

AMS 361, APPLIED CALCULUS IV: DIFFERENTIAL EQUATIONS

Instructor: **Taewon Lee**

Visiting Professor

*Department of Applied Mathematics & Statistics,
SUNY Korea*

Semester: Fall, Year: 2024

E-mail: taewon.lee@stonybrook.edu

Class Hours: TU TH 2:00 - 3:20 pm

Office Hours: **TU W TH 1:00 - 2:00 pm**

REC Hours: **TU 5:00 - 5:55 pm**

Class Room: **A114**

Office: **C611**

REC Room: **A114**

Contents

1	TA Information	2
2	Course Description	2
3	Course Structure	3
3.1	Homework	3
3.2	Exams	3
3.3	Calculators	3
3.4	Cell Phone and Other Electronic Devices	3
3.5	Grade Weighting	3
3.6	Grade Scale (as intervals of percentages)	4
3.7	Final Exam	4
4	Course Policies	6
4.1	Tardiness	6
4.2	Attendance Policy	6
4.3	Code of Conduct	6
4.4	Academic Integrity Statement	6
4.5	Critical Incident Management	7
4.6	Religious Holidays	7
4.7	Accommodations for Disabilities	7
4.8	Course Evaluations	7

1 TA Information

- Name: **Junseong Park**
- Email: **junseong.park@stonybrook.edu**
- Office address: **TBA**
- Office hours: **M W 11:00 am - noon,**

2 Course Description

- Prerequisites: AMS 161 or MAT 127 or 132 or 142 or MPE level 9.
- Textbook information:
 1. **Differential Equations with Boundary-Value Problems**, by *Dennis G. Zill*; ISBN: 978-1-337-55988-1.
- Course Overview: Homogeneous and inhomogeneous linear differential equations; systems of linear differential equations; partial differential equations and Fourier series; solution with power series and Laplace transforms; development of mathematical descriptions of physical phenomenon with emphasis on the interaction of science and mathematics. May not be taken for credit in addition to the equivalent MAT 303.

3 Course Structure

3.1 Homework

- Homework assignments are given **weekly** posted on *Brightspace*.
- Each homework must be submitted *via the Brightspace*. **Late homework will not be accepted for any reason.**
- You have only ONE attempt to submit your HW. Once you submit it on the Brightspace, you cannot edit or modify your answers. *It is your responsibility to check your HW carefully before submitting it.*
- Please submit the questions in the order in which they are assigned and submit a detailed and complete solution for full credit on each question.
- You may discuss homework problems with other classmates, or with TAs, or with me. However, you **MUST write** the solutions by yourselves. Copying the solutions from other classmates will not be accepted and your HW assignment will be scored 0 if you do so.

3.2 Exams

- There are **two midterm exams** and **the final exam**.
- **Exam Policy:** Only in the event of an unavoidable emergency will a make-up exam be considered.

3.3 Calculators

You can use a calculator during the exams.

3.4 Cell Phone and Other Electronic Devices

Cell phones and other electronic devices use are not permitted in class for any reason, thus eliminating distractions. Please set your cell phones to silent mode, and turn off all your electronic devices during the class time. If you are expecting an emergency call, please sit near the door, and answer the phone outside.

3.5 Grade Weighting

- Attendance: 5%
- Homework: 10%
- Midterm Exam1: 25%
- Midterm Exam2: 25%.
- Final: 35%.

3.6 Grade Scale (as intervals of percentages)

Percentage	Latin Grade
[93,100]	A
[90,93)	A-
[87,90)	B+
[83,87)	B
[80,83)	B-
[77,80)	C+
[73,77)	C
[70,73)	C-
[67,70)	D+
[63,67)	D
[60,63)	D-
[0,60)	F

3.7 Final Exam

The final exam: **December 12, Thursday, 12:30 - 3:00 pm**

Tentative Course Schedule

Week	Date	Material Covered
1	TU 08/27	L1: <i>Differential Equations and Mathematical Model</i>
	TH 08/29	L2: <i>Integrals as General and Particular Solutions</i>
2	TU 09/03	L3: <i>Slope Fields and Solution Curves</i>
	TH 09/05	L4: <i>Separable Equations and Applications</i>
3	TU 09/10	L5: <i>Linear First-Order Equations</i>
	TH 09/12	L6: <i>Substitution Methods and Exact Equations</i>
4	TU 09/17	No class
	TU 09/19	L7: <i>Modeling With First-Order Differential Equations</i>
5	TH 09/24	L8: <i>Review</i>
	TH 09/26	Exam 1
6	TU 10/01	L9: <i>Introductions: Second-Order Linear Equations</i>
	TH 10/03	No class
7	TU 10/08	L10: <i>General Solutions of Linear Equations</i>
	TH 10/10	L11: <i>Homogeneous Equations with Constant Coefficients</i>
8	TU 10/15	L12: <i>Nonhomogeneous Equations and Undetermined Coefficients</i>
	TH 10/17	L13: <i>Forced Oscillations and Resonance</i>
9	TU 10/22	L14: <i>Modeling With Higher-Order Differential Equations</i>
	TH 10/24	L15: <i>First-Order Systems and Applications</i>
10	TU 10/29	L16: <i>The Method of Elimination</i>
	TH 10/31	L17: <i>Matrices and Linear Systems</i>
11	TU 11/05	L18: <i>Review</i>
	TH 11/07	Exam 2
12	TU 11/12	L19: <i>The Eigenvalue Method for Homogeneous Systems</i>
	TH 11/14	L20: <i>Matrix Exponential and Linear Systems</i>
13	TH 11/19	L21: <i>Nonhomogeneous Linear Systems</i>
	TU 11/21	L22: <i>Diffusion Models and Boundary-Value Problems</i>
14	TH 11/23	L23: <i>Separable Partial Differential Equations</i>
	TU 11/24	L24: <i>Fourier Methods</i>
15	TH 12/03	L25: <i>Laplace Transforms</i>
	TU 12/05	L26: <i>Review</i>

4 Course Policies

4.1 Tardiness

Tardiness disturbs other students, disturbs me, and puts you at a disadvantage for doing well in the class. On the rare occasion that you are tardy, please come in quietly and take a seat in the back.

4.2 Attendance Policy

1. All students of SUNY Korea are required to attend every class.
2. Unexcused absences will affect seriously the student's final grade in the course.
3. If a student has over 20% unexcused absence (6 days), the student's final course grade will be an 'F'. Example:
 - (a) If the class is a 150 minute class, and is held once a week, the 4th unexcused absence of a student will lead to an F grade of the course.
 - (b) If the class is a 75 minute class, and is held twice a week, the 7th unexcused absence of a student will lead to an F grade of the course.
 - (c) If the class is a 50 minute class, and is held three times a week, the 10th unexcused absence of a student will lead to an F grade of the course.
 - (d) In Intensive English Course (IEC), if a student misses the class more than 40 hours in a semester, the student will receive an F grade on the course.
4. Students should report the reason of absence to the instructor in advance, or immediately after the absence.
5. When a student excuses his/her absence, the student must provide documentation of the reason for the absence to the instructor.
6. The instructor of the course reserves the right to excuse absences.
7. The course instructor may excuse the absence if the submitted documentation fulfills the conditions below.
 - (a) Extreme emergencies (e.g. death in the family)
 - (b) Severe medical reasons with doctor's note (Not a slight illness)
 - (c) Very important events (e.g. national conference, official school event)
8. At the end of semester, the course instructor should submit a copy of the attendance sheet to the Academic Affairs Office.

4.3 Code of Conduct

Since every student is entitled to full participation in class without interruption, all students are expected to be in class and prepared to begin on time. All cell phones or other devices that make noise must be turned off and out of sight when you enter the classroom. Disruption of class, whether by talking, noisy devices, eating in class or other inconsiderate behavior, will not be tolerated. Students who violate these rules will be asked to leave the classroom and will not be allowed to return until they have spoken privately with me.

4.4 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 [this link](#).

4.5 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.

4.6 Religious Holidays

(from the online Academic Calendar): Because of the extraordinary variety of religious affiliations of the University student body and staff, the Academic Calendar makes no provisions for religious holidays. However, it is University policy to respect the faith and religious obligations of the individual. Students with classes or examinations that conflict with their religious observances are expected to notify their instructors well in advance so that mutually agreeable alternatives may be worked out.

4.7 Accommodations for Disabilities

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact One-Stop Service Center, Academic Building A201, (82) 32-626-1117. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential. In addition, this statement on emergency evacuation is often included, but not required: Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and One-Stop Service Center.

4.8 Course Evaluations

Stony Brook University values student feedback in maintaining the high quality education it provides and is committed to the course evaluation process, which includes a mid-semester assessment as well as an end-of-the-semester assessment, giving students a chance to provide information and feedback to an instructor which allows for development and improvement of courses. Please click [the link](#) to access the course evaluation system.