MA 126 – Calculus II

Fall 2024; Section 105

Instructor. Dr. Armin Straub
Email. `straub@southalabama.edu`
Email is the best way to get in touch with me. I strive to reply as soon as possible and definitely within 24 hours; if you don't hear back within 24 hours, please check the email address and contact me again (most likely, something went wrong).
Online material.
`https://usaonline.southalabama.edu` — homework, exam grades (USAonline/Canvas)
`http://calc2.straub.link` — lecture notes, exam practice material
Office. MSPB 313
Office phone. (251) 460-7262 (please use e-mail whenever possible)

Graduate TA. Foyselur Rahman, `mr2333@jagmail.southalabama.edu`
Class schedule.
MWF, 11:15-12:05pm, in MSPB 235
TR, 11:00-11:50am, in Humanities 116 (TA Session led by Graduate TA)
Office hours.
MWF 10:00-11:00am, 12:15-1:15pm, or by appointment (Dr. Straub, MSPB 313)
TR 9:30-10:30am, R 12:30-1:30pm (Foyselur Rahman, MSPB 209)

Overview. This course is a continuation of MA 125 with emphasis on integral calculus. Topics include techniques of integration; applications of the definite integral to geometry, natural sciences, engineering, and economics; improper integrals; infinite sequences and series; Taylor polynomials and Taylor series; parametric equations and polar coordinates.
Learning objectives. Upon the successful completion of the course a student will be able to:

- Define, compute, and interpret a definite integral.
- State, explain, and apply the fundamental theorem of calculus.
- Perform techniques of integration, including u-substitution, integration by parts, decomposition into partial fractions, and trigonometric substitution.
- Recognize and compute improper integrals.
- Apply integrals to concepts such as area, volume, arc length, mass, work, and energy.
- Manipulate infinite sequences and series.
- Apply tests of convergence and divergence.
- Find the interval of convergence for power series, manipulate power series within their intervals of convergence, and represent analytic functions as a Taylor series.
- Describe plane curves in terms of parametric equations and polar coordinates.

General education learning outcomes.

- Students will evaluate information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).
- Students will convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words).

Textbook. *University Calculus: Early Transcendentals*, 4th edition, by J. Hass, C. Heil, P. Bogacki, M. Weir and G. Thomas (Pearson, 2020)

The textbook comes with access to MyLab Math which we will use for homework. You will have access to the online textbook and MyLab Math on Canvas through the JagPack Program (`https://www.southalabama.edu/programs/jagpack/`) unless you opted out. (If you opted out, you can purchase access to MyLab Math through Canvas. I suggest talking to me before doing so.)

Coverage.

- Integration (Sections 5.5–5.6)
- Application of Definite Integrals (Sections 6.1–6.4)
- Integrals and Transcendental Functions (Sections 7.1, 7.3)
- Techniques of Integration (Sections 8.1–8.4, 8.7)
- Infinite Sequences and Series (Sections 9.1–9.9)
- Parametric Equations and Polar Coordinates (Sections 10.1–10.3, 10.5)

Course format. Web-enhanced
Pre-requisite. C or better in MA 125 (Calculus I)

Grading

Exams. There will be three in-class midterm exams and a comprehensive final exam. Notes, books, or any tools besides the allowed calculator are not permitted during any of the exams. Our **tentative** exam schedule is:

- Midterm Exam 1: Thursday, September 26
- Midterm Exam 2: Thursday, October 24
- Midterm Exam 3: Thursday, November 21
- Final Exam: Wednesday, December 11 — 10:30-12:30pm

Homework. Homework is assigned for each class. The problems are accessible through MyLab Math at USAonline/Canvas (select *Access Pearson*, then *Open Pearson*). You have unlimited attempts for each problem but problems need to be completed by the posted due dates. (Make sure to work on them early so that you can ask for help if needed!) The two homework sets with the lowest scores will be dropped at the end of the semester.

Quizzes. Each week, up to two announced or unannounced quizzes will be given in the TA sessions. The two lowest quiz scores will be dropped.

Grades. Your grade will be based on the total sum of your scores on the midterm exams, homework, quizzes and the final exam.

- Midterm Exams: 45% in total
- Homework: 15% in total
- Quizzes: 15% in total
- Final Exam: 25%

The resulting numerical score is then translated to your semester grade as follows:
$[90, 100]$: A, $[80, 90)$: B, $[70, 80)$: C, $[60, 70)$: D, $[0, 60)$: F.

Make-up policy. There will be no make-ups for missed quizzes or midterm exams. If an exam is missed and appropriate documentation (e.g. a doctor's note) is presented in a timely manner, then the corresponding exam score will be replaced with the final exam score. Otherwise, the score for the missed exam will be recorded as zero. If a quiz is missed for an acceptable reason, the corresponding score is dropped (i.e. replaced with the average of all other quizzes).

Dropping. The final drop date is Friday, November 1. Please speak with me (and/or your advisor) before making a final decision to drop. Ideally, talk to me as soon as you are getting behind, so I can help you complete the course successfully.

Course organization

Calculator. The use of a basic scientific calculator, equivalent to the TI-30XIIS, is allowed on quizzes and exams. More advanced calculators (with graphing ability, additional algebraic capabilities, etc.) are not permitted.

Attendance. Attendance of all lectures is mandatory and roll will be taken. If you are unable to attend a class because you don't feel well, or because of any other reason, please let me know by email so that the absence can count as excused. You are responsible for finding out what you missed on days when you were unable to attend.
Let X be the number of times you miss class without excuse throughout the semester.

- If $X \leqslant 3$, then your lowest exam score is replaced with the final exam (if beneficial).
- If $X > 6$, then your overall semester grade will be decreased by a full letter grade.

Students are expected to be on time in class. Frequent late arrivals of a student to the classroom will be considered a disruption and a penalty may be applied in this circumstance.

Academic misconduct. Any form of academic misconduct will be reported. The penalty for cheating on an exam will typically be an automatic "F" for the entire course.

Cell phones and other electronic devices. The use of cell phones and other electronic devices, such as laptops, is generally not acceptable during lecture due to its potential for distraction, and is reserved for emergencies. If use of an electronic device is helpful to your learning (for instance, for note-taking) please speak with me beforehand.

Changes. Not all classes progress at the same rate. Thus course requirements and policies might have to be modified as circumstances dictate. You will be given notice if the course policies need to be changed.

Additional Academic Course Policies. Information on Student Disability Services, Academic Disruption Policy and Class Demeanor, Student Academic Conduct Policy, Operational Disruptions, and other university policies are posted on USAonline.

Welcome!

...please ask anytime if you have questions.