MATH 2414.091 INTEGRAL CALCULUS

2nd 5-Week Session - Summer 2025

Class Information:

Class Section	Room	Days/ Time	Instructor
MATH 2414.091 (Lecture)	SCI 2.230	MTWT 10:00am-12:00pm	Rabin Dahal
MATH 2414.391 (Prob. Sec.)	SCI 2.235	MW 3:00pm-5:15pm	Collins Boateng

Instructor Information:

Instructor: Rabin Dahal Office: FO 2.410B Office Phone: 972-883-6584	Office Hours: MW 9:00am - 9:45am, TR 12-12:45pm or by appt. Email: `Rabin.Dahal@utdallas.edu`

Teaching Assistant Information:

TA: Collins Boateng Office: FO 1.204 Office Phone:	Office Hours: Wed. 12:00pm-2:15pm or by appt. Email: `CollinsKwadwo.Boateng@utdallas.edu`
TA: Misha Billah Office: FO 1.210 O Office Phone:	Office Hours: Fri 3-5pm or by appt. Email: `Misha.Billah@utdallas.edu`

Course Description: MATH 2414 - Integral Calculus (4 semester credit hours) Continuation of Math 2413. Course covers topics in integral calculus, sequences and series. Topics include techniques of integration, improper integrals, and applications. Polar coordinates, parametric equations, and arc length. Infinite sequences and series, tests for convergence, power series, radius of convergence and Taylor series. Three lecture hours and two discussion hours a week; registration in a problem section as well as the exam section is required with MATH 2414. Not all MATH/STAT courses may be counted toward various degree plans. Please consult your degree plan to determine the appropriate MATH/STAT course requirements. Cannot be used to replace MATH 2419. A course material fee, which may include a course online access fee, of up to $100 may be charged for this course. Please see the course's syllabi in CourseBook for more details. Prerequisite: A grade of C- or better in either MATH 2417 or in MATH 2413 or equivalent. (3-2) S

Co-requisite and/or Other Restrictions: Students must enroll in the problem section MATH 2414.391 which meets on MW 3:00pm-5:15pm. Students are automatically enrolled in the exam section MATH 2414.702 which meets on exam days only.

Textbook and Materials:

- **Recommended Textbook:** Calculus, Early Transcendental 8^{th} *edition*; James Stewart. The book is available in the UTD library.
- **Lecture Notes:** Detailed lecture notes will be posted on eLearning course MATH 2414.702. Therefore, a textbook is not required.
- **Calculator:** A standard scientific calculator is allowed in the quizzes and exams. Graphing calculators, calculators with internet connectivity or ability to perform calculus operations are not allowed.

Students Learning Outcomes

1. Students will be able to formulate real world problems into mathematical statements.
   - Given a narrative description of a problem that lends itself to mathematical analysis, students will clearly define any variables introduced and provide an appropriate function or formula relating those variables.
2. Students will be able to develop solutions to mathematical problems at the level appropriate to each course.
   - The student will evaluate an indefinite or definite integral of a continuous function.
   - Students will determine the convergence or divergence of an improper integral or an infinite series.
3. Students will be able to describe or demonstrate mathematical solutions either numerically or graphically.
   - Students shall provide a qualitative, planar sketch which clearly indicates prescribed attributes.
   - Students will provide numerical results in a prescribed manner, as a percent, an interval, or within a specified error bound.

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eLearning: You must regularly check the MATH 2414.702 (the exam section) page of eLearning:

`https://elearning.utdallas.edu`

Under this course on elearning: Take Home Quizzes (THQ) will be assigned; a grade book will be maintained, and other important announcements will be posted. You will also access Digital Homework (DHW) through this course on eLearning.

Academic Support Resources

1. Peer Tutoring: The Student Success Center offers free help in math, physics and statistics courses to the UT Dallas students currently enrolled in classes. Please visit their website:

   `https://studentsuccess.utdallas.edu/programs/peer-tutoring/`

   for detail information.

Method of Evaluation:

A) **Grading System:**

1. **Homework (10%):** Digital Homework (DHW) will be generated using WebWork and made available on elearning course MATH 2414.702. To access DHW
   - On-Campus: Go to eLearning course MATH 2414.702 homepage, click on the folder DHW.
   - Off Campus: Follow the instructions on the webpage below to set up GlobalProtect VPN if you do not already have it: `https://atlas.utdallas.edu/TDClient/30/Portal/KB/ArticleDet?ID=152`If you have trouble installing or connecting, please click the IT Support link at the top of this webpage. Once you are connected to the UTD network via GlobalProtect VPN, go to your eLearning course MATH 2414.702, click the link DHW. Each time you want to access WebWork through the same device, you must connect to GlobalProtect VPN first. If you want to use a new device, you need to repeat the process from the beginning.

   The two lowest DHW scores will be dropped at the end of the semester. DHW average is worth 10% toward your final grade. See DHW schedule for the opening/due dates and the contents on each DHW.
2. **Quizzes (15%):** Quizzes will be given during the last 20 minutes of your problem section, except during exam weeks. At the end of the semester, the two lowest quiz scores will be dropped. The average of your remaining quiz scores is worth 15% toward your final grade.

3. **Take Home Quiz (15%):** Take-Home Quizzes (THQs) will be assigned throughout the course. A PDF file for each quiz will be uploaded to the MATH 2414.702 eLearning course. You are required to print the file, complete the solutions in the provided spaces, scan the completed document, save it as a PDF, and upload it to eLearning before the due date.

   You may use class notes (from lectures or problem sections), lecture notes and the recommended textbook while completing the quizzes. However, collaboration or assistance from any individual or external sources (including internet searches or tutoring services) is strictly prohibited.

   To receive full credit, all work must be clearly shown. Note that only a subset of the assigned problems on each THQ will be graded. The average score from all THQs will contribute 15% toward your final grade.

   Note: Unforeseen issues such as power/internet outage or eLearning malfunction may occur at any time. Therefore, it is strongly recommended that you plan to submit each THQ or DHW at least 24 hours before the deadline. This buffer will allow you to explore alternative submission methods within the remaining time, should such circumstances arise.

4. **Mid-term Exams (36%):** Two mid-term exams will be administered during the course. The dates and content coverage for each exam are outlined in the exam schedule section of this syllabus. Each mid-term exam will contribute 18% toward your semester grade.

5. **Final Exam (24%):** Final exam is comprehensive with more emphasis on the material covered after exam 2. The final exam will count 24% toward your semester average.

   Note: Detailed information regarding each exam will be provided on the MATH 2414.702 eLearning course page approximately one week before the scheduled date.

B. **Breakdown:** Letter grades will be assigned based on the numeric-to-alphabetic conversion table provided below.

$[90; 93)$ = A- $[93; 97)$ =A $[97; 100]$ = A+

$[80; 83)$ = B- $[83; 87)$ = B $[87;90)$ = B+

$[70; 73)$ = C- $[73; 77)$ = C $[77;80)$ = C+

$[60; 63)$ = D- $[63; 67)$= D $[67;70)$ = D+

$[0, 60)$ = F.

Important Dates

- **Classes begin:** Monday, July 07.
- **Last Day to Drop a class without a "W" :** Thursday, July 10.
- **Midterm Exam I**: Wednesday, July 16, 4:00pm-5:15pm, Location: Problem Section, SCI 2.235
- **Last Day to Drop a Course**: Monday, August 04.
- **Midterm Exam II**: Wednesday, July 30, Location: Problem Section SCI 2.235
- **Last Day of Classes** - Wednesday, August 13.
- **Final Exam**: Friday, August 15, 10:00 am-12:45 pm, SCI 2.230

Tentative Schedule:

Date	Lecture	Prob.Sec
07/07, Mon	Volumes	Volumes
07/08, Tue	Integration by Parts	
07/09, Wed	Trigonometric Integrals	Integration by Parts, Trig. Integrals Quiz 1
07/10, Thu	Trigonometric Substitution	
07/14, Mon	Partial Fractions	Trig. Substitution, Partial Fractions Quiz 2
07/15, Tue	Strategy for Integration	
07/16, Wed	Improper Integrals	Strategy for Integration, Improper Integrals, Exam 1
07/17, Thu	Separable Diff. Equations, Arc Length	
07/21, Mon	Area of a Surface of Revolution	Separable Diff. Equations, Arc Length, Area of a Surface of Revolution, Quiz 3
07/22, Tue	Parametric Curves	
07/23, Wed	Calculus of Parametric Curves	Parametric Curves, Calculus of Parametric Curves, Quiz 4
07/24, Thu	Polar Coordinates	
07/28, Mon	Area and Length in Polar Coordinates	Polar Coordinates, Area and Length in Polar Coordinates, Quiz 5
07/29, Tue	Sequences and Series	
07/30, Wed	Integral Test	Sequences and Series, Integral Test Exam 2
07/31, Thu	Comparison Test	
08/04, Mon	Alternating Series and Absolute Convergence	Comparison Test, Alternating Series and Abs. Convergence Quiz 6
08/05, Tue	The Ratio and Root Test	
08/06, Wed	Strategy for Testing Series	The Ratio and Root Test, Strategy for Series Testing, Quiz 7
08/07, Thu	Power Series	
08/11, Mon	Functions as Power Series	Power Series, Functions as Power Series, Quiz 8
08/12, Tue	Taylor and Maclaurin Series	
08/13, Wed	Review	Review, Quiz 9

Exam Schedule:

Exam	Topics	Date and Location
Exam 1	Volumes, Integration by Parts, Trigonometric Integrals Trigonometric Substitution, Partial Fractions	07/16, Wed. 4pm-5:15pm
Exam 2	Strategy for Integration, Improper Integrals Separable Equations, Arc Length, Area of a Surface of Revolution Parametric Curves, Cal. of Parametric Curves, Polar Coordinates Area and Length in Polar Coordinates	07/30, Wed. 4pm-5:15pm
Final	Comprehensive	08/15, Fri. 10am-12:45pm

Quiz Schedule:

Quiz	Topics	Date
Quiz 1	Volumes, Integration by Parts	07/09
Quiz 2	Trig. Integrals, Trig. Substitution	07/14
Quiz 3	Improper Integrals, separable equations, Arc Length	07/21
Quiz 4	Area of a surface of Revolution, parametric Curves	07/23
Quiz 5	Calculus of Parametric Curves, Polar Coordinates	07/28
Quiz 6	Sequences and Series, Integral Test, Comparison Test	08/04
Quiz 7	Alternating Series, The Ratio and Root Test	08/06
Quiz 8	Strategy for Series Testing, Power Series	08/11
Quiz 9	Functions as Power Series, Taylor and Maclaurin series	08/13

DHW Schedule:

DHW	Topics	Posting	Due
DHW 1	Volumes	07/07	07/13
DHW 2	Integration by Parts, Trig. Integrals	07/08	07/13
DHW 3	Trig. substitution, Partial Fractions	07/10	07/20
DHW 4	Strategy for Integration, Improper Integrals	07/15	07/20
DHW 5	Separable Equations, Arc Length, Area of a surface of Revolution	07/17	07/27
DHW 6	Parametric Curves, Calculus of Parametric Curves	07/22	07/27
DHW 7	Polar Coordinates, Area and Length in Polar Coordinates	07/24	08/03
DHW 8	Sequences and Series, Integral Test	07/29	08/03
DHW 9	Comparison Test, Alternating Series	07/31	08/10
DHW 10	The Ratio and Root Test, Strategy for Series Testing	08/05	08/10
DHW 11	Power Series, Functions as Power Series	08/07	08/14
DHW 12	Taylor and Maclaurin Series	08/12	08/14

THQ Schedule:

THQ	Topics	Posting	Due
THQ 1	Volumes	07/07	07/13
THQ 2	Integration by Parts, Trig. Integrals	07/08	07/13
THQ 3	Trig. substitution, Partial Fractions	07/10	07/20
THQ 4	Strategy for Integration, Improper Integrals	07/15	07/20
THQ 5	Separable Equations, Arc Length, Area of a surface of Revolution	07/17	07/27
THQ 6	Parametric Curves, Calculus of Parametric Curves	07/22	07/27
THQ 7	Polar Coordinates, Area and Length in Polar Coordinates	07/24	08/03
THQ 8	Sequences and Series, Integral Test	07/29	08/03
THQ 9	Comparison Test, Alternating Series	07/31	08/10
THQ 10	The Ratio and Root Test, Strategy for Series Testing	08/05	08/10
THQ 11	Power Series, Functions as Power Series	08/07	08/13

Course & Instructor Policies

1. **Late/Missed Coursework:** There is no make-up for any missed HW or quiz or THQ. However, we drop the two lowest homework and two lowest quizzes to account for possible missed works. Also, there will be no make-up exams unless the circumstances are extraordinary. In such cases, you should contact your lecture section instructor immediately.

2. **Attendance:** Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty. If you have to miss a class, you are responsible for the material covered in class. You are responsible for any/all assignments regardless of your attendance.

3. **Class Participation:** Regular class participation is encouraged, however, please raise your hand to speak. Avoid having side conversations and using electronic devices (such as phone, laptop) to prevent unnecessary distractions to yourself and your classmates. You are welcome to use a writing tablet to take lecture notes.

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the **Student Code of Conduct**.

Student AccessAbility

It is the policy and practice of The University of Texas at Dallas to make reasonable accommodations for students with properly documented disabilities. However, written notification from the Office of Student AccessAbility (OSA) is required. If you are eligible to receive an accommodation and would like to request it for this course, please discuss it with me and allow one week advance notice. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health,

psychological, learning, etc.) are invited to contact OSA for a confidential discussion. OSA is located in the Student Administration Building, AD 2.224. They can be reached by phone at 972-883-2098, or by email at: studentaccess@utdallas.edu

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Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the **Student Code of Conduct**.

UT Dallas Syllabus Policies and Procedures:

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please review the catalog sections regarding the **credit/no credit** or **pass/fail** grading option and withdrawal from class. Please go to

http://go.utdallas.edu/syllabus-policies

for these policies.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

Note: The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professors.