

16. Solve nonhomogeneous differential equations using the method of undermined coefficients.
17. Solve nonhomogeneous differential equations using the method of variation of parameters.
18. Solve mechanical and electrical vibration problems.
19. Solve differential equations involving forced vibrations.
20. Solve homogeneous linear differential equations of higher order.
21. Solve nonhomogeneous linear differential equations of higher order.
22. Apply the rules of matrices to solving systems of equations.
23. Set up linear differential equations as a Linear First Order system of Equations.
24. Given a linear first order system of differential equations determine the eigenvalues.
25. Given a linear first order system of differential equations determine the eigenvectors.
26. Solve a linear system of equations with complex eigenvalues, and repeated eigenvalues.
27. Determine the fundamental matrix of a system of equations.
28. Solve the nonhomogeneous linear system using the variation of parameters.
29. Use the Euler or tangent line method to find an approximate solution to a linear differential equation.
30. Determine the errors on numerical procedures.
31. Use the improved Euler Method to determine an approximate solution to a linear differential equation.
32. Use the Runge-Kutta Method to determine an approximate solution to a linear differential equation.

Instructional Procedures

The instructional procedures will include lectures, discussions, in class work, homework, reviews and tests.

IV. Instructional Materials

Textbook: W. Kohler and L. Johnson, Elementary Differential, 2nd Edition

Calculator: See instructor specific requirements.
Cell phones may not be used as calculators.

Software: Matlab (any version) or other software to carry out numerical calculations

Other: Pencils and paper. Ink is not to be used for any graded work

V. Course Content

- First order differential equations
- Higher order differential equations.
- Applications of differential equations, springs-mass-damper, electrical circuits, mixing problems.
- Systems of differential equations
- Eigen values & Eigen spaces
- Numerical approximations using Eulers method

Evaluation Criteria and Grading Scale

The grade for the course will be calculated from Tests, quizzes, a final exam and other work as deemed appropriate by the instructor. See individual syllabus for details on percentages/points.

VI. Withdrawal Policy

Student Initiated Withdrawal Policy:

A student may drop or withdraw from a class without academic penalty during the first sixty percent (60%) of the session. For purposes of enrollment reporting, the following procedures apply:

- a. If a student withdraws from a class prior to the termination of the add/drop period for the session, the student will be removed from the class roll and no grade will be awarded.
- b. After the add/drop period, but prior to completion of sixty percent (60%) of a session, a student who withdraws or is withdrawn from a course will be assigned a grade of “W”
- c. After that time, if a student withdraws from a class, a grade of “F” will be assigned.

A student may be awarded, retroactively, a grade of “W”, if and only if, the student would have been eligible under the previously stated policy to receive a “W” on the last date that he/she attended class.

1. The student must appeal for a grade of “W” based on attendance.
2. The admissions and Records staff will collect the relevant documentation for the appeal, including the last date of attendance, from the instructor of the course that is being appealed and other relevant documentation when mitigating circumstances are to be considered. For an appeal related to a distance education course

(IDL), the last date that the work was submitted will be considered the last date of attendance.

3. All relevant documentation will be reviewed by the Director of Student Development and the withdrawal policy strictly applied in determination of changing the grade to “W”.
4. If the student ceased attending class during the first 60% of the semester, a grade of “W” will be given. If the last date of attendance falls beyond the sixty percent mark, the student must demonstrate mitigating circumstances and must have been passing before a grade of “W” will be awarded.
5. Appeals asserting mitigating circumstances must be further reviewed by and a determination made by a committee of faculty appointed by the Dean of Instruction and Student Services.

A grade of withdrawal implies that the student was making satisfactory progress in the class at the time of withdrawal, or that the withdrawal was officially made before the deadline date published in the college calendar, or that the student was administratively transferred to a different program.

Instructor Initiated Withdrawal Policy

A student who adds a class or registers after the first day of class is counted absent from all class meetings missed. Each instructor is responsible for keeping a record of student attendance in each class.

Students who have not attended class by the last day to drop class and receive refund must be deleted by the instructor during the following week. No refund will be applicable.

When a student’s absences equal twice the number of weekly meetings of a class, the student may be dropped for unsatisfactory attendance in the class by the instructor.

When an instructor determines that absences constitute unsatisfactory attendance, a Faculty Withdrawal Form should be completed and submitted to the Admissions and Records Office. The last date of attendance must be documented. A grade of “W” will be recorded during the first sixty percent (60%) period of the course. Students withdrawn after the sixty percent (60%) period will receive a grade of “F” except under mitigating circumstances, which must be documented. A copy of this documentation must be placed in the student’s academic file.

The student will be notified of the withdrawal by the Admissions and Records Office. An appeal for reinstatement into the class may be approved only by the instructor.

VII. Cheating

The giving or receiving of any help on any graded portion (computer or written) of the course is considered cheating and will not be tolerated. Any student found cheating will receive a grade of “0” on that portion and possibly an “F” for the course. This “0” will not be replaced by the final exam score. When you are doing a computer Evaluate you are not allowed to use your book or notebook.

VIII. Additional Information:

- Any student with special needs or circumstances should feel free to meet with me during office hours.
- I will be happy to schedule a time to help you with this course at times other than my scheduled office hours. The best way to get in touch with me is via email.