**MAT 267 Calculus III for Engineers - Spring 2015_TuTh**

<table>
<thead>
<tr>
<th>Instructor: S. Nikitin</th>
<th>Office: PSA 436</th>
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<tbody>
<tr>
<td>Phone:</td>
<td>Email: <a href="mailto:nikitin@asu.edu">nikitin@asu.edu</a></td>
</tr>
<tr>
<td>Web Page: <a href="http://www.public.asu.edu/~nikitin/">http://www.public.asu.edu/~nikitin/</a></td>
<td>Office Hours: 12:00 – 1:00 pm</td>
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**Disclaimer:** All items on this syllabus are subject to change.

**Session C:** (16 Weeks) Monday, 1/12/2015 – Friday, 5/1/2015
Any in-class announcement, verbal or written, is considered official addendum to this syllabus

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

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

**Calculators:** A graphing calculator (e.g. TI83 or TI84 or Casio CFX-9850GB Plus) is recommended. Graphing calculators with QWERTY keyboards or those which perform symbolic manipulation (e.g. TI89, TI92, Casio FX2 or 9970G) will not be allowed for tests or quizzes.

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**Tentative Dates for Lectures and Exams**
*(Can and will change.)*

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Sections</th>
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<tbody>
<tr>
<td>1</td>
<td>1/12 – 1/16</td>
<td>10.1: 3-D Coordinate Systems, 10.2 Vectors, 10.3 Dot Product</td>
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<tr>
<td>2</td>
<td>1/19 – 1/23</td>
<td>MLK (Mon. 1/19), 10.4 Cross Product, 10.5 Equations of Lines &amp; Planes</td>
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<td>3</td>
<td>1/26 – 1/30</td>
<td>10.6 Cylinders &amp; Quadric Surfaces, 10.7 Vector Functions &amp; Space Curves, 10.8 Arc Length &amp; Curvature</td>
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<tr>
<td>4</td>
<td>2/2 – 2/6</td>
<td>10.9 Motion in Space, 11.1 Functions of Several Variables, Review for Test 1</td>
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<td>5</td>
<td>2/9 – 2/13</td>
<td>Test 1 on 2/10 (Sections 10.1 – 10.9), 11.3 Partial Derivatives, 11.4 Tangent Planes &amp; Linear Approximations</td>
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<tr>
<td>6</td>
<td>2/16 – 2/20</td>
<td>11.5 The Chain Rule, 11.6 Directional Derivatives &amp; The gradient vector</td>
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<tr>
<td>7</td>
<td>2/23 – 2/27</td>
<td>11.7 Maximum &amp; minimum values, 12.1 Double Integrals over Rectangles</td>
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<tr>
<td>8</td>
<td>3/2 – 3/6</td>
<td>12.2 Double Integrals Over general regions, 12.3 Double Integrals in Polar coordinates</td>
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<tr>
<td>Week</td>
<td>Dates</td>
<td>Sections</td>
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<tr>
<td>9</td>
<td>3/09 – 3/13</td>
<td>Spring Break (no classes)</td>
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<tr>
<td>10</td>
<td>3/16 – 3/20</td>
<td>12.5 Triple Integrals&lt;br&gt;Review for Test II&lt;br&gt;TEST II on 3/19 (11.1-11.7, 12.1-12.3)</td>
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<tr>
<td>11</td>
<td>3/23 – 3/27</td>
<td>12.5 Triple Integrals (cont’d)&lt;br&gt;12.6 Triple Integrals in Cylindrical Coordinates&lt;br&gt;12.7 Triple Integrals in Spherical Coordinates,</td>
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<tr>
<td>13</td>
<td>4/6 – 4/10</td>
<td>13.4 Green’s Theorem,&lt;br&gt;13.5 Curl &amp; Divergence</td>
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<td>14</td>
<td>4/13 – 4/17</td>
<td>Review for Test 3,&lt;br&gt;TEST III on 4/16 (12.5-12.8, 13.1 – 13.4)</td>
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<tr>
<td>15</td>
<td>4/20 – 4/24</td>
<td>13.5 Curl &amp; Divergence&lt;br&gt;13.6 Parametric Surfaces &amp; their areas</td>
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<tr>
<td>16</td>
<td>4/27 – 5/1</td>
<td>13.7 Surface Integrals,&lt;br&gt;Final Exam Review</td>
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<td>17</td>
<td>Tuesday 5/5</td>
<td>Final Exam (Cumulative and including 13.5-13.7)</td>
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<td>7:10-9:00 PM</td>
<td>Room: to be announced</td>
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**Course Withdrawal Deadline** | **April 5th, 2015**
---|---
**Complete Withdrawal Deadline** | **May 1st, 2015**

**GRADES:**

Grading policy is posted at http://www.public.asu.edu/~nikitin/grading/index.html

**TESTS/QUIZZES/HOMEWORK**

**25% Quizzes/Homework:** Quizzes are given randomly. No make up. The homework will have two components. One of them will be WeBWorK, an on-line homework program that gives students instant feedback on their answers. The URL is [http://webwork.asu.edu](http://webwork.asu.edu). The other component of homework will consist of selected problems from the book, where showing all the steps and writing explanations and proofs will be required. **No late homework will be accepted.**

**50% Three Midterm Tests**

Test 1: Tuesday 2/10. (Sections 10.1 – 10.9)
Test 2: Thursday, 3/19. (Sections 11.1-11.7, 12.1-12.3)
Test 3: Thursday 4/16. (Sections 12.5-12.8, 13.1 – 13.4)

**25% Final Exam.** The Final Exam will be on **Tuesday, May. 5th, 7:10-9:00PM.** Location TBA. (The final is comprehensive and includes 13.5-13.7)

The (common) final exam will be on Tuesday May 5th, 7:10pm-9:00pm. Your instructor will announce the location once it has been set. The final exam is NOT given in the math testing center, or in the regular classroom. Location TBA. The final is comprehensive. There will be no make-ups given for the final, and no finals will be rescheduled for personal reasons, including non-refundable airplane tickets.
• **Course Withdrawal Deadline:** the last day to withdraw from the class is April 5, 2015.

• **Complete Withdrawal Deadline:** the last day to withdraw from all your classes is May 1, 2015.

• 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:
  

**TUTORING:**

• The [Math Tutor Center](#) (free of charge) in PSA 116 will be open M-Th 8:00 a.m. - 6:00 p.m., Fri. 8:00 a.m. - 4:00 p.m., and Sun. 1:00 pm - 6:00 p.m.

• [Engineering Tutoring Center](#) provides tutoring in ECF 102.

• The [ASU Math Community Center](#) in PSA 303 is an excellent place to get help for the class. The MCC is open Monday to Friday, 10am to 7pm, starting on 9/4/2012. Information for the center is at [http://math.asu.edu/MC2](http://math.asu.edu/MC2)

• Online tutoring: [https://studentsuccess.asu.edu/onlinetutoring](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](#).

**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. Students who exceed the number of allowed absences will receive a grade of **EN**. Your instructor reserves the right to take attendance and to incorporate your attendance as part of your overall grade.

**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.
Exams: There will be three 60 minute midterm exams and one 110 minute final exam given during the semester. All exams will be taken in the classroom on the dates indicated on the given table. Non CAS graphing calculators are allowed on the exams, but graphing calculators that do symbolic algebra are not allowed on the exams (see below). **Your calculator may be viewed during exams and it will be taken away if it is a CAS calculator or have its memory cleared if anything suspicious is written therein.** The Instructor has the right to regard any suspicious material in your calculator memory as cheating. **Any student who accesses a phone or any internet-capable/camera 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. 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

Students are required to adhere to the ABOR Student Code of Conduct:

http://www.asu.edu/studentaffairs/reslife/outreach/abor_code.htm

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 extreme 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
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.
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 POLICIES:

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 pursued 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. 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 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.
**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: [http://www.asu.edu/studentaffairs/ed/drc](http://www.asu.edu/studentaffairs/ed/drc). Their hours are 8:00 AM to 5:00 PM, Monday through Friday.

**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.

**The grade of EN:** A grade of EN is reserved for "failure due to excessive absences." The grade goes on the student's transcript.

**Ethics:**
- Cellular phones and pagers must be turned off during class. No texting, no ipods/laptops, etc.
- Arriving late to class will not be tolerated.
- Academic dishonesty, including inappropriate collaboration, will not be tolerated. There are severe sanctions for cheating, plagiarizing and any other form of dishonesty. More information can be found at [http://provost.asu.edu/academicintegrity](http://provost.asu.edu/academicintegrity).

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.

**COURSE POLICIES:** 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 survive. You are expected to read the text, preferably before the material is covered in class. Quizzes are given randomly and frequently reflect material that has recently been discussed in class. **No late HW will be accepted and no make-up quizzes will be given.** 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.

Please schedule an appointment to see me during office hours if you have a disability that will require accommodations in this class.

Note: 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.

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://provost.asu.edu/academicintegrity. Academic dishonesty, including inappropriate collaboration, will not be tolerated. There are severe sanctions for cheating, plagiarizing and any other form of dishonesty.

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.