ASU SCHOOL OF MATHEMATICAL & STATISTICAL SCIENCES

MAT 267   Calculus III for Engineers - Spring 2017
LECTURE #10692
TuTh classes for Session C

Disclaimer: All items on this syllabus are subject to change. The instructor reserves the right to modify it (including the dates of the tests) to meet the needs of the class. Any in-class announcement, verbal or written, is considered official addendum to this syllabus. It is the student responsibility to attend class regularly and to make note of any change.

INSTRUCTOR: Toby Sanders	OFFICE: GWC 650
E-MAIL: toby.sanders@asu.edu	PHONE: 602-965-0559
WEB PAGE: tobysanders.com	**OFFICE HOURS:** Tu/ W from 2:00-3:30pm or (preferably) by appointment.

Prerequisites: MAT 266 or MAT 271 (Calculus II) or its equivalent with a grade C or better.

Textbook: *Essential Calculus , Early Transcendentals* by James Stewart, Thomson (Brooks/Cole), 2e

Calculators: A graphing calculator (e.g. TI84 or Casio CFX-9850GB Plus) is recommended.   Graphing calculators which perform symbolic manipulation (e.g. TI89, TI92, Casio FX2 or 9970G) will not be allowed for tests or quizzes.

ATTENDANCE: Attendance is mandatory! Your instructor reserves the right to take attendance and to incorporate your attendance as part of your overall grade. **For classes that meet two days a week, the maximum number of absences is four. For classes that meet three days a week, the maximum number of absences is six. For classes that meet once a week (recitations), the maximum number of absences is two. If you exceed the number of allowed absences you may receive an E for the course.**

Videos: We will make use of 267 videos on the site:

https://math.la.asu.edu/~surgent/video/mat267_exp.html

Cell Phones: Any student who accesses a phone or any internet-capable device during an exam for any reason automatically receives a score of zero on the exam. All such devices must be turned off and put away and made inaccessible during the exam.

Classroom behavior: Classroom disturbances, including but not limited to: arriving late, talking in class and using cellular devices are not tolerated. The use of recording devices is prohibited. Each student is expected to show respect for every student registered in the course. An instructor may withdraw a student from a course when the student's behavior disrupts the educational process under USI 201-10 http://www.asu.edu/aad/manuals/usi/usi201-10.html

Threatening behavior will be handled according to the Student Service Manual, SSM 104-02 http://www.asu.edu/aad/manuals/ssm/ssm104-02.html.

Students are required to adhere to the ABOR Student Code of Conduct: http://www.asu.edu/studentaffairs/reslife/outreach/abor_code.htm

TENTATIVE DATES FOR LECTURES AND EXAMS
(Can and will change.)

Week	Dates	Sections	Test dates and Holidays
1	1/9 - 1/13	10.1: 3-D Coordinate Systems 10.2 Vectors	
2	1/16 - 1/20	10.3 Dot Product 10.4 Cross Product	1/16/2017 Martin Luther King Day (no class)
3	1/23 - 1/27	10.5 Equations of Lines & Planes 10.6 Cylinders & Quadric Surfaces 10.7 Vector Functions & Space Curves	
4	1/30 - 2/3	10.8 Arc Length & Curvature 10.9 Motion in Space	
5	2/6 – 2/10	11.1 Functions of Several Variables **Test 1 (2/9/2017) Sections 10.1 – 10.9**	**Test 1 (2/9/2017) Sections 10.1 – 10.9**
6	2/13 – 2/17	11.3 Partial Derivatives 11.4 Tangent Planes & Linear Approximations	
7	2/20 – 2/24	11.5 The Chain Rule, 11.6 Directional Derivatives & The gradient	
8	2/27 – 3/3	11.7 Maximum & minimum values 12.1 Double Integrals over Rectangles	
9	3/5 – 3/11	**Spring Break – No Classes**	
10	3/13 – 3/17	12.2 Double Integrals Over general regions 12.3 Double Integrals in Polar coordinates	
11	3/20 – 3/24	12.5 Triple Integrals and Review **Test 2 (3/23/2017)** **Sections 11.1, 11.3 – 11.7 & 12.1 – 12.3**	**Test 2 (3/23/2017) Sections 11.1, 11.3 – 11.7 & 12.1 – 12.3**
12	3/27-3/31	12.6 Triple Integrals in Cylindrical Coordinates 12.7 Triple Integrals in Spherical Coordinates 13.1 Vector fields	

Week	Dates	Sections	Test dates and Holidays
13	4/3 – 4/7	13.2 Line Integrals 13.3 The Fund. Theorem for Line Integrals	
14	4/10– 4/14	13.4 Green's Theorem 13.5 Curl & Divergence	
15	4/17- 4/21	13.6 Parametric Surfaces & their areas **Test 3 (4/20/2017)** **Sections 12.5 – 12.7 & 13.1 – 13.4**	**Test 3 (4/20/2017)** **Sections 12.5 – 12.7 & 13.1 – 13.4**
16	11/28 – 12/2	13.7 Surface Integrals Final Exam Review	
17	Tuesday 5/2/2017 7:10-9:00PM	**Final Exam** **(Cumulative and including 13.5-13.7)**	**Final Exam** **(Cumulative and including 13.5-13.7)** **Room to be announced.**

Course Withdrawal Deadline: 4/2/2017
Complete Withdrawal Deadline: 4/28/2017

Grade Assignment	
A+	97% +
A	93% – 96.99%
A–	90% – 92.99%
B+	87% – 89.99%
B	83% – 86.99%
B–	80% – 82.99%
C+	77% – 79.99%
C	70% –76.99%
D	60% – 69.99%
E	< 60%

Important Dates and Point Allocations

Testing Schedule			Grade Allocations	
Test	**Covering through**	**Date**	**3 Tests**	**50%**
1	**Sections** **10.1 – 10.9**	**2/9/2017** **(in class) 50 minutes**	**Homework** (Webwork)	**15%**
2	**Sections** **11.1 – 11.7,** **12.1 – 12.3**	**3/23/2017** **(in class) 50 minutes**	**Attendance/** **Participation**	**10%**
3	**Sections** **12.5 – 12.8,** **13.1 – 13.4**	**4/20/2017** **(in class) 50 minutes**	**Final Exam**	**25%**

Final Exam	All above plus 13.5 – 13.7	**Tuesday May 2nd 7:10pm-9:00pm, room TBA**		

Homework will be assigned on Webwork. The URL is
http://webwork.asu.edu

Webwork: Homework will be assigned on Webwork. The URL is http://webwork.asu.edu
Your instructor may assign written homework as well. Webwork and written homework will count for 15% of your course grade.

Piazza: Our site for math discussions outside of class is at piazza.com. You should receive an email from them near the start of the semester. Partly why we use piazza is that it allows students to interact with each other and the instructor and TA, if one. Also, it has a math equation editor which most email doesn't have. For personal issues (and issues that pertain only to you) you can email the instructor. For math questions, including webwork questions, please post your questions on piazza. Signup Link: piazza.com/asu/spring2017/mat26710692

Catalog Description: Vector-valued functions of several variables, partial derivatives, multiple integration.

Course Overview: We will discuss vectors and analytical geometry in three dimensions; vector-valued functions and curvature; components of acceleration; functions of several variables; limits and continuity in three-space; partial and directional derivatives; gradients, tangent planes, and extrema of functions of two variables; multiple integrals in rectangular, polar, spherical, and cylindrical coordinates; line integrals; applications of multiple integrals to area, volume, moments, centroids, and surface area.

Learning Outcomes: At the completion of this course, students will be able to, among other things:
- Describe the structure of a 3-D coordinate system.
- Perform vector operations including dot product and cross product.
- Find parametric equations of a line and scalar equation of a plane.
- Identify cylinders and quadric surfaces.
- Find domain, limit, derivative and integral of a vector function, and the tangent line to a space curve.
- Evaluate the arc length of a vector function.
- Solve applied problems involving velocity and acceleration
- Determine the domain and range of two and three variable functions, and interpret contour plots and level surfaces.
- Find partial derivatives and explain their geometrical meaning.

- Find the tangent plane to a surface at a given point.
- Find linear approximations and differentials
- Write out and apply the chain rule.
- Evaluate gradients and directional derivatives
- Determine maximum and minimum values of a two variable function.
- Evaluate double integrals over general regions.
- Convert double integrals from Cartesian to polar coordinates and vice versa.
- Evaluate triple integrals in Cartesian, cylindrical and spherical coordinates.
- Sketch vector fields
- Evaluate line integrals of scalar functions and line integrals of vector fields.
- Find a potential function for a conservative vector field.
- State and apply the Fundamental theorem for Line Integrals
- State and apply Green's Theorem
- Find curl and divergence of a vector field.
- Find an equation of the tangent plane to a parametric surface at a given point.
- Evaluate the surface area of a parametric surface on a given domain.
- Evaluate surface integrals of scalar functions and surface integrals of vector fields.

COURSE POLICIES

- Students are responsible for assigned material. Students are responsible for material covered in class whether or not it is in the text.
- Working regularly on assigned problems and **attending class** is essential to success.
- Expect to spend at least 6-10 hours weekly on homework. You are expected to read the text, preferably before the material is covered in class.
- **No late HW will be accepted.**
- Make-up exams are at the discretion of the instructor and only in case of documented emergency. In any case, no make-up exams will be given unless the student has notified the instructor before the test is given.
- Messages may be left in my office, at the main office (965-3951) or through email (recommended).

ACADEMIC DISHONESTY: In the "Student Academic Integrity Policy" manual, ASU defines " Plagiarism [as] using another's words, ideas, materials or work without properly acknowledging and documenting the source". Students are responsible for knowing the rules governing the use of another's work or materials and for acknowledging and documenting the source appropriately. You can find this definition at:
http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm
Academic dishonesty, including inappropriate collaboration, will not be tolerated. There are severe sanctions for cheating, plagiarizing and any other form of dishonesty.

Departmental and University Policies and Procedures

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 would NOT automatically result in 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.

Final Exam Make-up Policy: The final exam schedule listed in the Schedule of Classes will be strictly followed. Exceptions to the schedule and requests for make-up examinations can be granted only by the Department Chair, Associate Department Chair or the Director of First Year Mathematics, and for one of the following reasons:
1. Religious conflict (e.g., the student celebrates the Sabbath on Saturday)
2. The student has more than three exams scheduled on the same day as the math final
3. There is a time conflict between the math final and another final exam.

Incomplete: If there is a last-minute personal or medical emergency, the student may receive a grade of Incomplete and make up the final within one calendar year. The student must provide written documentation and be passing the class at the time to receive an Incomplete. 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. *The Dean of the student's college must approve any exceptions to these rules.*

Academic Integrity: Academic honesty is expected of all students in all assignments, examinations, papers, laboratory work, academic transactions and records. Academic dishonesty, including inappropriate collaboration, will not be tolerated. There are severe sanctions for cheating, plagiarism, and any other form of dishonesty. 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 and
https://provost.asu.edu/sites/default/files/AcademicIntegrityPolicyPDF.pdf)
It's highly unethical to bring to your instructor's attention the possible impact of your mathematics grade on your future plans, including graduation, scholarships, jobs, etc. The instructor may exercise an option to withdraw you from the course if they think you are compromising the ability to assess your work independently of any other consideration.

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. Please schedule an appointment to see if you have a disability that will require accommodations in this class. **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: http://www.asu.edu/studentaffairs/ed/drc. Their hours are 8:00 AM to 5:00 PM, Monday through Friday. Please complete this process as soon as possible.

The grade of XE: A grade of XE is reserved for "failure for academic dishonesty." The grade goes on the student's transcript; the student needs to petition to have it removed after 1 year.

Ethics: It's highly unethical to bring to your instructor's attention the possible impact of your mathematics

grade on your future plans, including graduation, scholarships, jobs, etc. The instructor may exercise an option to withdraw you from the course if they think you are compromising the ability to assess your work independently of any other consideration. Students found to be involved in academic dishonesty will be removed from the class and a grade of E for the course will be submitted to the registrar. The student will be advised to repeat the course with another professor, possibly at another institution. This is the least action taken. Further, more serious actions may be taken if the situation indicated that such actions are appropriate. We will act very harshly against cheating during Quizzes or Exams.

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.
- It is a student's responsibility to verify that they have in fact withdrawn from a class.
- Please schedule an appointment to see me during office hours if you have a disability that will require accommodations in this class.
- To qualify for disability accommodations at ASU, students must qualify for services through the Disability Resource Center (DRC), which is located on the 1st floor of the Matthews Center Building. 480.965.1234 (V), 480.965.9000 (TTY). Please complete this process as soon as possible.
- All midterm review exercises and the final exam review exercises will be posted at location given below which is in the school's website:

http://math.asu.edu/first-year-math/mat-267-calculus-engineers-iii

Studying for the class:

Diligent and timely completion of the online homework assignments is necessary to master procedural skills. This alone is usually insufficient to gain conceptual understanding.

To master the concepts, you must

- review and study your class notes and/or the textbook thoroughly with the goal to understand the connections between the concepts.

- create your own lists (or perhaps 3x5 cards) of definitions and theorems and commit them to memory like you would do with vocabulary in any language.

- take the in-class activities seriously and complete all the activities.

You must do all this <u>continuously</u> throughout the semester. You must have learned the definitions and theorems covered in each class session and started the corresponding section of the online homework by the time of the next class session. Failure to know the material covered in lectures will result in your inability to follow subsequent lectures, and the difference between where you are in your understanding and where you should be will be compounded with each lecture.

Relying on "just in time" cramming for exams is an ineffective study technique and will virtually guarantee failure in the class.

Tutoring is available at the **Math Tutor Center in PSA 116** and at the **Engineering Tutor Center, ECF 102.**
The math tutoring center located in PSA 116 is open for tutoring throughout the week. Their hours of operation are
- Monday-Thursday from 8:00 AM until 8:00 PM
- Fridays from 8:00 AM until 3:00 PM
- Sundays from 1:00 PM until 6:00 PM.

The **ASU Math Community Center** in PSA 303 is an excellent place to get help for the class. The MCC is open

Online tutoring: https://studentsuccess.asu.edu/onlinetutoring .

Many residence halls and the Memorial Union also offer evening or weekend free tutoring to all ASU students as part of the Student Success Centers

ASU Learning Resource Center (LRC): The **LRC, http://asu.edu/lrc** provides counseling, tutoring in math (and many other subjects), supplemental instruction, and other types of support to students. LRC resources are available in many residence halls and in the Memorial Union, Room 14. See the LRC web page for further information.