MAC2312: Calculus 2
Fall 2017
Syllabus/Calendar

Course Coordinator

Dr. Konstantina Christodoulopoulou

Lecture: MWF 5 (CAR 100) and MWF 7 (NRN 137) Office: 370 Little Hall

Office Hours: M8, W6, F4 or by appointment

Phone: 352-294-2315

Email: kchristod@ufl.edu

The course homepage is located in e-Learning CANVAS, http://elearning.ufl.edu/.

When you email the course coordinator, you need to write **your lecture period, TA's name, and section number** in the subject line.

Lecturer

Mr. Keith Copenhaver

Lecture: MWF 7 (NRN 137)

Office: LIT 429

Office Hours:_____

Phone: (352) 294-2365

Email: keithc@ufl.edu

Discussion Leader (TA)

Name: _____

Office: _____

Office Hours:_____

Phone: _____

Email:_____

MAC 2312: Calendar, Fall 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
20	Aug 21 L1	22 First Discussion Class	23 L2	24 First Discussion Class	25 Drop/Add Deadline L3
27	28 L4	29 WK#1 due Discussion HW1 in WA	30 L5	31 WK#1 due Discussion HW2	Sep 1 L6
3 HW3	4 Labor Day No Class	5 Quiz 1 (L1-L5) HW4	6 L7	7 Quiz 1 (L1-L6) HW5	8 L8
10 HW6	11 L9	12 WK#2 due Discussion HW7	13 L11	14 WK#2 due Discussion HW8	15 Conflict make-up exam sign-up deadline L12
17 HW9&HW10	18 L13	19 Quiz2(L9,L11,L12) HW11	20 L14	21 Quiz 2 (L11-L13) HW12	22 clicker registration deadline L10
24 HW13	25 Exam Review	26 WK#3 due Discussion Exam 1*(L1-L13)	27 L15	28 WK#3 due Discussion HW14	29 L16
Oct 1 HW15	2 L17	3 Quiz 3 (L14-L16) HW16	4 L18	5 Quiz 3 (L14-L17) HW17	6 Homecoming No Class
8 HW18	9 L19	10 WK#4 due Discussion HW19	11 L20	12 WK#4 due Discussion HW20	13 L21
15 HW21	16 L22	17 Quiz 4 (L17-L21) HW22&23	18 L24	19 Quiz 4 (L18-L22) HW24	20 L23
22 HW25	23 Exam Review	24 WK#5 due Discussion Exam 2* (L14-23)	25 L25	26 WK#5 due Discussion HW26	27 L26
29 HW27	30 L27	31 Quiz 5 (L24-L26) HW28	Nov 1 L28	2 Quiz 5 (L24-L26) HW29	3 L29
5 HW30&31	6 L30	7 WK#6 due Discussion HW32	8 L31	9 WK#6 due Discussion HW33	10 Veterans Day No Class
12 HW34	13 L32	14 Quiz 6 (L27-L30)	15 L33	16 Quiz 6 (L27-L30) HW35	17 L34
19 HW36	20 Withdraw Deadline L35	21 No Discussion HW37	22 Thanksgiving No Class	23 Thanksgiving No Class	24 Thanksgiving No Class
26 HW38&39	27 Exam Review	28 Quiz 7 (L31-L34) Exam 3*(L24-L35)	29 L36	30 WK#7 due Quiz 7 (L31-L34) HW40	Dec 1 L37
3 HW41	4 L37	5 WK#7 due Discussion HW42	6 *clicker alert *verify all Canvas grades Review	7 Reading Day No Class	8 Reading Day No Class

*Evening Exams Time: 8:30PM – 10PM. See Canvas for Exam Locations.
- Cumulative Final Exam: Saturday, Saturday, December 9, 5:30PM– 7:30PM.
- Clicker registration deadline – successfully receiving weekly H-ITT report.
*clicker alert-Forfeit all clicker points if still have not resolved all clicker issues by 12/6.
*Verify and resolve all Canvas grades issues: 9/6-12. Absolutely NO grades discussion after 9/12.

1. INTRODUCTION

1a <u>**COURSE CONTENT:**</u> MAC 2312 is the second semester of the three-semester calculus sequence. Topics covered include techniques of integration, improper integrals,infinite sequences and series, power series, and their applications, parametric equations, polar coordinates and polar equations of plane curves and applications of definite integrals including volumes of solids and solids of revolution. Knowledge of this subject matter is essential for those wishing to pursue studies in mathematics, engineering, sciences or a host of other fields.

A minimum grade of C (not C−) in MAC 2311 satisfies four credits of the university General Education Math requirement.

1b <u>**PREREQUISITES:**</u> You must have received a grade of C or higher in MAC 2311 or, recommended a rating of 5 on AP BC-exam. A good grasp of precalculus (both algebra and trigonometry), differentiation and integration by substitution is assumed at the outset. You are encouraged to refresh your prerequisite math skills even if you have met the prerequisites. Quite often, your algebra, trigonometry and Calculus 1 skills may need review. ALEKS assessment can provide information and specific areas in precalculus for additional study and the six weeks of ALEKS remediation access can help you refresh your algebra and/or trigonometry skills. Access ALEKS through the ISIS homepage www.isis.ufl.edu; click on Placement under My Online Services. For more complete information, check the page www.isis.ufl.edu/aleksinfo.html.

There is a list of prerequisite material in the last pages of this syllabus. You should already be competent in working this material.

MAC 2312 begins with the integration chapter. We strongly recommend students who have not had Calculus 1 and/or are having difficulty with the basic integration review material consider first taking MAC 2311, a four credit calculus course reviewing essential differential calculus skills and algebra and trigonometry skills. You may switch courses on ISIS during the drop-add period.

1c <u>**REQUIRED MATERIALS**</u> :

Textbook: The textbook for the course is *Calculus Early Transcendentals, by James Stewart (8th Edition)*. There is a loose-leaf print version ($50.00) of the customized textbook available at the UF Bookstore for students who wish to have a printed resource.

WebAssign Access Code: It includes an access to the Stewart ebook and the online homework assignments. WebAssign (WA) provides a two-week grace period to use the online homework system before you must purchase an access code.

To purchase a WA access code:

- You have the choice to "opt-in" to WA access and the e-book through CANVAS once classes begin for a reduced price of $62.50 and pay for these materials through your student account. The deadline to opt-in is Sept. 8.

- Students who already have purchased a multi-term access for Stewart text prior to this semester should not have a problem accessing our class on WA. If you have any issues regarding your multi-term access, contact WA Support, 1800-955-8275.

H-ITT Clicker: Go to **Syllabus** tab in CANVAS to look up detailed information about HITT clickers. Starting approximately the second week of the semester, students will be required to have their clickers in class in order to participate in lectures. A weekly clicker grade report will be sent to your UF webmail. It's your responsibility to verify the scores and fix any problems <u>immediately</u>.

NO CALCULATORS are allowed on quizzes or on the exams. A graphing calculator and Wolframalpha are useful as a study and learning tool when used appropriately, but are not essential. Remember that Calculus is a collection of ideas that are not mastered through calculator skills.

1d <u>E-LEARNING CANVAS</u>: All course information including homework assignments, lecture outline, lecture videos, office hours and test locations and reviews are posted on this site.

All grades are posted in the CANVAS gradebook (except individual WA and HITT points, which are accessed through those programs directly). You are responsible for verifying that those grades are accurate. **You have <u>one week</u> after a score has been posted to contact your TA to resolve any grade concerns. We will not consider any grading disputes nor make any grades adjustment at the end of the semester. Be sure to save all original documents in case of grading questions.**

Please note: Check CANVAS regularly for announcements. Important course information is clearly communicated in this syllabus and the MAC 2312 homepage in CANVAS. We will update with announcements both in lecture and on the homepage on CANVAS. Due to the volume of email your instructors receive, we cannot reply to each request for information that is already posted online. So always check those resources first. If you must email the coordinator, please be sure to write down <u>your section number and your TA's name</u> in the subject line in all mail correspondence.

1e <u>LECTURES</u>: Attendance in lecture is required. You are responsible for learning lecture material missed due to any absences.

Lecture Outlines: Students can print out the lecture notes outlines from CANVAS through **Course Resources** tab. You may also purchase a printed copy from Target Copy Center (1412 W University Ave).

Taped Lectures: We understand that students often need to re-watch a lecture to review difficult concepts or to copy the lecture notes. For your convenience, MAC 2312 lectures are taped. You may access the taped lectures in CANVAS.

1f <u>DISCUSSION SECTIONS,</u> which meet once a week (either Tuesday or Thursday, depending on the section in which you are registered) give you a valuable opportunity for open discussion of the lecture material and assigned problems in a smaller class setting. **Attendance in discussion is required.**

Your main resource person is your discussion leader, a teaching assistant (TA) in the mathematics department. He or she is available during office hours (or by appointment) to answer your questions about the course material. Your TA is responsible for recording all quiz, homework, and test scores. You must retain <u>all</u> returned papers in case of any discrepancy with your course grade. As mentioned above, **you should check CANVAS regularly and consult with your TA if you have any questions about recorded grades. All grade concerns must be taken care of <u>within one week</u> of receiving the score.** Your grade is subject to being raised or lowered if there is a recording error, computational error, bubbling error, "padding" error, etc.

If you have concerns about your discussion class which cannot be handled by your TA please contact the course coordinators, Dr. Christodoulopoulou in Little 370.

1g <u>FREE HELP:</u> All instructors' office hours will be posted in CANVAS approximately the third week of the semester. You may go to anyone's office hours that fit your schedule. We encourage you to use this valuable resource to help you stay on track and succeed. In addition to instructors' office hours, the following aids are available on campus.

- The Teaching Center Math Lab, located at SE Broward Hall, is a tutorial service staffed by trained math and science students to provide help with your calculus questions and homework. Tutors will be glad to provide guidance on specific problems after you have attempted them on your own. You may want to attend different hours to find the tutors with whom you feel most comfortable. You can also request free one-on-one tutoring.

  The Broward Teaching Center also offers a more structured tutoring program for MAC 2312, called **supplemental instruction**. A tutor, assigned specifically to MAC 2312, provides weekly help sessions. More details will be provided in lecture.

  In addition, the Broward teaching center tutors hold reviews on the evenings before each exam. They also provide videos of review and sample test problems. Check the webpage, https://teachingcenter.ufl.edu/, for a map of the location, tutoring hours and test review dates and locations.

- Office of Academic Support offers free one-on-one and small group tutoring sessions to any UF students. See http://oas.aa.ufl.edu/programs/tutoring/ for details.

- UF Counseling Center provides information and workshops on developing Math Confidence. The center also offers counseling support in case of issues with academics, adjusting to the stress of college life, or personal challenges. Please use this resource before you get overwhelmed! You may also speak to Dr. Christodoulopoulou or an advisor in your college if you are having difficulties. You may contact the center at http://www.counseling.ufl.edu/cwc/.

1h SUCCESS: I want you to be successful in this class, I am on your side and will be working hard to make sure you always have the resources to have a clear path to success. But I cannot walk that path for you! It will take considerable effort on your part. To do this and be successful, you will need to do the following:

1. **Prepare diligently outside of class and come to class ready to work from the get-go.**

    (a) Get an early start on all assignments.

    (b) Do Not Procrastinate on assignments by waiting until the day before they are due. (internet is known to be down sometimes)

    (c) Work hard, work whole heartily.

    (d) Review and master your assignments and lecture notes before arriving at the next class.

    (e) If you get stuck, watch the taped lecture again and/or find office hours for timely help. Do not let questions go unanswered.

2. **Actually come to class and be actively engaged in your learning.**

    (a) Pay attention and answer questions, at least mentally, posed by your instructor in lecture.

    (b) Avoid inappropriate distractions in class such as Facebook, texting, and talking.

3. **Be engaged and active in your learning after class.**

    (a) Watch the lecture video again, go to office hours whenever you get stuck on a problem.

    (b) Spend at least 3 hours outside of class for every hour you spend in class. So 12 hours a week just on MAC2312.

    (c) The time you spend on MAC2312 is to spent purposefully, with a plan for what you will master and when you will do it as well as a plan for getting help if you get stuck.

    (d) Believe that your mathematical skills can be improved through dedication and hard work, and when you fail at something, take it as a learning opportunity and get better by learning from your mistakes.

4. **Practice self-guided learning.** Pay attention not only to what you are learning but how you are learning it, and you are not depending upon the instructor or anyone else to learn things. In particular:

   (a) Be aware at all times of what you are supposed to be learning.
   (b) When you work, work purposefully. Some of the activities are ones that you make up yourself, such as study guides, even if no grade is involved.
   (c) If you see there is a gap between your abilities and the topics covered in lectures, take initiative to find things that will help you close it.

1i STUDENTS WITH LEARNING DISABILITIES: Students requesting class and exam accommodations must first register with the Dean of Students Office Disability Resource Center(DRC), https://www.dso.ufl.edu/drc/. The DRC will provide a documentation letter to the student who must then provide this letter to the course coordinators during office hours when requesting accommodation. This should be done as early as possible in the semester, **at least one week before the first exam and adhering to DRC deadlines**, so there is adequate time to make proper accommodations.

1j ACADEMIC HONESTY: Remember that you committed yourself to academic honesty when you registered at the University of Florida. All students are bound to

The Honor Pledge
We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied:
"On my honor, I have neither given nor received unauthorized aid in doing this assignment."

Academic Honesty Guidelines: "All students are required to abide by the Academic Honesty Guidelines which have been accepted by the University. The academic community of students and faculty at the University of Florida strives to develop, sustain and protect an environment of honesty, trust, and respect. Students are expected to pursue knowledge with integrity. Exhibiting honesty in academic pursuits and reporting violations of the Academic Honesty Guidelines will encourage others to act with integrity. Violations of the Academic Honesty Guidelines shall result in judicial action and a student being subject to the sanctions in paragraph XIV of the Student Code of Conduct."

The Mathematics Department expects you to follow the Student Honor Code. We are bound by university policy to report any instance of suspected cheating to the proper authorities. **This includes clicker points submitted in lecture. Each student must enter his or her own response; clicking for another student is a violation of the Academic Honesty Guidelines and will be reported.**

You may find the Student Honor Code and read more about student rights and responsibilities concerning academic honesty at the link https://www.dso.ufl.edu/sccr/. In addition, we remind you that lectures given in this class are the property of the University/faculty member and may not be taped without prior permission from the lecturer and may not be used for any commercial purpose. Students found to be in violation may be subject to discipline under the Student Conduct Code.

2. TESTING

2a <u>**SEMESTER EXAMS**</u>**:** During the semester there are three midterms and a cumulative final, all mandatory. The mid-term exams are assembly exams which begin at 8:30PM, consist of multiple choice and free-response questions; the final exam consists solely of multiple choice questions. All exam dates and time are specified in the course calendar and the exams must be taken at the assigned date and time.

Missing a final exam due to negligence will result in <u>a minimum 10-point penalty.</u>

2c <u>**IMPORTANT EXAM POLICIES**</u>**:** MAC 2312 requires that students take evening exams on the listed dates. There are no exceptions to this. Students with conflicts, including regularly scheduled classes, must make advance arrangements to be present at the test.

The following applies to all exams:

(1) Students are responsible for material covered in lectures, NYTI, and assignments. Sample tests are available from the Teaching Center one week before each exam. **Exam coverage and format may vary from semester to semester.**

(2) Bring only the following to the exam:
  - Soft lead graphite pencils (number 2 lead or softer) for bubbling your scantron
  - Ink Pen (To sign your test)
  - Knowledge of your SECTION NUMBER and UF ID number
  - Picture ID (UF Gator One card or your state driver's license) with a **legible signature**

  No calculators are permitted. Cell phones and other electronic devices must be turned off and out of sight. If any such device rings, buzzes, or otherwise causes a distraction during the exam, your test will be considered to be compromised and your test score will be 0.

(3) Students should be at the exam location at least 10 minutes early. No one will be admitted to the test 10 minutes after the starting time of the test. No one will be permitted to leave the test until 30 minutes after the stated start time.

(4) The **Test Form Code**, as well as **your UFID**, name, and section number must be encoded correctly or you will lose <u>3 points</u>. You must also take the test in your assigned test location or you will lose <u>3 points</u> on your test.

(5) An answer key will be posted on CANVAS within one day after each exam. To check your answers, record them on the test or scratch paper that you keep after turning in your scantron and tearoff sheets.

(6) Graded tearoff sheets will be returned in discussion. You then have **one week** to see your discussion leader if you have questions about your exam grade.

See Section 3f for the Exam Conflict and Makeup Policies.

3. GRADING

3a <u>COURSE GRADE:</u> Your course grade is based on 500 points accumulated as follows:

Quizzes (best 5 of 7, 10 points each)	50
WebAssign assignments	60
Worksheets (best 5 of 7, 4 points each)	20
HITT Class participation points	40
Semester exams (80 points$\times$ 3=240)	240
Cumulative Final exam	90
	500

The total sum of points is your numerical score, which will be converted to a letter grade according to the following scale.

A	450 - 500 pts	C	340 - 359.999 pts
A$-$	435 - 449.999 pts	C$-$*	320 - 339.999 pts
B+	420 - 434.999 pts	D+	300 - 319.999 pts
B	400 - 419.999 pts	D	280 - 299.999 pts
B$-$	380 - 399.999 pts	D$-$	260 - 279.999 pts
C+	360 - 379.999 pts	E	0 - 259.999 pts

The course grade is determined by the number of <u>points</u> you have, not by the percentage, and will be strictly enforced. There will be no additional curve in this course, and extra assignments for individual students to improve a grade are NOT possible.

*NOTE: A grade of C$-$ DOES NOT give Gordon Rule or General Education credit!

For those taking the S-U option: S [305 - 450 points]   U [0 - 304.999 points]

We will not review disputed points at the end of the semester. All grade concerns must be settled <u>within one week</u> of the return of the paper.

3b <u>WORKSHEETS:</u> The worksheets are posted in **Course Resources** tab in CANVAS and will be collected in discussion on the dates listed in the calendar. They will be graded on a scale of 0 $-$ 4 points; each is checked for completeness and some problems will be graded for correctness. The work must be your own and not taken from other sources. The top five scores will count, up to a total of 20 points.

3c <u>ONLINE HOMEWORK:</u> The online homework assignments must be completed by the specified due date. Your score on each assignment will count up to a maximum 60 points, but the total number of points available is higher to offset credit lost due to technical difficulties or a missed assignment. The homework problems are graded by WA and you see your score immediately after submitting your work. You will have multiple attempts for each problem; there are aids and a link to the e-book to help you solve each question. Some homework problems may suggest the use of a graphing calculator. They are designed to help you visualize important concepts and to reinforce the mathematical processes involved. The use of a calculator is recommended but not required. **Do not try to complete an assignment in one sitting; start early instead of waiting until the due date to avoid missing the deadline.**

3d QUIZZES: Your discussion leader will administer seven quizzes in class on the dates listed in the course calendar. Each will be graded on a scale of 0 to 10 points, and the top five scores will count, up to a total of 50 points. The quiz will be based on previous lectures and homework assignments.

3e CLASS PARTICIPATION POINTS: Up to 40 points may be earned by attendance in lecture and completing problems in class. Points will be collected through the use of the H-ITT clicker starting approximately the second week of the semester. A weekly report will be sent to students. **It's students responsibility to verify the scores and fix any problems immediately. NO H-ITT points can be recovered or made-up.** No one is allowed to turn in work for a student who is not in class (see section 2j). A violation of this policy will be handled according to standard University policies. There will be extra points available to account for an occasional absence or technical difficulties with your clicker. Total points will be capped at 40.

Following university policy, you may expect a penalty (additional lost points) for attending fewer than 75% of your classes.

3f MAKE-UP POLICY: All make-up work must be approved by the course coordinator, Dr. Christodoulopoulou in LIT 370 during office hours. You must provide documentation of your absence. **The deadline to sign up a conflict make-up quiz/exam is Friday, Sept. 15.**

- **Exam Conflicts — The UF during Term Assembly Exam Policy**
(https://catalog.ufl.edu/ugrad/current/regulations/info/exams.aspx):
"Exams may be held Monday — Friday from 8:20 — 10:10PM (periods E2–E3) for the fall and spring terms. If other classes are scheduled during an exam time, instructors must provide make-up class work for students who miss class because of an assembly exam. If two exams are scheduled at the same time, assembly exams take priority over time-of-class exams. When two assembly exams conflict, the higher course number takes priority. Instructors giving make-up exams will make the necessary adjustments."
If MAC 2312 is the lower course number, students must sign-up with the course coordinator by the deadline and provide appropriate documentation so that accommodations can be made.
You may also take the conflict exam if you are participating in a UF sponsored event during the regular exam time. You must provide documentation of the conflict to the course coordinator in person by the deadline.
The conflict exam will be offered from 6:40 — 8:20 on the same night as the regular exam. You must sign up with the course coordinator as indicated above. You will not be permitted to leave the exam room before 8:20PM.

- **Make-up Exams:** If you are participating in a UF sponsored event or religious observance, you may make up an exam only if you make arrangements with the course coordinator in her office before the deadline. You must present documentation of a UF sponsored event.
If illness or other extenuating circumstances cause you to miss an exam, contact the course coordinator immediately (no later than 24 hours after the exam) by email. Then, as soon as possible after you return to campus, bring the appropriate documentation to the course coordinator.

- **Make-up Quizzes:** There are no make-ups, unless,
1) you are participating in a UF sponsored event, for which you must bring your documentation before the **deadline Sept. 15** to the course coordinator.
2) you miss at least three discussion quizzes for which you have valid, documentable reasons for your absences. You will be allowed to make up the excused absences that are in excess of two. Bring your documentation to the course coordinator **within one week of your third discussion quiz absence.**

3) you miss because of a religious holiday. You must notify the course coordinator **within the first three weeks of class** if you will be missing discussion class due to a religious holiday.
4) you miss because of a court-ordered obligation − see the course coordinator.

Your TA cannot give makeups without the authorization of the course coordinator.

- **Make-up Worksheets collection:** There are no make-ups, unless,

  1) you are participating in a UF sponsored event or you are observing a religious holiday. In this case, you must turn in all your assignment to your TA **prior to the discussion class** along with valid documentation.

  2) you are present in discussion class at the time of the collection but forgot to bring your assignment. In this case, you have 24 hours to bring the assignment to your TA with 1 point penalty. You must **notify and make arrangement with your TA** <u>before</u> **you leave the discussion that day**.

- **Make-up WebAssign HW:** There are no make-ups. You can request an extension on WebAssign homework within 1 day after the deadline and you will have 24 hours to complete it after extension request. The extension must be submitted in WebAssign directly. However, there will be a 20% grade penalty for those problems completed after the original due date for the assignment.

- **Make-up Clicker points:** There are no make-ups.

- **Other Make-ups:** There are no make-ups on any extra point opportunities.

3g <u>10-MINUTE POLICY:</u> Only the students who are present in the first 10 minutes of the class and stay for the entire period will be allowed to participate in the class activities (including submitting clicker questions, taking quizzes, and turning in assignments).

3h <u>ONE WEEK POLICY:</u> All grades are posted in the Canvas gradebook (except individual WA and H-ITT points which are accessed through those programs directly). You are responsible for verifying all grades are accurate. You have one week after a score is available to discuss any grade concerns with your TA. There is no grades dispute after one week.

3i <u>INCOMPLETE:</u> A student who has completed a major portion of the course with a passing grade but is unable to complete the final exam or other course requirements due to illness or emergency may be granted an incomplete, indicated by a grade of "I". This allows the student to complete the course within the first six weeks of the following semester. The student must contact the course coordinator before finals week to sign an incomplete grade contract (http://clas.ufl.edu/forms/incomplete-grade-contract.pdf), and must provide documentation of the extenuating circumstances preventing him or her from taking the final exam. The grade of "I" is never used to avoid an undesirable grade, and does not allow a student to redo work already graded or to retake the course. See the official policy at http://www.math.ufl.edu/department/incomplete-grades/.

4. GENERAL EDUCATION INFORMATION

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MAC 2312 has been designated a General Education course that can be counted towards the Mathematical Science (M) requirement. **Course Objective**- The General Education Objectives for Mathematics courses:

"Courses in mathematics provide instruction in computational strategies in fundamental mathematics including at least one of the following: solving equations and inequalities, logic, statistics, algebra,

trigonometry, inductive and deductive reasoning. These courses include reasoning in abstract mathematical systems, formulating mathematical models and arguments, using mathematical models to solve problems and applying mathematical concepts effectively to real-world situations."

The primary goal of the course is to help students understand and apply the fundamental principles of differential and integral calculus. These objectives are accomplished through the lectures, homework, quizzes and discussion sections.

Student Learning Outcomes (SLOs)- The general education student learning outcomes describe the knowledge, skills and attitudes that students are expected to acquire while completing a general education course at the University of Florida.

I. Content: Content is knowledge of the concepts, principles, terminology and method- ologies used within the discipline. Students demonstrate competence in the terminology, concepts, theories and methodologies used within the discipline.

Explore some of the applications of the definite integral by using it to compute areas between curves, volumes of solids, and length of a curve.

Develop techniques for using basic integration formulas to obtain indefinite integrals of more complicated functions.

Understand the definition of infinite sequences and series and determine whether a sequence/series converges or diverges.

Understand parametric equations and polar equations with Calculus.

II. Communication: Communication is the development and expression of ideas in written and oral forms. Students communicate knowledge, ideas and reasoning clearly and effectively in written and oral forms appropriate to the discipline.

Communicate mathematical findings clearly and effectively using written and/or graphic forms.

III. Critical Thinking: Critical thinking is characterized by the comprehensive analysis of issues, ideas, and evidence before accepting or formulating an opinion or conclusion. Students analyze information carefully and logically from multiple perspectives, using discipline-specific methods, and develop reasoned solutions to problems.

Apply integration techniques and critical thinking effectively to evaluate integrals of applied problems including areas between curves, volumes of solids, and length of a curve.

Analyze the series according to its form and apply a list of the tests to determine the convergence of the series.

Apply Calculus to the parametric/polar equations to
    nd the area of the region and length of a curve.

These SLOs are assessed through weekly discussions, homework assignments and quizzes, three semester exams and final exam.

5. ONLINE COURSE EVALUATION

Students are asked to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open.

This syllabus is subject to change. You will be notified if any changes are made.

Updated 8/18/2017

PREREQUISITES MATERIAL FOR MAC2311, 2312

This course assumes that you have a sound precalculus background. The following is a summary of some important concepts used in solving calculus problems. The textbook provides a more complete review of these essential topics.

ALGEBRA

1. Basic Geometric Formulas: ($b =$ base, $l =$ length, $h =$ height, $w =$ width)

    Triangle: area $= \dfrac{1}{2} bh$

    Circle: area $= \pi r^2$; circumference $= 2\pi r$

    Parallelogram: area $= bh$

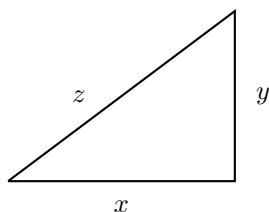   Rectangular box: volume $= lwh$

    Sphere: volume $= \dfrac{4}{3}\pi r^3$; surface area $= 4\pi r^2$

    Right circular cylinder: volume $= \pi r^2 h$;   surface area $= 2\pi rh + 2\pi r^2$

    Right circular cone: volume $= \dfrac{1}{3}\pi r^2 h$;   surface area $= \pi r \sqrt{r^2 + h^2}$

    Facts about similar triangles

    Pythagorean theorem: $x^2 + y^2 = z^2$

2. <u>Basic Functions and their graphs</u>

    $f(x) = x$; $f(x) = x^2$; $f(x) = x^3$; $f(x) = |x|$; $f(x) = \sqrt{x}$; $f(x) = 1/x$;

    $f(x) = b^x$, $b > 0$ and $b \neq 1$, such as $f(x) = 2^x$

3. <u>Factoring</u>

    $x^3 + y^3 = (x + y)(x^2 - xy + y^2)$; $x^3 - y^3 = (x - y)(x^2 + xy + y^2)$; etc.

4. <u>Completing the square</u> $x^2 + ax + b = \left(x + \dfrac{a}{2}\right)^2 + \left(b - \left(\dfrac{a}{2}\right)^2\right)$

5. <u>Law of exponents</u> $x^n y^n = (xy)^n; \quad x^n x^m = x^{n+m};$

$$\frac{x^n}{x^m} = x^{n-m}; \qquad (x^n)^m = x^{nm}$$

6. <u>Roots</u>

$\sqrt[n]{x} = x^{\frac{1}{n}}; \; x^{-n} = \dfrac{1}{x^n}$, etc.

7. <u>Inequalities and absolute values</u>

$|x| \le a \qquad -a \le x \le a; \qquad\qquad |x| > a \qquad x > a \text{ or } x < -a$

8. <u>Properties of logarithms</u> If $x > 0$, $\log_a x = y$ if and only if $x = a^y$

If $m > 0$ and $n > 0$, then

$\log(nm) = \log(n) + \log(m) \qquad \log\left(\dfrac{n}{m}\right) = \log(n) - \log(m)$

$\log(n^c) = c\log(n) \qquad\qquad \log_b(x) = \dfrac{\ln(x)}{\ln b}$

TRIGONOMETRY

1. Identities:

$\sin(-\theta) = -\sin\theta \qquad\qquad \cos(-\theta) = \cos\theta \qquad\qquad \tan(-\theta) = -\tan\theta$

$\sin\left(\dfrac{\pi}{2} - \theta\right) = \cos\theta \qquad \cos\left(\dfrac{\pi}{2} - \theta\right) = \sin\theta \qquad \tan\left(\dfrac{\pi}{2} - \theta\right) = \cot\theta$

$\sin^2\theta + \cos^2\theta = 1 \qquad\quad \sec^2\theta = 1 + \tan^2\theta \qquad\quad \csc^2\theta = 1 + \cot^2\theta$

2. Sum and Difference Formulas:

$\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$

$\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$

$\tan(A \pm B) = \dfrac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$

3. Double Angle Formulas:

$\sin 2\theta = 2\sin\theta\cos\theta$

$\cos 2\theta = \cos^2\theta - \sin^2\theta = 2\cos^2\theta - 1 = 1 - 2\sin^2\theta$

4. Half-Angle Formulas:

$$\sin^2\theta = \frac{1-\cos 2\theta}{2} \qquad \cos^2\theta = \frac{1+\cos 2\theta}{2}$$

5. Trigonometric Values:

θ	0	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$
$\sin\theta$	0	$1/2$	$\sqrt{2}/2$	$\sqrt{3}/2$	1
$\cos\theta$	1	$\sqrt{3}/2$	$\sqrt{2}/2$	$1/2$	0
$\tan\theta$	0	$\sqrt{3}/3$	1	$\sqrt{3}$	undef

PREREQUISITES MATERIAL FOR MAC2312

This course assumes that you have a sound calculus 1 background. The following is a summary of some important concepts and formulas used in solving calculus problems. The textbook provides a more complete review of these essential topics.

FORMULAS YOU ARE EXPECTED TO KNOW

1. COMPLETING THE SQUARE:

$$x^2 + ax + b = \left(x + \frac{a}{2}\right)^2 + \left(b - \left(\frac{a}{2}\right)^2\right)$$

2. PARABOLA:

$$y = f(x) = ax^2 + bx + c, \text{ vertex } (h,k), \text{ where } h = -\frac{b}{2a}, \text{ and } k = f\left(-\frac{b}{2a}\right)$$

3. CIRCLES:

$$(x-a)^2 + (y-b)^2 = r^2, \qquad \text{Center at } (a,b), \text{ radius } = r$$

4. DERIVATIVES OF AN INVERSE FUNCTION:

If $g = f^{-1}$, then $g'(x) = \dfrac{1}{f'(g(x))}$

5. DIFFERENTIATION/INTEGRATION FORMULAS:

CHAIN RULE $\qquad (f(g(x)))' = f'(g(x))g'(x)$

PRODUCT RULE $\qquad (f(x)g(x))' = f(x)g'(x) + g(x)f'(x)$

QUOTIENT RULE $\qquad \left(\dfrac{f(x)}{g(x)}\right)' = \dfrac{g(x)f'(x) - f(x)g'(x)}{(g(x))^2}$

$$\frac{d}{dx}(x^n) = nx^{n-1} \qquad\qquad \int x^n \, dx = \frac{x^{n+1}}{n+1} + C$$

$$\frac{d}{dx}(\ln x) = \frac{1}{x} \qquad\qquad \int \frac{1}{x} \, dx = \ln|x| + C$$

$$\frac{d}{dx}(e^x) = e^x \qquad\qquad \int e^x \, dx = e^x + C$$

$$\frac{d}{dx}(a^x) = (\ln a)a^x \qquad\qquad \int a^x \, dx = \frac{a^x}{\ln a} + C$$

$$\frac{d}{dx}(\sin x) = \cos x \qquad\qquad \int \cos x \, dx = \sin x + C$$

$$\frac{d}{dx}(\cos x) = -\sin x \qquad\qquad \int \sin x \, dx = -\cos x + C$$

$$\frac{d}{dx}(\tan x) = \sec^2 x \qquad\qquad \int \sec^2 x \, dx = \tan x + C$$

$$\frac{d}{dx}(\cot x) = -\csc^2 x \qquad\qquad \int \csc^2 x \, dx = -\cot x + C$$

$$\frac{d}{dx}(\sec x) = \tan x \sec x \qquad\qquad \int \tan x \sec x \, dx = \sec x + C$$

$$\frac{d}{dx}(\csc x) = -\cot x \csc x \qquad\qquad \int \cot x \csc x \, dx = -\csc x + C$$

$$\frac{d}{dx}(\arcsin x) = \frac{1}{\sqrt{1-x^2}} \qquad\qquad \int \frac{1}{\sqrt{1-x^2}} \, dx = \arcsin x + C$$

$$\frac{d}{dx}(\arctan x) = \frac{1}{1+x^2} \qquad\qquad \int \frac{1}{1+x^2} \, dx = \arctan x + C$$

$$\frac{d}{dx}[f(g(x))] = f'(g(x))g'(x) \qquad\qquad \int f'(g(x))g'(x) \, dx = \int f(u) \, du$$

$$\int \tan x \, dx = \ln|\sec x| + C \ \text{ or, } \ -\ln|\cos x| + c$$