

2. Identify certain behaviors of solutions, for example asymptotic approximations, boundedness, and stability of the solutions under slight variation of the input parameters.

3. Write mathematical models of certain phenomena such as mass-spring motion, radioactive decay, and Newton's Law of Cooling.

4. Use mathematical software to solve differential equations and visualize the solution.

Grading components:

Homework: 25%
Attendance: 15%
Quizzes: 10%
Mathematica labs: 10% (extra credit)
Midterm: 25%
Final exam: 25%

Means of assessment:

- **Homework**: there will be 8 homework sets to be turned in on paper in class every Friday (except in the first week and the last week). A schedule of homework assignments was posted on the course website and Canvas.

  Students are encouraged to work together, but must individually write in his/her own words and reflect his/her own understanding. Only a few selected problems will be graded in detail. The rest will be given credit on the basis of completion.

- **Attendance**: the instructor will check attendance every day of class, except for the first week. If you have a legitimate reason for absence such as sickness or University sport duty, please let the instructor know so that you will be marked as excused instead of absence.

- **Quizzes**: quizzes will be given in class at random times on random days. They are to test students' understanding of recent topics.

- **Labs**: an optional component of this course are the lab assignments using two mathematical software (Mathematica and Octave) for computation and visualization purposes. No programming experience is required. There will be 4 lab assignments to be submitted on Canvas as pdf documents. These lab assignments are for extra credit.

- **Midterm Exam:** there will be one midterm exam held at the Testing Center (Zabel Hall 112) from May 8-10. A 4" x 6" handwritten single-sided note card is allowed. A scientific calculator is allowed. Graphing/programmable/transmittable calculators are not allowed.

- **Final exam:** this exam will only cover the material after the midterm exam. Thus, it is not a cumulative exam. It will be held at the regular classroom (Loso Hall 116) **from 8 AM to 10 AM on Tuesday, June 13, 2023**. A 4" x 6" handwritten single-sided note card is allowed. A scientific calculator is allowed. Graphing/programmable/transmittable calculators are not allowed.

Make-up work: make-up exams will be given only in exceptional circumstances, with appropriate documentation, such as illness or family emergency. If possible, notify the professor as soon as you are aware of the issue. Late assignments may be accepted within one week after the due date under similar conditions.

Grade lines: the course grade lines will not be harder than the standard grade lines: A 100-93%, A- 92.99-90%, B+ 89.99-87%, B 86.99-83%, B- 82.99-80%, C+ 79.99 - 77%, C 76.99-73%, C- 72.99-70%, D+ 69.99-67%, D 66.99-63%, D- 62.99 - 60% and F $<$ 60%.

Other Learning Resources:

- The instructor has office hours dedicated to help you. Don't hesitate to make an appointment if the office hours conflict with your schedule.
- Your fellow classmates are also a good resource. Form a study group and you will find it helpful.
- You can find peer tutors at the Math Lab in Loso Hall 232. They have drop-in hours (no appointment necessary) which vary from term to term. You can find the latest information here: https://www.eou.edu/lcenter/math-lab-schedule/
- The Learning Center at Loso Hall 234 (next to the Math Lab) and the Library are great study places for you and your group.

Academic Misconduct Policy:
Eastern Oregon University places a high value upon the integrity of its student scholars. Any student found responsible for an act of academic misconduct (including but not limited to cheating, unauthorized collaboration, fabrication, facilitation, plagiarism or tampering) may be subject to having his or her grade reduced in the course in question, being placed on probation or suspended from the University, or a combination of these.

Students with Disabilities policy:
Any student who feels he or she may need an accommodation for any type of disability must contact the Disability Services Office in Loso Hall, Room 234. Phone 541-962-3081.