

**The University of Iowa
The College of Liberal Arts and Sciences
Spring 2024**

Title of Course: MATH 6610:0001 Ordinary Differential Equations II

Course meeting time and place:

Lecture: 11:30AM – 12:20PM MWF, 113 MLH

Department of Mathematics: <https://math.uiowa.edu/>

Course ICON site: To access the course site, log into [Iowa Courses Online \(ICON\)](https://icon.uiowa.edu/index.shtml) <https://icon.uiowa.edu/index.shtml> using your Hawk ID and password.

Course Home

The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the add and drop deadlines, the “second-grade only” option (SGO), academic misconduct policies, and other undergraduate policies and procedures. Other UI colleges may have different policies.

Instructor: Rodica Curtu

Office location: **225F MLH**

Office hours:

**Mon 10:30-11:20 AM, Mon 12:30-1:20 PM, Wed 10:30 – 11:20 AM in 225F MLH
or by appointment.**

Phone: **(319) 335-0744**, E-mail: rodica-curtu@uiowa.edu

TA: None.

DEO: Professor Ryan Kinser, ryan-kinser@uiowa.edu, 14 MLH

Description of Course

This course is a continuation of MATH:6600. Topics include central manifold theory (normal forms, invariant manifolds, and bifurcation theory in high-dimensional systems), perturbation theory and asymptotics, and an introduction to the theory of canards. Time permitting, we will also discuss boundary value problems and calculus of variations techniques. The course is taught by faculty.

Learning Objectives

This is the second part of an ODE sequence of two courses. The students are expected to learn and be able to prove main theorems from the central manifold theory, Sturm-Liouville limit problems, as well as to apply methods from perturbation theory and bifurcation theory to models from the life sciences and engineering.

Textbook/Materials

Your course material is available on your ICON course site; this is called ICON DIRECT. Please read the additional files on ICON.

There is no required textbook. Notes will be provided in class. Selected topics from the following textbooks will be presented (though other material will be included as well):

- John Hunter, Asymptotic analysis and singular perturbation theory, 2004 (pdf online)
- Y. Kuznetsov, Elements of applied bifurcation theory, Springer, 2004
- Jack Carr - Applications of Centre Manifold Theory, Springer, 1981

Academic Honesty and Misconduct

All students in CLAS courses are expected to abide by the [CLAS Code of Academic Honesty](#).

Student Complaints

Students with a complaint about a grade or a related matter should first discuss the situation with the instructor and/or the course supervisor (if applicable), and finally with the Director or Chair of the school, department, or program offering the course.

Undergraduate students should contact [CLAS Undergraduate Programs](#) for support when the matter is not resolved at the previous level. Graduate students should contact the CLAS [Associate Dean for Graduate Education and Outreach and Engagement](#) when additional support is needed.

Drop Deadline for this Course

You may drop an individual course before the deadline; after this deadline you will need collegiate approval. You can look up the [drop deadline for this course](#) here. When you drop a course, a “W” will appear on your transcript. The mark of “W” is a neutral mark that does not affect your GPA. Directions for adding or dropping a course and other registration changes can be found on the [Registrar's website](#). Undergraduate students can find policies on dropping and withdrawing [here](#).

Grading System and the Use of +/-

With **criterion-reference grading**, students receive grades based on the quality of their work in relation to the criteria defined by the instructor and by the rubrics or models specifying the qualities of each grade. The cut scores (e.g. 90 for A-) will never go up, but they may go down for some exams, and each exam will be treated separately. We will start with:

Final grades will be awarded based on the following ranges:

A 90-100	B 80-89	C 65-79	D 50-64	F <50
Plus/minus grading will be used.				

Homework (50%), Midterm Exam (25%), Final Exam (25%).

Midterm Exam: **take-home (assigned Friday Feb 23, due Friday March 1)**

Final exam – (take-home): assigned Monday April 29, due the date of the final exam (TBD).

Attendance and class participation are strongly recommended.

All exams are comprehensive unless specified otherwise.

Date and Time of the Final Exam

The final examination date and time will be announced by the Registrar generally by the fifth week of classes and it will be announced on the course ICON site once it is known. **Do not plan your end of the semester travel plans until the final exam schedule is made public. It is your responsibility to know the date, time, and place of the final exam.** According to the Registrar's final exam policy, students **have a maximum of two weeks after the announced final exam schedule** to request a change if an exam conflict exists or if a student has more than two exams in one day (see the [policy](#) here).

Attendance and Absences

University regulations require that students be allowed to make up examinations which have been missed due to illness or other unavoidable circumstances. Students with mandatory religious obligations or UI-authorized activities must discuss their absences with me as soon as possible. Religious obligations must be communicated within the first three weeks of classes.

Communication: UI Email

Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community. For the privacy and the protection of student records, UI faculty and staff can only correspond with UI email addresses.

Course policies:

- 1) **Information about the material covered in class, assignments and grades will be posted in ICON. You are urged to use ICON for this course.**
- 2) **Late homework** will be accepted **only** by special permission of the course instructor. **A reduced maximal score** may be a direct consequence of any late submission of the assignment, and it will be decided by the instructor at the time the permission for the delay is obtained.
- 3) Attendance is expected. You are responsible for material covered in class and announcements made during class (these may include changes in the syllabus).
- 4) Absences from exams will require a compelling reason and must be arranged with your course instructor in advance.
- 5) All cell phones must be turned off during lecture and exams.

Student Collaboration is permitted on homework only (however you must typeset and submit your solutions yourself). It is NOT permitted for the exam(s). Any attempt to collaborate during the exam will result in a 0 score on that test.

Students are encouraged to be mindful of their mental health and seek help as a preventive measure or if feeling overwhelmed and/or struggling to meet course expectations. Students are encouraged to talk to their instructor for assistance with specific class-related concerns. For additional support and counseling, students are encouraged to contact University Counseling Service (UCS). Information about UCS, including resources and how to schedule an appointment, can be found at counseling.uiowa.edu. Find out more about UI mental health services at mentalhealth.uiowa.edu.

Student Care and Assistance provides assistance to University of Iowa students who are experiencing a variety of crisis and emergency situations, including but not limited to medical issues, family emergencies, unexpected challenges, and sourcing basic needs such as food and shelter. More information on the resources related to basic needs can be found at basicneeds.uiowa.edu/resources/. Students are encouraged to contact Student Care & Assistance in the Office of the Dean of Students (Room 135 IMU, dos-assistance@uiowa.edu, or 319-335-1162) for support and assistance with resources.

Accommodations for Students with Disabilities

The University is committed to providing an educational experience that is accessible to all. If a student has a diagnosed disability or other disabling condition that may impact the student's ability to complete the course requirements as stated in the syllabus, the student may seek accommodations through [Student Disability Services](#) (SDS). SDS is responsible for making Letters of Accommodation (LOA) available. The student must provide an LOA to the instructor as early in the semester as possible, but requests not made at least two weeks prior to the scheduled activity for which an accommodation is sought may not be accommodated. The LOA will specify what reasonable course accommodations the student is eligible for and those the instructor should provide. Additional information can be found on the [SDS website](#).

University Policies

Classroom Expectations

Free Speech and Expression

Non-discrimination

Absences for Religious Holy Days

Sexual Harassment/Misconduct and Supportive Measures

Sharing of Class Recordings