**MATH 122B – First Semester Calculus**

**Departmental and University Policies**

**Fall 2019**

**The information in this document applies to all sections of MATH 122B. Your instructor will post a syllabus detailing policies specific to your section. You are responsible for the information in both documents.**

Catalog Course description: An introduction to first-semester calculus for engineering, science and math students, from rates of change to integration, with an emphasis on understanding, problem solving, and modeling. Topics covered include key concepts of derivative and definite integral, techniques of differentiation, and applications, using algebraic and transcendental functions.  A graphing calculator is required for this course.

Course Prerequisites: A grade of C or better in Math 122A. For more information see <https://www.math.arizona.edu/academics/placement/courses>

Course Structure: Math 122B is a four credit course which meets in person for either five days or four days per week depending on the scheduled start time of the class.

Course Goals and Objectives:

* To help students understand the calculus concepts of differentiation and the definite integral.
* To help students apply prerequisite skills in addition to calculus formulas and rules in order to compute derivatives and antiderivatives.
* To help students construct well-written solutions to mathematical problems and to provide practical interpretations of answers.
* To promote problem solving and critical thinking skills through the application of calculus concepts.
* To promote, utilize, and understand the connections between the representations of functions: concepts are explored numerically, graphically, algebraically, and in the context of applications.

Learning Outcomes: Upon successful completion of this course, students should be able to

* Use derivatives and limits to analyze and graph algebraic and transcendental functions.
* Select and apply models and differentiation techniques to applications involving, but not limited to, optimization and related rates.
* Apply the fundamental Theorem of Calculus to evaluate integrals.
* Use estimation techniques to approximate rates of change, area, and total change.

Course Webpages: <https://d2l.arizona.edu> for access to course content information and materials, https://calculus.math.arizona.edu/calc1/math122b for general information and additional resources.

Text and WebAssign: Calculus Single Variable; Sixth Edition by Hughes-Hallett et al.; published by Wiley and access to the online homework system, WebAssign. This package is being delivered digitally via D2L through the Inclusive Access program. You automatically have access to the course materials free through September 28. You must take action (even if you have not accessed the materials) to opt-out if you do not wish to pay for the materials, and choose to source the content independently. The deadline to opt-out for this course is 9:00pm MST, September 28. If you do not opt-out and choose to retain your access, the cost of the digital course materials will appear on your October Bursar’s account. For more information, visit the FAQs page at <https://shop.arizona.edu/textbooks/Inclusive.asp>. *Please see your instructor’s syllabus for information about section specific materials.*

Calculators: A graphing calculator is an important tool that will be used in this course. We recommend models in the TI-83 or TI-84 series. Models that can perform symbolic calculations (also known as CAS) are NOT allowed on exams, including the final exam. CAS models include (but are not limited to) the TI-89, TI NSpire CAS, HP 50g, and Casio Classpad 330. Students are not allowed to share calculators during exams. *Please see your instructor’s syllabus for information about section specific policies for calculator usage on exams or quizzes.*

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Communication: Announcements and important course information may be sent out via your official UA email, through D2L, or through the WebAssign email feature. It is your responsibility to check for messages and announcements regularly. *Please see your instructor’s syllabus for his/her preferred mode of communication.*

**Absence and Class Participation:** Attending lectures and participating in this course are vital to the learning process. As a result, you are expected to attend every scheduled class meeting. *Please see your instructor’s syllabus for section specific information in addition to the University policies below.*

* The UA’s policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>.
* The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.
* Absences for groups of more than three students that are pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <http://policy.arizona.edu/employmenthuman-resources/attendance>.

**Expected Classroom Behavior:** To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing, etc.).Students are asked to refrain from disruptive conversations with people sitting around them during lecture (unless the conversation is directed by the instructor, i.e. group work). Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion and may be reported to the Dean of Students. See <https://policy.arizona.edu/education-and-student-affairs/disruptive-behavior-instructional-setting>. *Please see your instructor’s syllabus for any additional policies specific to your section.*

**Accessibility and Accommodations:** At the University of Arizona we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (520-621-3268, <https://drc.arizona.edu/>) to establish reasonable accommodations. Please be aware that the accessible table and chairs in our room should remain available for students who find that standard classroom seating is not usable.

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**Homework:** (100 points) Homework will be submitted in multiple formats throughout the semester. WebAssign will be used for problems assigned primarily from the text. Hand-written homework showing all work with proper notation will also be submitted. These problems will come from the text and/or from a set of problems created by your instructor. Your instructor may also give quizzes or worksheets/activities as part of the homework component. *Please see your instructor’s syllabus for information specific to your section and how your homework grade will be computed.*

**In-Class Exams:** (400 points) Four exams will be given in sections meeting Monday through Friday. Three exams will be given in sections meeting Monday through Thursday. All exams are closed-book and closed-notes. All electronic devices that transmit wireless signals must be turned off during all exams. Issues related to the grading of an exam need to be addressed within one week after the exam has been returned. *Please see your instructor’s syllabus for the dates of your exams, how points will be distributed across exams, and any other information specific to your section.*

**Missed Exams:** In general, there will be no make-up exams in the course. However, in complex and unusual circumstances which are beyond your control, a make-up exam may be given on a case-by-case basis. Dean’s excuses for university related activities and religious holidays recognized by the university will be honored. Students who fail to notify their instructor or Mathematics Department within 24 hours after the test has been given may receive a grade of zero on the exam. Make-up exams will be administered only at the discretion of the Mathematics Department and/or the instructor. If a student is allowed to make up a missed exam, (s)he must take it at a mutually arranged time. No further opportunities will be extended. Failure to contact the Mathematics Department and/or instructor as stated above or inability to produce sufficient evidence of a real emergency will result in a grade of zero on the exam.

**Final Exam:** (200 points) The final exam is a comprehensive common exam given to all sections of Math 122B and 125. It is scheduled for Tuesday, December 17 from 1:00 – 3:00 pm. Additional information and a study guide can be found at https://calculus.math.arizona.edu/calc1/math122b. The location of the final exam will also be posted later in the semester at this site. The University’s Exam regulations will be strictly followed <https://www.registrar.arizona.edu/courses/final-examination-schedule-fall-2019>

**Grades:** Your final course grade will be determined by a percentage of the 700 total possible points in the course. There are no extra credit or bonus points earned in this course.

 You are guaranteed a grade of:

Homework 100 points A if you earn at least 630 points (90%)

In-class exams 400 points B if you earn at least 560 points (80%)

Final Exam 200 points C if you earn at least 490 points (70%)

Total possible points 700 points D if you earn at least 420 points (60%)

Note: A grade of C or better in Math 122B or 125 is a necessary prerequisite for Math 129 (Calculus II). Students who receive a D in Math 122B or 125 will receive credit for the course towards graduation requirements, and will be able to use their course for the general education math requirement, but will not be automatically qualified to register for Math 129.

**Withdrawing from the course:** Withdrawals must be made in accordance with University policy <https://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal>. You may drop the class without a W through September 28 using UAccess. The class will appear on your UAccess record, but will not appear on your transcript. You may withdraw with a W through November 10 using UAccess. The University allows withdrawals after November 10, but only with the Dean’s approval. Late withdraws are dealt with on a case by case basis, and requests for late withdraw without a valid reason may or may not be honored.

**Incompletes:** Incompletes must be made in accordance with University policy <https://catalog.arizona.edu/policy/grades-and-grading-system#incomplete>.

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**Additional Resources for Students:** UA Academic policies and procedures are available at

<http://catalog.arizona.edu/policies> . Student Assistance and Advocacy information is available at

<http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>

**Confidentiality of Student Records:**

[http://www.registrar.arizona.edu/personal](http://www.registrar.arizona.edu/personalinformation/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa)

[information/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa](http://www.registrar.arizona.edu/personalinformation/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa)

**Code of Academic Integrity:** Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: <http://deanofstudents.arizona.edu/codeofacademicintegrity> and <http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

**Nondiscrimination and Anti-harassment Policy:** The University is committed to creating and maintaining an environment free of discrimination; see <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy> .

**Threatening Behavior Policy:** The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See.

<http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>

Crisis resources: Campus Health offers counseling services and resources for students covering a wide range of issues regarding mental health; see <https://health.arizona.edu/crisis-resources-and-hotlines>

**Tentative Schedule:** Suggested calendars for MTWRF and MTWR classes can be found at https://calculus.math.arizona.edu/calc1/math122b These calendars are guidelines and may differ from the one used by your instructor. *Please see your instructor’s syllabus, especially for information about exam dates.*

**Changes to the Course Syllabus:** The information contained in the instructor’s course syllabus, other than the grade and absence policies, as deemed appropriate by the instructor, are subject to change with reasonable advance notice. In particular, the dates of midterm exams, the number of exams, and the order in which topics are covered may differ from the dates and arrangement in the tentative weekly schedule.

Relevant for MTWRF sections

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| --- | --- | --- | --- |
| Week | Start Date | Topics to be Covered | Assignments (WebAssign, Written) |
| 1 | Sep 16 | Measuring speedDerivative at a point  | Reading: 1.7, 1.8 review, 2.1, 2.2Homework: Limits, 2.1 |
| 2 | Sep 23 | Derivative function Interpretations of derivativesSecond derivative | Reading: 2.3, 2.4, 2.5Homework: 2.2, 2.3, 2.4 |
| 3 | Sep 30 | Differentiability Power, polynomial, and exponential rules. EXAM 1 | Reading: 2.6, 3.1, 3.2Homework: 2.5, 2.6, 3.1 |
| 4 | Oct 7 | Product, quotient, chain rules, Trig | Reading: 3.3, 3.4, 3.5Homework: 3.2, 3.3 |
| 5 | Oct 14 | Trig, chain, inverse rulesImplicit differentiation | Reading: 3.5, 3.6, 3.7Homework: 3.4, 3.5, 3.6 |
| 6 | Oct 21 | Linear approximationsUsing 1st & 2nd derivativesEXAM 2 | Reading: 3.9, 4.1, 4.2Homework: 3.7, 3.9, 4.1, 4.2 |
| 7 | Oct 28 | OptimizationOptimization & modelingFamilies of functions | Reading: 4.2, 4.3, begin 4.4Homework: 4.2, 4.3 |
| 8 | Nov 4 | Rates & related ratesL’Hopital’s Rule | Reading: 4.4, 4.6, 4.7Homework: 4.3, 4.4, 4.6 |
| 9 | Nov 11 | EXAM 3Measuring distanceThe definite integral | Reading: 5.1, 5.2Homework: 4.7, 5.1 |
| 10 | Nov 18 | The Fundamental TheoremTheorems about definite integralsAntiderivatives | Reading: 5.3, 5.4, 6.1Homework: 5.2, 5.3, 5.4 |
| 11 | Nov 25 | Constructing antiderivativesDifferential equations | Reading: 6.2, 6.3Homework: 6.1, 6.2 |
| 12 | Dec 2 | The 2nd Fundamental Theorem Integration by substitutionEXAM 4 | Reading: 6.4, 7.1Homework: 6.3, 6.4, 7.1 |
| 13 | Dec 9 | Finish topicsReview | Homework: 7.1 |
| 14 | Dec 16 | Final Exam on Dec 17 1-3pm |  |

Relevant for MTWR sections

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| --- | --- | --- | --- |
| Week | Start Date | Topics to be Covered | Assignments (WebAssign, Written) |
| 1 | Sep 16 | Measuring speedDerivative at a point  | Reading: 1.7, 1.8 review, 2.1, 2.2Homework: Limits, 2.1 |
| 2 | Sep 23 | Derivative function Interpretations of derivativesSecond derivativeDifferentiability | Reading: 2.3, 2.4, 2.5, 2.6Homework: 2.2, 2.3, 2.4 |
| 3 | Sep 30 | Power, polynomial, and exponential rules Product, quotient rules | Reading: 3.1, 3.2, 3.3Homework: 2.5, 2.6, 3.1, 3.2 |
| 4 | Oct 7 | Chain rules EXAM 1 | Reading: 3.4Homework: 3.3, 3.4 |
| 5 | Oct 14 | Trig, chain, inverse rulesImplicit differentiationLinear approximations | Reading: 3.5, 3.6, 3.7, 3.9Homework: 3.5, 3.6, 3.7 |
| 6 | Oct 21 | Using 1st & 2nd derivativesOptimization | Reading: 4.1, 4.2Homework: 3.9, 4.1 |
| 7 | Oct 28 | Optimization & modelingFamilies of functions | Reading: 4.3, 4.4Homework: 4.2, 4.3, 4.4 |
| 8 | Nov 4 | EXAM 2Rates & related rates | Reading: 4.6Homework: 4.4 |
| 9 | Nov 11 | L’Hopital’s RuleMeasuring distanceThe definite integral | Reading: 4.7, 5.1, 5.2Homework: 4.6, 4.7 |
| 10 | Nov 18 | The Fundamental TheoremTheorems about definite integralsAntiderivatives | Reading: 5.3, 5.4, 6.1Homework: 5.1, 5.2, 5.3, 5.4 |
| 11 | Nov 25 | Constructing antiderivativesDifferential equations | Reading: 6.2, 6.3Homework: 6.1, 6.2 |
| 12 | Dec 2 | Integration by substitutionEXAM 3 | Reading: 7.1Homework: 6.3, 7.1 |
| 13 | Dec 9 | The 2nd Fundamental Theorem Review | Homework: 6.4 |
| 14 | Dec 16 | Final Exam on Dec 17 1-3pm |  |