Course Syllabus

Last Update: **November 9, 2020**

Class Details:

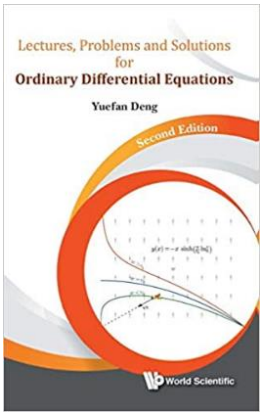
Dates:	**1/5/2021 – 1/23/2020**	**Times:**	**TuWeThFr 9:30AM – 1:55PM EST**
Room:	**Online – web based**	**Class Number**	**1213**

Class Description: This course intends to teach multiple methods for solving ordinary differential equations (ODEs) and systems of them in addition to presenting the basic ideas of constructing such equations. More specially, the following topics will be covered during the course:

1. *First-Order Differential Equations*
2. *Mathematical Models and Numerical Methods*
3. *Linear Equations of Higher Order*
4. *Systems of Differential Equations*
5. *Nonlinear Systems*
6. *Laplace Transform Methods*
7. *Applications of Laplace Transform Methods for Solutions of ODEs*

Prerequisites: AMS 161 or MAT 127 or 132 or 142 or MPE level 9 (*Analytic and numerical methods of integration; interpretations and applications of integration; differential equations models and elementary solution techniques; phase planes.*)

Textbook:



Lectures, Problems And Solutions For Ordinary Differential Equations (Second Edition) by Yuefan Deng, World Scientific Publishing, **ISBN-13:** 978-9813226135, **ISBN-10:** 9813226137

Homework problems will be posted on **Blackboard**.

Grading Policy:

(1) No late homework or late tests will be graded for any reasons.
(2) No makeups for tests except emergencies. Requests of test makeup must be made at least 24 hours prior to the test. If one is too handicapped to call, text or email, an approval must be requested immediately when possible.
(3) Grading complaints for any graded work (homework and tests) must be submitted within 24 hours of grade posting. No late complaints will be addressed.
(4) All tests are open book WEB-based tests. Electronics are allowed for allowed functions.
(5) No communication of any kind with a live human, except the proctors, is allowed.
(6) You download PDF of the test problems at the start of test time and submit **ONE** PDF of your solution of the entire test any time you complete the test.
    a. All are required to sign into Zoom Room during the test.
    b. A few randomly selected students may be required to show, using real-time video, the test environment with the student in it. This will take 1~2 minutes and the selected student is given 2 minutes extra test time.

c. After examining the test papers, I may interview a few selected students on Zoom.

(7) **Three Homework Sets (30%):** each set may contain 3-4 problems and each problem may take 0.25~0.5 hour to solve. You have one week of working time on each set. All homework will be collected by email.

(8) **Two Short tests (45%):** during regular class time. Doing any two of three problems for each test and the best two will be credited if all are attempted; Exact Dates may be announced at the start of lecture.

(9) **One Final (25%):** You solve any THREE of four problems in a WEB-based proctored test.

e-Homework (e-HW) Submission Guideline:

(1) Each e-HW must be packed in **ONE** (and only one) PDF and the email **Subject** must by "**Lastname-SBUID-HW-X**". for example, John Smith with SBUID=106501234 submitting Homework 3 must use Subject "Smith-106501234-HW-3".

(2) The PDF must be named the same as your email Subject line: **Lastname-SBUID-HW-X**

(3) The PDF could be generated by one of following methods: (*a*) write directly using a digital writing device such as iPad/Surface then save it as PDF; (*b*) type your answers using Word or LaTeX or any other programs that allow you to save it as PDF; (*c*) write on paper and then scan it with a scanner/smartphone to make a PDF. Every method is equally good.

(4) E-HW must follow all conventional rules as paper HW, e. g., no late e-HW will be accepted for ANY reasons. Refer to Grading Policy.

(5) Each HW set is allowed **ONE submission**. Multiple submissions will cause major chaos and TA may give a ZERO for that set.

(6) The graders may deduct points for failing to follow the above results at his/her discretion.

Submission of Short and Final tests:

(1) Submission of short and final tests must follow the submission rules for E-HW, e.g., a test must be packed in ONE PDF.

(2) **Subject** and **Filename** for **Short** tests: **Lastname-SBUID-Test-X**

(3) **Subject** and **Filename** for **Final** test: **Lastname-SBUID-Final**

Submission Emails:

TO: charutamanikra.bamane@stonybrook.edu

CC: peng.zhang@stonybrook.edu

Miscellaneous Items

➢ **Instructor**	**Peng Zhang** (Check Faulty Information on Blackboard) Email: peng.zhang@stonybrook.edu **OH**: 1-3 PM EST, Monday, Jan 11 & 18, or by appointment. **Zoom Room:** Meeting ID: **959 8983 6440** PW: **zhang4ams**
➢ **TA/Grader**	**Charuta Manikrao Bamane** **Email:** charutamanikra.bamane@stonybrook.edu **OH:** 4-5 PM EST, Wednesday and Friday. **Zoom Room:** Meeting ID: **699 409 4092** PW: **bamane**

➢ **Blackboard**	**The official source for course information.** Zoom Room number and password will be announced in BB.
➢ **Lecture Notes**	Lecture notes will be posted with links.
➢ **Homework**	Check "Assignment" for HW sets and Tests. No HW assignment during the First week.
➢ **Announcement**	Check "Announcements" regularly for quick attention.
➢ **Grades**	Check "Grade Center" for HW and Test grades.
➢ **Blackboard and Email**	Students are responsible for checking their Stony Brook email account and log in Blackboard regularly for important course information.
➢ **Classroom and Office Hour Zoom Room:**	WEB-based Zoom Room: Meeting Room ID: **959 8983 6440** Password: **zhang4ams**

Lecture Plans

Adjustment of the lecture plans and course schedules will be announced in the **Blackboard**.

WEEK	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
JAN 5 TO JAN 8	Sec. 1.1 Definition of DEs Sec. 1.3 Separation of variables	Sec. 1.4 First order linear Des Sec. 1.5 Substitution methods **Homework-1**	Sec. 1.5 Substitution methods Sec. 1.7 Exact DE methods	**Short Test 1** Sec. 2 Math Models
JAN 12 TO JAN 15	Sec. 2 Math Models (cont'd) Sec. 2.1 Newton's Law of Cooling	Sec. 2.3 Population model Sec. 2.4 Acceleration-velocity model **Homework-2**	Sec. 3 Linear DEs of Higher Order, Sec. 3.1 to 3.2	**Short Test 2** Sec. 3.3 Homogeneous DEs
JAN 19 TO JAN 22	Sec. 3.4 Inhomogeneous DEs Sec. 4 Systems of DEs **Homework-3**	Sec. 4.4 & 4.5 Eigen methods Sec. 5 Laplace transforms	Recitation and Examples for Final	**Final Test**

Student Accessibility Support Center (SASC) Statement:

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, 128 ECC Building, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and the Student Accessibility Support Center. For procedures and information go to the following website: https://ehs.stonybrook.edu/programs/fire-safety/emergency-evacuation/evacuation-guide-people-physical-disabilities and search Fire Safety and Evacuation and Disabilities.

- *To access mental health services, call Counseling and Psychological Services at 631-632-6720; Counselors are available to speak with 24/7.*
- *For updated information on the Academic Success and Tutoring Center please check www.stonybrook.edu/tutoring for the most up-to-date information.*
- *For IT Support: Students can visit the Keep Learning website at https://sites.google.com/stonybrook.edu/keeplearning for information on the tools you need for alternative and*

online learning. Need help? Report technical issues at https://it.stonybrook.edu/services/itsm or call 631-632-2358.

Academic Integrity Statement:

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management:

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

University policies on missing tests:

Students are expected to report for their examinations and major graded coursework as scheduled. If a student is unable to report for any examination or to complete major graded coursework on time, the student must contact the faculty member immediately. If the student cannot reach the faculty member, then s/he should contact the Director of Undergraduate Studies.

Although faculty will consider each student's request on its own merits and not attempt to define ahead of time the validity of all possible reasons a student might give for missing an examination or the date to turn in major graded coursework, instructors are expected to accept an excuse of significant illness, tragedy, or other personal emergencies and to make reasonable alternative accommodations for the student. It shall be the student's responsibility to provide sufficient documentation to support any such request. Accommodations for other reasons will be at the discretion of the faculty.