MATH 132-01 and 132L-01, Calculus II and Calculus II Lab
MWF 11:00-11:50am, S018, Tu/Th 11am-12:20pm S017

Instructor: Dr. Amy DeCelles

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Office Hours*: M 3-3:50, Tu 10-10:50, W 2-2:50, Th 1-1:50, F 3-3:50

**If you anticipate wanting to come to office hours regularly, and none of these times work for you, please email me about this within the first week of the semester.*

Course Description: A continuation of MATH 131. Topics include: techniques of integration; applications of integration; infinite sequences; infinite series, including tests of series convergence; power series; Taylor series; introductory polar coordinates; first-order differential equations and initial value problems, including graphical and numerical methods, and analytical solutions of separable and linear equations.

Course Prequisite: Successful completion (C- or better) of MATH 131 (Calculus I), equivalent, or permission of instructor.

Credits and Workload Expectations: 4 credits, 6-10 hours per week outside the classroom.

Course Materials and Resources:

- *Calculus: Early Transcendentals*, 9th Edition, by James Stewart
- Canvas. Notes and other information will be posted there. Students are expected to check Canvas (and Bethel email) regularly.
- WebAssign: online practice problems, etc.; accessed through Canvas.
- Calculator: No calculator is required for this course, though you may find a graphing calculator to be helpful.
- *Mathematica* Software: Available on the computers in lab S030.
- Learning Commons: lower level of the Miller/Moore Academic Center (AC)

Course Objectives: Upon successful completion of this course, students will be able to . . .

- utilize various tools from calculus and be able to understand and apply theorems in a variety of contexts;
- explain the concepts behind the calculations and theorems that you are using (e.g., What does it mean for a series to converge, conceptually?);
- use technology (e.g., calculators and computers) appropriately and have an understanding of how technology can help (and hinder) your understanding of calculus;

- study mathematics more effectively;
- identify the many ways in which calculus relates and/or applies to your area of study and every day life;
- communicate more effectively about mathematics;
- discuss how the development and history of mathematics has been influenced by Christian men and women and see how faith influences one's view of mathematics. (How can God be glorified through the study of mathematics?!) ...

Program Objectives: This course supports the following math program objectives (as well as similar objectives for Math Education and Engineering programs): M1, M2, M3, M4, M5, M6.

Collaboration and Consultation: I encourage you, when working on homework, to collaborate with fellow students, to reread the textbook, and to ask the professor or the Learning Commons tutors for help. You are also free to consult other textbooks or online resources for general information on the topic. However, *you may not at any point consult any worked solution to an assigned homework problem.* This includes but is not limited to: the student solution manual, the instructor solution manual, other students' written homework, and any online solution. If in doubt about the acceptability of a certain kind of collaboration or consultation, ask the professor. Please see the university policy on academic dishonesty, below.

Attendance: Attendance in class (both lecture and lab) is expected, and a portion of the final grade comes from preparation for and participation in class. Absences for official university functions will be excused, provided that the instructor is notified in advance. Absences due to qualifying family or medical emergencies will also be excused, though the instructor reserves the right to ask for verification. *In the case of an excused absence, it is the student's responsibility to contact the instructor in a timely fashion and make arrangements for an assignment to compensate for the missed discussion participation.*

Late Work: Written work is due at the beginning of class on the date it is due; WebAssign assignments are due 15 minutes before the start of class. Late work is typically not accepted. The lowest three discussion prep scores will be dropped at the end of the semester. Moreover, each student may have one "no questions asked" 24-hour extension on a problem set; the request must be received within 2 hours of the original deadline. Extensions on other assignments will be considered if requested before the due date, and work may certainly be submitted before the due date, if arrangements have been made with the professor in advance. If there is a serious, unforeseeable reason for missing more than one week of class, it is the student's responsibility to contact the professor as soon as possible and to make an appointment with the professor upon returning to classes to make a plan, e.g. whether to continue with the course, take an incomplete, or withdraw; and if continuing, how to make up missed work.

Missed Exams: Make-up midterm exams may be given to students with legitimate excuses such as serious illness, university sponsored events, etc., as long as the make-up exam can be taken within a reasonable time frame. If it is not possible to schedule a make-up exam within a reasonable time frame, the grade for the midterm may be prorated from the final exam. Written documentation may be required. Rescheduling the final is not possible except under very extreme circumstances.

Incompletes: Grades of I are normally not given in this course. However, they may be granted due to extenuating circumstances if (i) at least 60% of the course work has been completed at a level of C or better and (ii) the student demonstrates the ability to complete the remaining coursework outside of the classroom. In such cases, a well-documented petition should be submitted to the professor well before grades are due to the Registrar. Please see the university policies on incomplete grades and withdrawing from a class.

Final Course Grade: The overall score for this course will be computed as outlined below.

- Discussion Preparation (5%): drafting solutions to discussion problems before class
- WebAssign (10%): online homework problems, graded for correctness of final answers
- Problem Sets and Presentations (20%): about 11 problem sets, roughly weekly, each consisting of final solutions to discussion problems and full written solutions to WebAssign problems (whose answers are also submitted online); at least 1 group presentation (on an application of the integral)
- Basic Skills Exam (5%): four 5-minute quizzes, followed by one 20-minute quiz, Jan 17-21
- Midterm Exams (30%): tentatively scheduled for Mon Feb 7, Tues Mar 1, Mon Apr 4; equally weighted; each is a 50-minute, closed-notes, closed-book exam
- Final Exam (25%): cumulative; Thurs May 5, 10:30 am (time slot for TR 11am classes)
- Best Exam (5%): at the end of the semester the highest exam score (one of the midterm exam scores or the final exam score) will contribute an extra 5% towards the overall score

Final letter grades will be determined from the overall score as follows:

A	93-100	B+	87-89	B-	80-82	C	73-76	D+	67-69	D-	60-62
A-	90-92	B	83-86	C+	77-79	C-	70-72	D	63-66	F	0-59

Learning Commons: Located on the lower level of the Miller/Moore Academic Center (AC), the Learning Commons offers in-person and online tutoring services to all Bethel students, including help with any sort of writing projects, from conception to completion. Tutors are trained to give thoughtful feedback and advice on a variety of study skills, understanding concepts pertaining to relevant coursework, and overall writing concerns.

DEI: Bethel University respects the dignity of all God's image-bearers, and stands against racism, prejudice, and discrimination. Because Christ calls us to love our neighbor as ourselves, Christian discipleship includes pursuing the good of those who suffer injustice due to their color, race, or ethnicity. Therefore, we aim to continually transform our classrooms into safe and hospitable spaces where we listen to one another with mercy, learn from and value each other with tenacity, and commit to pursuing justice for the most vulnerable in our community.

Accessibility and Accommodations: Bethel University strives to make learning experiences accessible to all participants. If you anticipate or experience physical or academic barriers based on disability, please contact the Center for Academic Success to discuss options. To schedule an appointment, email `rachel.kennedy@betheluniversity.edu` or call 574-807-7460.

Academic Dishonesty: The student handbook (p. 156) states: "Any act of deceit, falsehood or stealing by unethically copying or using someone else's work in an academic situation is strictly prohibited.

1. A student found guilty of plagiarism or cheating will receive an "F" (zero) for that particular paper, assignment or exam. Should this occur, the professor will have an interview with the student and will submit a written report of the incident to the academic dean.

2. If a second offense should occur, the student will be asked to appear before the professor, the academic dean and the vice president for student development.

The student should realize that at this point continuation in a course and even his/her academic career may be in jeopardy. In the event of a recommendation for dismissal, the matter shall be referred to the Student Development Committee."

Cell Phones: Cell phones must be turned off and stowed in book bags during class. Any student using a cell phone for any reason (without permission) will be asked to leave the class and an unexcused absence will be recorded. Students using cell phones during exams or graded activities may be cited for cheating (at professor's discretion). In the case of expected emergencies, students may seek permission from the professor to leave their cell phones on during class, but the phone must remain in the book bag. Professors reserve the right to have operational cell phones in class.

COVID-19: Students are expected to comply with current Bethel University COVID-19 Protocols and Procedures.

Disclaimer: This syllabus is not a legal contract, but serves as a general outline for the semester. The professor reserves the right to announce in advance necessary adjustments to the course as the need arises.

Tentative Schedule: See the next page.

Calculus II, Tentative Semester Schedule, Spring 2022

Mon	Tues	Wed	Thurs	Fri
Jan 10, 2022	Jan 11, 2022	Jan 12, 2022	Jan 13, 2022	Jan 14, 2022
			Intro and Overview	Review: Linear Approximation, Constructive FTC
Jan 17, 2022	Jan 18, 2022	Jan 19, 2022	Jan 20, 2022	Jan 21, 2022
BSE 1A (5 min) Taylor Polynomials	BSE 1B (5 min) Taylor Polynomials Discussion	BSE 1C (5 min) Numerical Integration (7.7)	BSE 1D (5 min) Numerical Methods Discussion	BSE 2 (20 min) Wrap up week (30 min)
Jan 24, 2022	Jan 25, 2022	Jan 26, 2022	Jan 27, 2022	Jan 28, 2022
7.1 IBP (P1 due)	IBP Discussion	7.2 Trig Ints	Trig Ints Discussion	7.3 Trig Sub
Jan 31, 2022	Feb 1, 2022	Feb 2, 2022	Feb 3, 2022	Feb 4, 2022
Trig Sub Discussion	7.4 Partial Fractions and Rationalization	PFD Discussion	7.5-6 Integration Strategies, Tables, and Software	Strategies Discussion (P2 7.1-4 due)
Feb 7, 2022	Feb 8, 2022	Feb 9, 2022	Feb 10, 2022	Feb 11, 2022
Exam 1	7.8 Improper Integrals	Imp. Ints. Discussion	6.1 Areas between Curves	Areas Discussion
Feb 14, 2022	Feb 15, 2022	Feb 16, 2022	Feb 17, 2022	Feb 18, 2022
6.2 Volumes (Slicing)	Volumes (Slicing) Discussion (Supplement)	6.3 Volumes (Shells)	Volume (Shells) Discussion 6.5 Average Value (P3 7.8, 6.1-2 due)	Ave. Val. Discussion
Feb 21, 2022	Feb 22, 2022	Feb 23, 2022	Feb 24, 2022	Feb 25, 2022
6.4, 8.3 (Presentations)	8.3, 8.4 (Presentations)	Apps. Discussion	8.1 Arc Length	8.2 Surface Area (P4 6.3-5, 8.3-4)
Feb 28, 2022	Mar 1, 2022	Mar 2, 2022	Mar 3, 2022	Mar 4, 2022
Arc Length, Surf. Area Discussion	Exam 2 (50 min) Short break. Preview 11.1 (20 min)	11.1 Sequences	Sequences Discussion	11.2A Series (Intro) (P5 8.1-2 due)
Mar 7, 2022	Mar 8, 2022	Mar 9, 2022	Mar 10, 2022	Mar 11, 2022
Spring Break	Spring Break	Spring Break	Spring Break	Spring Break
Mar 14, 2022	Mar 15, 2022	Mar 16, 2022	Mar 17, 2022	Mar 18, 2022
Series (11.2A) Discussion	No Class (Deeper Life)	11.2B Series (Con't)	Series (11.2B) Discussion 11.3A Integral Test	11.3B Estimates of Sums (P6 11.1-2 due)
Mar 21, 2022	Mar 22, 2022	Mar 23, 2022	Mar 24, 2022	Mar 25, 2022
Integral Test Discussion	11.4 Comparison Tests	Comparison Tests Discussion	11.5 Alt. Series Test	Alt. Series Test Discussion
Mar 28, 2022	Mar 29, 2022	Mar 30, 2022	Mar 31, 2022	Apr 1, 2022
11.6A Absolute Convergence (P7 11.3-5 due)	11.6B Ratio and Root Tests	Abs. Conv. Discussion	Review Seq. & Series (11.7)	Discussion Seq. and Series (P8 11.6 due)
Apr 4, 2022	Apr 5, 2022	Apr 6, 2022	Apr 7, 2022	Apr 8, 2022
Exam 3 (P9 11.7 due)	11.8 Power Series	Power Series Discussion	11.9 Functions as P.S.	Fcns. as P.S. Discussion
Apr 11, 2022	Apr 12, 2022	Apr 13, 2022	Apr 14, 2022	Apr 15, 2022
11.10 Taylor Series	Taylor Series Discussion	9.1 Intro to DE	Easter Break	Easter Break
Apr 18, 2022	Apr 19, 2022	Apr 20, 2022	Apr 21, 2022	Apr 22, 2022
Intro to DE Discussion (P9 11.8-10 due)	9.2 Direction Fields and Euler's Method	9.3 Exponential Models	Exponential Models Discussion	9.4 Models for Pop. Gr.
Apr 25, 2022	Apr 26, 2022	Apr 27, 2022	Apr 28, 2022	Apr 29, 2022
Pop. Gr. Discussion	17.4 Series Solutions (P10 9.1-4 due)	17.4 Series Solutions	Series Solutions Discussion	Review DE (P11 17.4)