Syllabus for MAC2312: Calculus 2

**Instructor**

Name: Prof. Dennis Ward

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**Academic Department**

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**Course Information**

**Course Description**

This course is designed to follow Calculus with Analytic Geometry I. Topics include inverse trigonometric functions, hyperbolic and inverse hyperbolic functions, areas, volumes, centroids, work, fluid pressure, length of arc, trigonometric integrals, integration techniques, polar coordinates, indeterminate forms, improper integrals, infinite series, plane curves, parametric equations, conic sections, and computer work. (Credit is not also given for MAC 2234.)

**Course Goals/Objectives**

1. **The student will engage critical thinking skills in the use of the inverse trigonometric and of the hyperbolic and inverse hyperbolic functions to evaluate integrals by:**
   1. finding derivatives of inverse trigonometric functions and integrals which yield inverse trigonometric functions.
   2. stating definitions of hyperbolic sine, cosine and tangent functions.
   3. finding the derivatives of hyperbolic functions.
2. **The student will engage critical thinking skills in the use of applications of the definite integral by:**
   1. solving area problems using the definite integral.
   2. solving volume problems using the definite integral.
   3. solving work problems using the definite integral.
   4. finding the length of arc of a plane function with definite integrals.
   5. solving fluid pressure problems with definite integrals.
   6. finding the center of mass with definite integrals.
3. **The student will engage critical thinking in the use of certain techniques of integration by:**
   1. using the methods of parts, trigonometric substitution and partial fractions to do integration problems.
   2. integrating rational functions of the sine and cosine functions.
   3. finding integrals by using integral tables.
4. **The student will engage critical thinking in the use of polar coordinates, plane curves, parametric equations and conic sections by:**
   1. defining basic terms related to polar coordinates and be able to plot points in a polar coordinate system.
   2. converting from rectangular to polar coordinates and vice versa.
   3. graphing the limacon, cardioid, rose, spiral, line and circle.
   4. finding area and arc length in polar coordinates.
   5. obtaining parametric equations of a given plane curve and to eliminate the parameter.
   6. finding the slope and concavity of a curve given parametrically.
   7. finding the length of arc of a curve given parametrically.
   8. graphing parabolas, ellipses, and hyperbolas and extract useful information from those graphs.
   9. sketching the graph of a conic section in polar coordinates when one focus is at the pole.
5. **The student will engage critical thinking in the use of indeterminate forms, improper integrals and Taylor’s formula by:**
   1. using L'Hopital's rule to evaluate limits which become indeterminate in form involving zero, 1 or infinity.
   2. integrating improper integrals with infinite limits of integration.
   3. integrating improper integrals of sectionally continuous functions involving infinite discontinuities.
   4. stating and using Taylor’s formula.
6. **The student will engage critical thinking in the use of infinite series by:**
   1. defining a sequence determine if it is increasing or decreasing, find lower and upper bounds if they exist and determine convergence or divergence.
   2. defining an infinite series, the sum of a series, and the nth partial sum of a series.
   3. determining the convergence or divergence of the following infinite series:
      1. constant term
      2. geometric
      3. harmonic
      4. positive term
      5. alternating
   4. being able to do the following with a power series:
      1. find convergence interval using the ratio and root tests
      2. differentiate it
      3. integrate it.
   5. defining the Taylor and Maclaurin series for a given analytic function.
   6. using the Binomial Theorem as it applies to infinite series.

**Required Textbooks & Other Resource Information**

**Required Textbook**

You must have access to Enhanced WebAssign to complete assigned homework. This can be achieved in one of three way:

* Calculus, Hybrid with Enhanced WebAssign
* Enhanced WebAssign Access Card
* Calculus, Hardcover with Enhanced Webassign

Please note that WebAssign includes an online copy of the textbook.

**Calculator Policy**

A scientific calculator (i.e. TI-30 +) or a Graphing calculator (i.e. TI-83) are allowed for homework and exams.

You may not use any calculator that has a QWERTY keyboard (i.e. TI-nSpire; TI-92; etc.), that can communicate with other people or devices (i.e. iPod Touch; calculators on a phone), or online calculators.

**Meeting Information**

Mo We Fr 9 – 10:30 am in SE UP-218

**Important Dates**

Important Dates: <http://www.spcollege.edu/calendar>

Financial Aid: <http://www.spcollege.edu/pages/dynamic.aspx?id=614>

**Discipline Specific Information**

Class is a professional environment, and should be treated as such. Respect is expected in every correspondence, whether between student and instructor or between student and student. Communication in a manner that is not respectful (as determined by the instructor) may result in removal from the classroom at the discretion of the instructor. Classroom computers are not available for personal use. Personal use of computers may result in restricted access to computers and removal from class.

**Attendance**

The college-wide attendance policy is included in the Syllabus Addendum

<http://www.spcollege.edu/addendum/>

Students are required to attend every class, complete all assignments on or before the due dates, and come to class prepared. It is the responsibility of the student to notify the instructor in advance of any absence. Excused absences do not negatively affect a student’s grade. Excused absences are at the discretion of the instructor. Physical proof of excuse and/or prior notification will be required.

Students who are not participating in class and attending regularly will be removed from the class and will receive a grade of WF as determined on the withdrawal deadline. A student may be removed from class if they have a grade of 0 on any test given previous to that date. Students who miss the first two weeks of class or who fail to complete the Start Here assignments will be removed from class on the third week.

**Grading**

Students enrolled after the withdrawal deadline will receive one of the grades below:

|  |  |
| --- | --- |
| **Grading Scale** | **Categories** |
| **A** ≥ 90 |  |
| **B** 80.00 – 89.99 | **Homework 10%** |
| **C** 70.00 – 79.99 | **Unit Exams 90%** |
| **D** 60.00 – 69.99 | **Optional Final\* 90%** |
| **F** < 60 |  |

*\*If you choose to take the Optional Final, you grade will be either the average of your Unit Exams or the grade earned on the final exam, whichever is higher.*

**UNDER NO CIRCUMSTANCES** will a student receive a W grade after the withdrawal deadline. Students on their third attempt cannot withdraw from the class after the first week. State policy specifies that students may not repeat a college credit course for which a grade of “C” or higher has been earned except by appeal to the campus Academic Appeals committee. You may repeat a college credit course one time without penalty. At the third attempt, you will pay the full cost of instruction. The full cost of instruction rate for the academic year is stated in the course catalog. In addition, at the third attempt you may NOT receive a grade of “I,” “W,” or “X,” but must receive the letter grade earned. This grade will be averaged into your overall grade point average.

**Assignments**

**Homework**

Homework will be assigned throughout the course utilizing WebAssign. Students are expected to complete all homework assignments prior to the related exam.

**Unit Tests**

You will be taking five (5) paper-and-pencil Unit tests according to the Class Schedule. You will have 1 attempt for each test. It is your responsibility to complete the Tests by the deadlines designated by your instructor (please refer to the Assignment Due Dates in MyCourses). Make-up exams will be offered at the discretion of the instructor. Appropriate documentation may be required.

**Final Exam/Test Retake**

At the end of the semester you may choose to retake one of the unit exams, or an optional final examination covering all topics covered in the course. These exams are timed (maximum 110 minutes) and must be taken by the scheduled date according to the Class Schedule. If you choose to retake an exam, you will receive the higher of the original and retake grades. If you score higher on the optional final, it will replace your exam average.

*All OSSD students must provide appropriate documentation if they need special arrangements for testing.*

**Late Assignments and Make-up Policy**

Extensions will only be offered in cases of significant illness, death in the family, or other significant impediment to completing the assignments on time and only with appropriate documentation.

Late assignments will not be accepted without proper documentation of physical inability of access class during the due date and instructor approval. Loss of internet is not a valid excuse for missing a deadline. Should a student miss a test, a makeup test may be made available only with instructor approval and approved documentation of physical inability to access class during the testing period.

The instructor may use discretion in offering alternate options in unusual cases.

All requests for extensions must be made prior to the next unit exam due date or the end of the semester, whichever comes first.

**Extra Credit**

No Extra Credit will be available.

All course work must be completed by the appropriate due dates. A grade of zero will be assigned to any course requirement not completed.

Grades will be hand calculated at the end of the term. Neither MyCourses nor WebAssign determines your grade; the standards set forth in the syllabus determine your grade.

**Students’ Expectations and Instructor’s Expectations**

**Student Responsibilities**

 The student is responsible for knowing all course policies listed in the syllabus or discussed via email, class announcements or discussion boards.

 The student is responsible for participating in class. The student will respect the rights of other students to learn. The student will communicate with others in a courteous and respectful manner at all times, including the instructor.

 The student is responsible for knowing when assignments are due, the formats required, and the procedures for completing and submitting assignments.

 The student is expected to know the SPC Academic Honesty Policy and to act above suspicion at

all times with regard to academic issues.

 The student is responsible for regularly checking assignments and due date in MyCourses, completing assignments before the due date and participating in discussions on the discussion boards.

**Instructor Responsibilities**

 The instructor is responsible for providing a syllabus the first day of class that clearly explains all course policies. The instructor will provide a Student Survey of Instruction for fall and spring semesters. The instructor will post grades in MySPC by the end of the semester.

 The instructor will create a learning environment in the classroom that engages students and facilitates learning. The instructor will enforce the right of all students to learn. The instructor will communicate with students in a courteous and respectful manner at all times. The instructor will respond to emails within 48 hours, 5 of 7 days per week.

 The instructor will provide clear guidelines and information regarding when assignments are

due, the format required, and the procedure for completing and submitting assignments. The instructor will grade all assignments within 7 days of each due date, with additional time for late assignments, if accepted.

 The instructor will enforce SPC Academic Honesty policies at all times

 The instructor will maintain weekly office hours or come to class one half hour early for questions, as determined by college policy.

**Resources**

**Tutoring**

Tutoring is available for free to all SPC students on each of the major campuses and virtually via Smarthinking. You are also encouraged to contact your instructor with any questions or concerns you may have.

**Technical Support**

SPC helpdesk: 727-341-4357

[onlinehelp@spcollege.edu](mailto:onlinehelp@spcollege.edu)

[www.spcollege.edu/helpdesk/](http://www.spcollege.edu/helpdesk/)

**Student Survey of Instruction**

The student survey of instruction is administered in courses each semester. It is designed to improve the quality of instruction at St. Petersburg College. All students are confidential and anonymous and will be used solely for the purpose of performance improvement.