MAT251 - Calculus for Life Sciences

ASU School of Mathematical & Statistical Sciences

Syllabus – Fall 2017

Instructor: Dave Heckman   **Section:**
Office: ECA 213   **Room:**
Office Hours: **Time:**
Phone: (480) 965 - 0267   **Website: math.la.asu.edu/~dheckman**
E-mail: daveheckman@asu.edu **(Only send emails from your ASU address.)**

Course Description: Differential and integral calculus of elementary functions. Emphasizes applications to the life sciences. Not open to students with credit in MAT 210, 265, or 270.
3 credits, fulfills university general studies MA requirement.

Pre-requisites: MAT 170 with C or better or completed the ALEKS Calculus Placement Exam with a score of 60% or higher or the Calculus Placement Exam with a score 36 or higher.

Textbook: Bittinger, Marvin L., Neal Brand & John Quintanilla, _Calculus for the Life Sciences_, Addison-Wesley, Pearson Education, Boston, 2006. ISBN 0-558-37131-0

Graphing Calculator: A graphing calculator is required for this course. Examples of highly recommended models are the TI 83/84 or TI _n_-spire (NOT the n-spire CAS) or Casio 9850GB Plus. Calculators with QWERTY keyboards or those that do symbolic algebra, such as the Casio FX2, Casio 9970Gs, Ti n-spire CAS, TI-89, or TI-92 **may not** be used in class or during an exam.

Attendance:
- Attendance will be taken on a regular basis as studies have shown that students that attend class regularly are more likely to complete their courses successfully.
- For classes that meet 3 days per week (Mon-Fri), the maximum number of allowed absences is six. For classes that meet twice per week, the maximum number of allowed absences is four. **Students who exceed the maximum number of absences will receive a grade of EN.**

Classroom behavior: Under no circumstances should you allow your cell phone to ring during class. Any disruptive behavior, which includes ringing cell phones, listening to your mp3/iPod player, text messaging, constant talking, eating food noisily, reading a newspaper will not be tolerated. Students who engage in disruptive classroom behavior may be subject to various sanctions. The procedures for initiating a disruptive behavior withdraw can be found at http://clas.asu.edu/classroom/disruptive.

Technology Usage Policy: Any student who accesses a phone or any internet-capable device during a quiz or exam for any reason automatically receives a score of zero on the assessment. All such devices must be turned off and put away during quizzes and exams.

TENTATIVE SCHEDULE

Week of	Topics	Comments
8/17 - 8/18	Orientation, online homework **2.1**: Limits & Continuity: Numerically & Graphically	
8/21 - 8/25	**2.2**: Limits Algebraically **2.3**: Average Rates of Change	
8/28 - 9/1	**2.4**: Differentiation Using Limits of Difference Quotients **2.5**: Differentiation techniques	
9/4 - 9/8	**2.6**: Instantaneous rates of change **2.7**: Differentiation Techniques: Product Rule & Quotient Rule Plus Trig Derivatives	**Labor Day (Sept 4th) - No Classes**
9/11 - 9/15	**2.8**: The Chain Rule	**Exam 1 (2.1 – 2.8): 9/15**
9/18 - 9/22	**3.1**: Using first derivatives to find min/max values **3.2**: Using second derivatives to find min/max values	
9/25 - 9/29	**3.4**: Using derivatives to find absolute max & min **3.5**: Optimization (Max / Min problems)	**Academic Status Report #1: 9/25 - 10/2**
10/2 - 10/6	**3.7**: Implicit Differentiation and related rates Exponential and Logarithmic Function Review	
10/9 - 10/13	**4.1 & 4.2**: Derivatives Exponential and Logarithmic functions **(base e)**	**Fall Break (10/7 - 10/10) – No Classes**
10/16 - 10/20	**4.3**: Exponential Growth **4.4**: Decay **,** Newton's Law of Cooling	
10/23 - 10/27	**4.5**: The derivatives of a^x and $\log_a x$.	**Academic Status Report #2: 10/25 – 10/30**
10/30 - 11/3	**5.1**: Integration (Basic Integrals)	**Exam 2 (3.1,3.2, 3.4,3.5,3.7,4.1 – 4.5) 11/1** **Course Withdrawal Deadline – 11/1**
11/6 - 11/10	**5.2**: Definite Integrals (Geometric Approach) **5.3**: Fundamental Theorem of Calculus	**Veterans Day - 11/10 - No Classes**
11/13 - 11/17	**5.4**: Properties of definite integrals **5.5**: Integration by substitution	
11/20 - 11/24	**5.6**: Integration by parts Regression and Analysis	**Thanksgiving 11/23 - 11/24** **(No Classes)**
11/27 - 12/1	Regression and Analysis (Continued) Review	**Complete session withdrawal deadline: 12/1**
12/4 - 12/8	**FINAL EXAM WEEK**	**Exam 3 (5.1 – 5.6, Regression)** According to ASU Final Exam Schedule

Grading

Distribution: Exams 1, 2, and 3   20% each
                   Homework   20%
                   Quizzes   20%

Grading Scale: 97 – 100% A+, 93 – 96.9% A, 90 – 92.9% A-, 87 – 89.9% B+, 83 – 86.9% B,
80 – 82.9% B-, 77 – 79.9% C+, 70 – 76.9% C, 60 – 69.9% D, 0 – 59.9% E

Withdrawal: A student may withdraw from a course with a grade of **W** during the course withdrawal period. The instructor's signature is not required.

The grade of Incomplete: A grade of incomplete will be awarded only in the event that a documented emergency or illness prevents the student who is doing acceptable work from completing a **small** percentage of the course requirements. The guidelines in the current general ASU catalog regarding a grade of incomplete will be strictly followed.

Instructor-Initiated Drop: At the instructor's discretion, any student who has not attended class during the first week of classes may be administratively dropped from the course. However, students should be aware that non-attendance will NOT automatically result in their being dropped from the course. Thus, a student should not assume they are no longer registered for a course simply because they did not attend class during the first week. It is the student's responsibility to be aware of their registration status.

Homework and Quizzes:
- Homework and quizzes will be graded. Students may work together on homework, but each individual student is required to submit their own work.
- Homework will be submitted online via the internet using the online homework system MyMathLab.
  It can be either your own computer or one in any of the ASU computer labs.
- To log onto MyMathLab, go to **http://pearsonmylabandmastering.com/**
  - You will need 3 items to register for MyMathLab:
    1. Course ID –
    2. Valid access code (bookstore purchase or online registration)
    3. Valid email address

Further instructions regarding MyMathLab will be given in class.
Regular quizzes will be given and frequently reflect material that has recently been discussed in class.
Students are expected to read relevant sections of the textbook prior to attending class.

Exams: You will take three exams during the term. Each midterm exam may consist of a mixture of Multiple Choice, Matching, Short Answer, and/or Free Response questions. The exams will be administered in class. **The best possible preparation of them is regular attendance and completion of assigned homework.** Your calculator memory may be viewed during any exam and will be cleared if anything suspicious is noted. The instructor has the right to regard finding suspicious material in your calculator memory as cheating.

Makeup exams: The instructor is not required to give a make-up exam. If a make-up exam is given for any reason, it may be more difficult than the original. Make every effort to take each exam on time.

Technology Usage Policy: Any student who accesses a phone or any internet-capable device during a quiz or exam for any reason automatically receives a score of zero on the assessment. All such devices must be turned off and put away during quizzes and exams.

Final Exam policy:
The final exam schedule listed in the Schedule of Classes will be strictly followed. Except to resolve those situations described below. No changes may be made in this schedule without prior approval of the Dean of the college in which the course is offered. Under this schedule, if a conflict occurs, or a student has more than three exams on one day, the instructors may be consulted about an individual schedule adjustment. If necessary, the matter may be pursed further with the appropriate dean(s). This procedure applies to conflicts among any combination of Downtown Phoenix campus, Tempe campus, Polytechnic campus, West campus, and/or off campus class. Make-up exams will NOT be given for reasons of a non-refundable airline tickets, vacation plans, work schedules, weddings, family reunions, and other such activities. Students should consult the final exam schedule before making end-of-semester travel plans.

Student Resources:

- **Tutor Center:** The **Math Tutor Center** (free of charge) in PSA 116.
  Check the website for availability: http://math.asu.edu/mathtutors
  Come in for help before it is too late, and several days before an exam day to strengthen your preparation. In order to be admitted to the Tutor Center each student must present their valid ASU Sun Card.

- **ASU Learning Support Services (LSS):** Learning Support Services uses a peer-assisted model to provide academic support and learning opportunities that foster students' academic, personal, and professional success. LSS staff members are professionally trained to assist peers in achieving academic success. Check the website for availability: **http://studentsuccess.asu.edu/**

Students with Disabilities

Disability Accommodations: Qualified students with disabilities who will require disability accommodations in this class are encouraged to make their requests to me at the beginning of the semester either during office hours or by appointment. Note: Prior to receiving disability accommodations, verification of eligibility from the Disability Resource Center (DRC) is required. Disability information is confidential.

Establishing Eligibility for Disability Accommodations

Students who feel they will need disability accommodations in this class but have not registered with the Disability Resource Center (DRC) should contact DRC immediately. Their office is located on the first floor of the Matthews Center Building. DRC staff can also be reached at: 480-965-1234 (V), 480-965-9000 (TTY). For additional information, visit: www.asu.edu/studentaffairs/ed/drc. Their hours are 8:00 AM to 5:00 PM, Monday through Friday.

Classroom behavior: Make sure you arrive on time for class

Excessive tardiness will be subject to sanctions. **Under no circumstances should you allow your cell phone to ring during class.** Any disruptive behavior, which includes ringing cell phones, listening to your mp3/iPod player, text messaging, constant talking, eating food noisily, reading a newspaper will not be tolerated. The use of laptops, cell phones, MP3, IPOD, etc are strictly prohibited during class. Students who engage in disruptive classroom behavior may be subject to various sanctions. The procedures for initiating a disruptive behavior withdrawal can be found at http://clas.asu.edu/classroom/disruptive.

Policy on Threatening Behavior

All incidents and allegations of violent or threatening conduct by an ASU student (whether on-or off campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students. If either office determines that the behavior poses or has posed a serious threat to personal safety or to the welfare of the campus, the student will not be permitted to return to campus or reside in any ASU residence hall until an appropriate threat assessment has been completed and, if necessary, conditions for return are imposed. ASU PD, the Office of the Dean of Students, and other appropriate offices will coordinate the assessment in light of the relevant circumstances.

Absences related to religious observances/practices:
If you will be absent from class due to a religious observance or practice, it is your responsibility to inform the instructor during the first week of class. Your instructor will work with you on alternative and reasonable arrangements for any time missed.

Absences related to university sanctioned events and activities: If you will be absent from class due to participation in a university sanctioned event/activity, it is your responsibility to inform the instructor during the first week of class. Your instructor will work with you on alternative and reasonable arrangements for any time missed.

Honor Policy: The highest standards of academic integrity are expected of all students. The ailure of any student to meet these standards may result in suspension or expulsion from the University or other sanctions as specified in the University Student Academic Integrity Policy. Violations of academic integrity include, but are not limited to, cheating, fabrication, tampering, plagiarism, or facilitating such activities. See the following website for more details: http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm

Academic Dishonesty

Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions and records. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification and dismissal. For more information, see http://provost.asu.edu/academicintegrity.

Note: This syllabus is tentative and should not be considered definitive. The instructor reserves the right to modify it (including the dates of the tests) to meet the needs of the class. It is the student responsibility to attend class regularly and to make note of any change. The Instructor also reserves the right to create class policies regarding homework due dates, late assignments, etc.