MTH 141 – SUMMER II 2019

Instructor : Ayşê Sharland
e-mail : aysharland at uri.edu
Office : 202G Lippitt Hall
Office Hours : 1:00pm - 2:00pm Monday-Thursday
Course website : (visit Sakai)
Course meets : MoTuWeTh 10:00am - 12:30pm in Swan Hall 305

Course Description

The language of science is mathematics, and calculus is an indispensable part of everyday calculations used in technology, engineering, mathematics, and other fields. MTH 141 is the first calculus course for students in these areas. This course will make precise and deepen your understanding of fundamental concepts such as change, limit, and rate. You will apply differential calculus to problems in the physical and biological sciences involving optimization, motion, and growth. You will also receive an introduction to integral calculus, which will be further developed in subsequent courses. In addition, you will have an understanding of mathematical modeling and some numerical methods.

MTH 141 Calculus I satisfies A1 and B3 requirements and is a prerequisite for MTH 142.

Course Goals

The goals of the course are

- Provide an introduction to one-variable Calculus, which is essential to natural and mathematical sciences, engineering and other areas.

- Expose students to mathematical concepts and provide mathematical skills needed in their area of specialization.

- Provide a bridge for the student from high-school or lower-division mathematics courses to upper-division mathematics.

- Help students to become effective mathematics problem solvers, specifically help them to
  - Understand concepts rather than merely mimic techniques.
  - Demonstrate understanding through explanation.
  - Understand the relationship between a process and the corresponding inverse process.
  - Select between formal and approximate methods for solution of a problem, and make judgments about the appropriateness of the choice.
  - Select the proper mathematical tool(s) for the task at hand.
Required Materials

⋆ Textbook

The textbook for this class is *Calculus: Single Variable* (7th Edition) by Deborah Hughes-Hallett, Andrew Gleason, William McCallum, et al., Wiley.

⋆ WileyPlus code

You will be given weekly homework assignments via the WileyPlus Online Homework System. Typically homework assignments will be made available the Monday of the week that the corresponding sections are scheduled to be covered and will be due the following Sunday night. Late submissions will be subject to point reductions.

To sign up for this system, you will need a WileyPlus registration code.

- If you buy a new text book, make sure to buy the book bundled with WileyPlus code.
- If you buy a used book, you need to buy the WileyPlus registration code separately. You can directly purchase the code from the WileyPlus website; you should also be able to buy the code alone from URI book store.

You register for the WileyPLUS system by going to the URL that is unique to your term/section of MTH 141 which will be announced before the term starts.

⋆ Calculators are NOT required in this course nor allowed in the exams or quizzes.

Grading

Final grades will be based on quizzes, online homework assignments on WileyPlus, three midterm exams, and a comprehensive final exam on the last day of the term. Total weight of each component is distributed as follows:

<table>
<thead>
<tr>
<th></th>
<th>Points available</th>
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<tbody>
<tr>
<td>WileyPlus</td>
<td>15% – see details above, under Required Materials.</td>
</tr>
<tr>
<td>Daily Quizzes</td>
<td>15% – details will be given in class.</td>
</tr>
<tr>
<td>Exams</td>
<td>40% – each worth of 13.33%.</td>
</tr>
<tr>
<td></td>
<td>• Monday, July 1, 2019</td>
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<td></td>
<td>• Monday, July 8, 2019</td>
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<td></td>
<td>• Monday, July 15, 2019</td>
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<tr>
<td>Final Exam</td>
<td>30% – Thursday, July 25, 2019.</td>
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</tbody>
</table>

All of the exams will be held in the classroom. The policy regarding make-up exams can be found under the Policies below.
There is no alternative credit in this course. Assignments will not be graded on a curve nor will any extra credit be made available.

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**Letter Grade Distribution**

Final grades will be determined according to the following scale.

<table>
<thead>
<tr>
<th>Grade Range</th>
<th>Letter Grade</th>
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<tbody>
<tr>
<td>92 – 100</td>
<td>A</td>
</tr>
<tr>
<td>90 – 91.99</td>
<td>A-</td>
</tr>
<tr>
<td>87 – 89.99</td>
<td>B+</td>
</tr>
<tr>
<td>82 – 86.99</td>
<td>B</td>
</tr>
<tr>
<td>80 – 81.99</td>
<td>B-</td>
</tr>
<tr>
<td>77 – 79.99</td>
<td>C+</td>
</tr>
<tr>
<td>72 – 76.99</td>
<td>C</td>
</tr>
<tr>
<td>70 – 71.99</td>
<td>C-</td>
</tr>
<tr>
<td>67 – 69.99</td>
<td>D+</td>
</tr>
<tr>
<td>60 – 66.99</td>
<td>D</td>
</tr>
<tr>
<td>0 – 59.99</td>
<td>F</td>
</tr>
</tbody>
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**Expectations**

Much of the learning of this course will happen outside the classroom time: by reviewing the lecture notes daily, completing homework assignments and preparing for quizzes. You are encouraged to start working on assignments and practice problems right away, and seek help from your instructor or tutors at AEC (https://web.uri.edu/aec/tutoring/summer/) whenever you feel like you are stuck. It is very important that you do not let “problems” pile up. Moreover,

- You are expected to attend every lecture, and to submit your homework on time. We cover a great deal of information at a rapid pace; missing a class will result in a large amount of material missed. Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee’s responsibility to get all missing notes or materials.

- It is your responsibility to communicate clearly in writing up solutions for homework, quizzes, and exams. Your results must display your understanding well and be written in a correct, complete, coherent, and well organized fashion. The rules of language still apply in mathematics, and they apply even when symbols are used in formulas, equations, etc. Precise communication and neatness count!

- The pace of the class requires that you spend enough time every day doing homework, reviewing notes, reading the textbook, and working out extra problems, all in addition to the time spent in class.
Learning Outcomes

At the end of the course you should be able to:

- **Limits and continuity.** Select suitable techniques to and perform analysis and computation of limits by analytic, graphical and numerical methods, and use limits to investigate properties of functions such as continuity and existence of asymptotes. Investigate continuity properties of functions.

- **Derivatives.** Select suitable techniques to and perform analysis and computation of derivative at a point using limits, numerical, and graphical methods. State the definition of derivative as a limit of a difference quotient, and use it to establish its value or non-existence. Perform analysis of differentiability of a function at a point or a set of points, using limits, numerical, or graphical methods.

- **Computing derivatives algebraically.** Select suitable formulas and theorems to and perform computation of first and higher order derivatives algebraically. Perform computation derivatives of functions defined implicitly.

- **Using Derivatives.** Perform analysis and computation using differentiation to and investigate velocity, acceleration, related rates, monotonicity, optimization problems, linear approximation, limits (L’Hopital’s rule), and functions defined parametrically. Apply theorems about continuous and differentiable functions (Extreme Value Theorem, Mean Value Theorem, Rolle’s Theorem).

- **Integration.** Select appropriate technique to perform analysis and computation using Left and Right Riemann sums to approximate integrals. Select suitable formulas and theorems to and calculate anti-derivatives, and verify answers by differentiation. State the First and Second Fundamental Theorem of Calculus and use it to compute integrals of simple functions, and apply them to total change. Use integrals to compute area of planar regions bounded by simple functions.

- **Modeling, Approximation, Technology.** Select calculus methods and use technology to analyze mathematical models and determine their applicability. Use technology to analyze accuracy of approximations, perform numerical and symbolic calculations, and produce graphical representations of functions to investigate their properties.

- **Written Mathematical Communication.** Communicate effectively in written form mathematical ideas and solutions, by stating in a complete, clear, concise, and organized manner steps, calculations, solution strategy, conclusions, and when appropriate, interpreting results in practical or applied terms.
General Exam Policies

- No calculators, notebooks, textbooks or cheat sheets are allowed in the exam.
- During the exam, you may not leave the room for any reason. Please remember to use the bathroom before the exam.
- No cell phones, MP3 players, smart watches, or any electronic devices of any kind may be used or even accessible to you at any time during the exam. Any student found with any electronic device for any reason during the exam will be considered to be cheating.

Exam and Quiz Make Up Policy

Makeup exams/quizzes may be scheduled in the event you are unable to attend exams/quizzes under the following conditions. In particular, if you must miss the exam because of a scheduling conflict, you must notify your instructor before, not after, the exam, and emergencies require you to contact your instructor within 24 hours. See University Manual sections 8.51.10 and 8.51.14 for guidelines.

- If your reason for missing the exam as scheduled is (i) a University sanctioned event for which verifiable documentation can be provided (including another scheduled class), (ii) a responsibility to an employer that cannot be rescheduled (with documentation from your employer), or (iii) Religious holidays, then you MUST INFORM YOUR INSTRUCTOR 48 HOURS IN ADVANCE OF THE EXAM AND PROVIDE DOCUMENTATION IF REQUESTED. Makeup exams will be scheduled after the actual exam, and preferably before the class period when exams are to be handed back, but no later than one week after the original date.

- If the reason for missing the exam as scheduled is due to (i) illness (with verifiable documentation from a medical provider), or (ii) an emergency (with appropriate documentation), then you MUST INFORM YOUR INSTRUCTOR WITHIN 24 HOURS OF THE EXAM and provide documentation upon your return. Failure to notify your instructor within 24 hours will result in a 0 for the exam. No exceptions. Makeup exams may be scheduled no later than a week after the original date, unless the illness or emergency precludes this, in which case the makeup exam will be given on a common date during the last few weeks of the semester.

- If your circumstances do not meet either of the above (no documentation, a non-emergency excuse without sufficient notice, etc.), then you will receive a zero for the missed exam. No exceptions.

Electronic Devices

Cell phones should be kept on silent mode during class. All other electronic devices (ipads, ipods, laptops, etc.) should be turned off during class. They can be a distraction to you and your classmates. Excepted from this are tablets used for note-taking.
Academic Honesty Policy

Cheating is defined in the University Manual section 8.27.10 as the claiming of credit for work not done independently without giving credit for aid received, or any unauthorized communication during examinations. Students are expected to be honest in all academic work. The following are examples of academic dishonesty:

- Claiming disproportionate credit for work not done independently
- Unauthorized possession or access to exams
- Unauthorized communication during exams
- Unauthorized use of another’s work or preparing work for another student
- Taking an exam for another student
- Altering or attempting to alter grades
- The use of notes or electronic devices to gain an unauthorized advantage during exams
- Facilitating or aiding another’s academic dishonesty

The resolution of any charge of cheating or plagiarism will follow the guideline set forth in the University Manual sections 8.27.10-8.27.21.

Furthermore, course content and outlines, exams, and assignments created by instructors shall be considered the instructors’ intellectual property. Course materials shall not be distributed, shared in any public domain or third party website, or sold without prior written consent of the instructor. See the University Manual section 8.27.22.

Special Needs

Any student with a documented disability may contact the instructor early in the semester so that reasonable accommodations may be arranged. Students can contact Disability Services for Students: Office of Student Life, 330 Memorial Union, 874-2098. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Incomplete Grade

University of Rhode Island regulations concerning incomplete grades will be followed. See University Manual sections 8.53.20 and 8.53.21 for details.

Religious Holidays

It is the policy of the University of Rhode Island to accord students, on an individual basis, the opportunity to observe their traditional religious holidays. Students who plan to be absent from classes or examinations for religious holy days that traditionally preclude secular activity shall discuss this with the appropriate instructor(s) in advance of the holy day. See University Manual section 8.51.11 for details.

Standards of Behaviour

Students are expected to treat faculty and fellow classmates with dignity and respect. Students are responsible for being familiar with and adhering to the published “Community Standards of Behavior: University Policies and Regulations” which can be accessed in the University Student Handbook web.uri.edu/studentconduct/university-student-handbook/