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# MAP 4305/5304 – Intermediate Differential Equations – Spring 2021

## Syllabus

### Contact information

- Instructor: Dr. Richard Crew
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- www: <http://people.clas.ufl.edu/rcrew>

This course has both an online and a face-to-face section. The online section will meet via Zoom. The face-to-face session will meet in LIT113 on Monday and Friday, and is online Wednesday. In addition the very first class meeting (11 January) is online. Both sections meet MWF 5th period (11:45 to 12:35). Zoom contact information will be announced via Canvas.

Welcome everyone! Our first meeting is Monday January 11 (first day of classes).

### Prerequisites and requirements

The main prerequisite is two semesters of calculus.

- Required Reading: The text for the course is the 6th edition of Nagle, Saff & Snider's *Fundamentals of Differential Equations and Boundary Values*. Be aware that there is a very similar book by the same authors whose title omits the phrase "boundary values"; do not get this version. Notes for the Zoom lectures will be available on the Canvas site; they constitute another required text and study aid.
- Required and Recommended Software: You will need Zoom and software for creating and reading PDF files. You will not need mathematical software in this course but its use is occasionally helpful or enlightening. If you have MATLAB that should suffice for most purposes. Be aware that there is a free/open-source alternative called OCTAVE which is very similar. For symbolic computation (e.g. integrals) you can use Mathematica or Maple.

### Course description

This course is the sequel to MAP2302, and will cover the following topics:

Intermediate  
Differential  
Equations – Spring  
2019

MAS 6932 Section  
3F93 – Special  
Topics in Algebra –  
Spring 2019

MAS 5311 Section  
8526 – Introduction  
to Algebra I – Fall  
2019

MAP 4305/5304  
Sections  
0099/17290 –  
Intermediate  
Differential  
Equations – Fall  
2019

- The theory of linear systems.
- Series solutions of linear differential equations with analytic coefficients.
- Second order boundary value problems.
- Qualitative theory of nonlinear systems in 2 or more dimensions.

Some of this material is fairly challenging, particularly the last topic. Unlike calculus and the first semester of differential equations, you will actually be using mathematics to analyze problems, and not simply crank out answers to set problems. All of these topics are important in mathematics and the physical sciences, but we will mostly be focused on theory and calculation, and only secondarily on applications.

## Graded Work

The graded work consists of four take-home assignments and four exams. Dates will be announced later via Canvas. In general you will have two days to complete the take-home assignment. Points will be taken off for late assignments. The exams will be given asynchronously; you will have between 2 to 3 hours to complete each exam. Please allow up to a week for the return of graded material.

Each exam will count for 20% of your final grade, and the total of the four assignments will account for the remaining 20% (thus each assignment counts 5%). Final letter grades will be assigned as follows:

Letter Grade	From	To
A	100.0%	94.0%
A-	<94.0%	90.0%
B+	<90.0%	87.0%
B	<87.0%	84.0%
B-	<84.0%	80.0%
C+	<80.0%	77.0%
C	<77.0%	74.0%
C-	<74.0%	70.0%
D+	<70.0%	67.0%
D	<67.0%	64.0%
D-	<64.0%	61.0%
E	<61.0%	

This scale may be adjusted slightly after the second exam.

## UF Policies regarding this course

This course is aligned with the UF policies below.

- Contact Hours: “Contact Hours” refers to the hours per week in which students are in contact with the instructor, excluding office hours or other voluntary contact. The number of contact hours in this course equals the number of credits the course offers. Workload: As a Carnegie I, research-intensive university, UF is required by federal law to assign at least 2 hours of work outside of class for every contact hour. Work done in these hours may include reading/viewing assigned material and doing explicitly assigned

## Related Links

[CLAS IT](#)

[College of Liberal Arts  
and Sciences](#)

[Mathematics  
Department](#)

[University of Florida](#)

individual or group work, as well as reviewing notes from class, synthesizing information in advance of exams or papers, and other self-determined study tasks.

- Accommodation for Disabilities: Students requiring such accommodations should connect with the Disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/> (Links to an external site.). This class supports the needs of different learners; it is important for students to share their accommodation letter with their instructor and discuss their access needs as early as possible in the semester.
- Evaluations: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available from the Gatorevals website. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via the evaluation system. Summaries of course evaluation results are available to students at the public results website.
- Course Recording: Our class sessions may be audio visually recorded for students in the class to refer back to and for use of enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate verbally are agreeing to have their voices recorded. If you are unwilling to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the “chat” feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

## Additional Course Policies and Information

The following are additional policies that shape my approach to teaching.

- UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code ([sccr.dso.ufl.edu/process/student-conduct-code/](http://sccr.dso.ufl.edu/process/student-conduct-code/)) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor.
- The Mathematics Department is committed to diversity and inclusion of all students. We acknowledge, respect, and value the diverse nature, background and perspective of students and believe that it furthers academic achievements. It is our intent to present materials and activities that are respectful of diversity: race, color, creed, gender, gender identity, sexual orientation, age, religious status, national origin, ethnicity, disability,

socioeconomic status, and any other distinguishing qualities.

## Additional Resources

- University Police: The UF police are together for a safe campus. 392-1111 (or 9-1-1 for emergencies) (Links to an external site.)<http://www.police.ufl.edu/>.
- Career Connections Center: Career Connections Center (352-392-1601 | [CareerCenterMarketing@ufsa.ufl.edu](mailto:CareerCenterMarketing@ufsa.ufl.edu)) connects job seekers with employers and offers guidance to enrich your collegiate experience and prepare you for life after graduation.
- Counseling and Wellness Center: Counseling and Wellness Center (352-392-1575) provides counseling and support as well as crisis and wellness services including a variety of workshops throughout the semester (e.g., Yappy Hour, Relaxation and Resilience).
- Dean of Students Office: Dean of Students Office (352-392-1261) provides a variety of services to students and families, including Field and Fork (UF's food pantry) and New Student and Family programs
- Disability Resource Center: Disability Resource Center ([DRCaccessUF@ufsa.ufl.edu](mailto:DRCaccessUF@ufsa.ufl.edu) | 352-392-8565) helps to provide an accessible learning environment for all by providing support services and facilitating accommodations, which may vary from course to course. Once registered with DRC, students will receive an accommodation letter that must be presented to the instructor when requesting accommodations. Students should follow this procedure as early as possible in the semester.
- Multicultural and Diversity Affairs:  
Multicultural and Diversity Affairs (352-294-7850) celebrates and empowers diverse communities and advocates for an inclusive campus.
- Office of Student Veteran Services:  
Office of Student Veteran Services (352-294-2948 | [vacounselor@ufl.edu](mailto:vacounselor@ufl.edu)) assists student military veterans with access to benefits.
- ONE.UF: ONE.UF (Links to an external site.) is the home of all the student self-service applications, including access to:
  - Advising
  - Bursar (352-392-0181)
  - Financial Aid (352-392-1275)
  - Registrar (352-392-1374)

