Calculus II, Spring 2024 Syllabus
MATH 2314.002, MATH 2114.002

Professor: Dr. Keith Hubbard
Email: hubbardke@sfasu.edu
Phone: 936-468-1533
Office: 336 Bush Mathematics Building

Department: Mathematics and Statistics
Class Times: MWF 9:00-9:50AM in Math 202
W 2:30-3:55PM in Math 358

Class Times:

<table>
<thead>
<tr>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thurs</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-9, 1-2</td>
<td>11-12</td>
<td>8-9</td>
<td>11-12</td>
<td>8-9</td>
</tr>
</tbody>
</table>

Course Description & Credit Hours: Topics will include applications and techniques of integration, improper integrals, infinite series and power series. MATH 2314 and MATH 2114 are treated as a single 4-credit-hour course with a single grade calculated at the end of the semester. The course meets 225 minutes each week for the entire semester. Homework, study time, and projects are likely to take you from 6 to 15 hours per week.

Text and Materials:
- **Calculator**: students may use a non-programmable, non-graphing calculator (e.g. TI-30 XS MultiView). Calculators that perform numerical differentiation or numerical integration (e.g. TI 36 X pro) are prohibited.

Course Requirements
- **When you arrive to class**: (1) silence your cell phone and other devices, (2) prepare to take studious notes, and (3) push yourself to fully engage with any mini-quiz opening activity.
- **Homework** — Exercises from the textbook will be assigned for each major topic in the course and submitted on D2L.
- **Quizzes** — You will have in-class quizzes on most Fridays. Your lowest quiz grade will be dropped at the end of the term.
- **Projects** — You will have projects on a number of lab days that utilize graphing utilities (such as desmos). Some projects involve several parts; take each part seriously.
- **Three Exams** — If you must miss an exam due to an excused absence, special arrangements should be made at least two class days in advance. Student ID with photo may be required for exams.
- **A cumulative final exam** — The final exam is Wednesday, May 8, 8 – 10 AM
- **Participation** — You are expected to attend every class, ask questions, and engage in the discussion. You should be prepared to invest several hours per day outside of class reading the text, writing the assigned examples, and completing homework exercises. Check your @jacks email daily, as your instructor may send reminders, assignments, or announcements.

Grading Policy: Your grade will be computed by a weighted average with the following items and percentages.

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW &amp; Participation</td>
<td>15%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Projects</td>
<td>15%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>15%</td>
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<tr>
<td>Exam 2</td>
<td>15%</td>
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<tr>
<td>Exam 3</td>
<td>15%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>15%</td>
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</tbody>
</table>

Grading Scale: 90% - 100%: A; 80% - 90%: B; 70% - 80%: C; 60% - 70%: D; Below 60%: F

Attendance Policy: You are expected to attend every class. A late arrival counts as a ½ absence.

Tips for Success:
1. Attend every class. Take notes. **Ask questions.** Before class, read the corresponding section in the textbook, print the available notes (suggested 2-4 slides per page), and bring them to class.
2. Be prompt and professional. Remove your head phones. Put your phone away without being asked.
3. Check your SFA email at least once per day.
4. Do all assigned HW exercises independently and promptly.
5. Believe in the process. Learning useful things takes time, practice, and hard work. But the benefit of becoming better at learning will benefit you for the rest of your life.
Academic Integrity (4.1)

The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.

Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.

Withheld Grades Semester Grades Policy (5.5)

Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course to compute the grade point average. For additional information, go to https://www.sfasu.edu/policies/course-grades-5.5.pdf.

Students with Disabilities

Please copy and paste the following statement and place it in your course syllabus.

To obtain disability-related accommodations, alternate formats, and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services promptly may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.

Student Wellness and Well-Being

SFA values students’ overall well-being, mental health and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help, SFA provides a variety of resources to support students’ mental health and wellness. Many of these resources are free, and all of them are confidential.

On-campus Resources:

The Dean of Students Office (Rusk Building, 3rd floor lobby)
www.sfasu.edu/deanofstudents; 936.468.7249
dos@sfasu.edu

SFA Human Services Counseling Clinic Human Services 202
www.sfasu.edu/humanservices/139.asp; 936.468.1041

Crisis Resources:

- Burke 24-hour crisis line: 1.800.392.8343
- National Suicide Crisis Prevention: 9-8-8
- Suicide Prevention Lifeline: 1.800.273.TALK (8255)
- johCrisis Text Line: Text HELLO to 741-741

The Health and Wellness Hub “The Hub”

SFA Drop Policy: https://www.sfasu.edu/policies/course-add-drop-6.10.pdf

See https://math.sfasu.edu/docs/syllabi/MATH2314Syllabus.pdf for elements common to all sections.
### Tentative Course Calendar

<table>
<thead>
<tr>
<th>Week</th>
<th>Monday</th>
<th>Wednesday</th>
<th>Wed Lab</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>5.2</td>
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<tr>
<td>2</td>
<td>5.3</td>
<td>5.4</td>
<td>Lab 1: Integration</td>
<td>5.6</td>
</tr>
<tr>
<td>3</td>
<td>5.7</td>
<td>5.7/5.8</td>
<td>Lab 2: Substitution</td>
<td>5.8</td>
</tr>
<tr>
<td>4</td>
<td>6.1</td>
<td>6.1/6.2</td>
<td>6.2</td>
<td>6.3</td>
</tr>
<tr>
<td>5</td>
<td>6.3/6.4</td>
<td>Review</td>
<td>Exam 1</td>
<td>6.4</td>
</tr>
<tr>
<td>6</td>
<td>6.4/6.5</td>
<td>6.5</td>
<td>Lab 3: Energy Drink</td>
<td>7.1</td>
</tr>
<tr>
<td>7</td>
<td>7.1/7.2</td>
<td>7.2</td>
<td>Lab 3</td>
<td>7.3</td>
</tr>
<tr>
<td>8</td>
<td>7.3/7.4</td>
<td>7.4</td>
<td>7.5/ Lab 3 - orals</td>
<td>7.5</td>
</tr>
</tbody>
</table>

**Spring Break**

| 9    | 8.2    | Review | Exam 2 | 7.7    |
| 10   | 7.7/8.3| 8.3     | Personal Finance | Easter Break |
| 11   | 10.1   | 10.1    | 10.2/ Lab 3 due | 10.2    |
| 12   | 10.3   | 10.3    | Lab 4: Seq’s & Ser’s | 10.4   |
| 13   | 10.4   | Review  | Exam 3  | 10.5   |
| 14   | 10.5/10.6| 10.6 | Lab 5: Fourier Series | 10.7   |
| 15   | 10.7/10.8| 10.8 | Euler’s Formula | Review |

**Final Exam** | May 8, 8:00-10:00 AM

### Tentative Homework Assignments

<table>
<thead>
<tr>
<th>Section</th>
<th>Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2 Definite Integral</td>
<td>#7, 9, 13 – 16, 43 – 46, 50, 58 – 62</td>
</tr>
<tr>
<td>5.3 Indefinite Integral</td>
<td>#3 – 7 odd, 12 – 39 (mult of 3), 48 – 60 (mult of 3)</td>
</tr>
<tr>
<td>5.4 Fund Thm of Calc I</td>
<td>#6 – 36 (mult of 3), 49, 53, 54,</td>
</tr>
<tr>
<td>5.5 Fund Thm of Calc II</td>
<td>#7 – 13 odd, 21 – 24, 29 – 32</td>
</tr>
<tr>
<td>5.6 Net Change</td>
<td>#1, 4 – 6, 9 – 12, 15</td>
</tr>
<tr>
<td>5.7 Substitution</td>
<td>#1 – 6, 8 – 72 (mult of 4), 84 – 93 (mult of 3)</td>
</tr>
<tr>
<td>5.8 More Integration</td>
<td>#1 – 8, 11, 12, 15 – 30 (mult of 3), 36 – 63 (mult of 3)</td>
</tr>
<tr>
<td>6.1 Area Between Curves</td>
<td>#1, 4, 9, 17, 18, 21 – 25, 30, 42, 45 – 47</td>
</tr>
<tr>
<td>6.2 Volumes, etc.</td>
<td>#3 – 5, 9 – 11, 13, 39, 42, 45</td>
</tr>
<tr>
<td>6.3 Disks and Washers</td>
<td>#6, 8, 9, 12 – 15, 21, 29 – 34, 41, 45, 48</td>
</tr>
<tr>
<td>6.4 Shells</td>
<td>#3, 4, 8 – 10, 12, 15, 21, 36 – 44, 45</td>
</tr>
<tr>
<td>6.5 Work and Energy</td>
<td>#3 – 6, 17 – 23</td>
</tr>
<tr>
<td>7.1 Integration by Parts</td>
<td>#3, 9, 15, 21, 27, 33, 39, 45, 51, 67-75 (odd)</td>
</tr>
<tr>
<td>7.2 Trig Integrals</td>
<td>#9, 24-48 (mult of 3), 59, 61,62</td>
</tr>
<tr>
<td>7.3 Trig Substitution</td>
<td>#5, 6-27 (mult of 3), 37-39</td>
</tr>
<tr>
<td>7.4 Hyperbolic Integrals</td>
<td>#3-15 (mult of 3)</td>
</tr>
<tr>
<td>7.5 Partial Fractions</td>
<td>#5, 7, 12-42 (mult of 3)</td>
</tr>
<tr>
<td>8.2 Arc Length &amp; Surface Area</td>
<td>#2-7, 43, 45, 47</td>
</tr>
<tr>
<td>7.7 Improper Integrals</td>
<td>#3-18 (mult of 3), 33, 36, 39, 45, 47, 61, 63, 68</td>
</tr>
<tr>
<td>8.3 Fluid Pressure &amp; Force</td>
<td>#3, 7, 13, 17, 23</td>
</tr>
<tr>
<td>10.1 Sequences</td>
<td>#3-15 (mult of 3), 43, 45, 49, 51, 53, 55, 61</td>
</tr>
<tr>
<td>10.2 Series</td>
<td>#11, 13, 17-33 odd, 43</td>
</tr>
<tr>
<td>10.3 Comparison Tests</td>
<td>#3, 11, 17, 18, 21, 39, 51, 66-75 (mult of 3)</td>
</tr>
<tr>
<td>10.4 Alternating Series</td>
<td>#3-5, 7, 21-31 odd</td>
</tr>
<tr>
<td>10.5 Ratio &amp; Root Tests</td>
<td>#3, 5, 7, 15, 17, 21, 37, 39, 45-57 (mult of 3)</td>
</tr>
<tr>
<td>10.6 Power Series</td>
<td>#7, 10-12, 25-31 odd, 35, 37</td>
</tr>
<tr>
<td>10.7 Tayler Polynomials</td>
<td>#3-15 (mult of 3), 23, 25, 59</td>
</tr>
<tr>
<td>10.8 Tayler Series</td>
<td>[#13, 15, 37, 39, 41, 45 ]]</td>
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</tbody>
</table>
Course description: Applications and techniques of integration, improper integrals, infinite series and power series.

Credit hours: 3

The following is an excerpt from SFA Policy 5.4:

The federal definition of a credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates:

1. Not less than one hour of classroom or direct faculty instruction and a minimum of two hours out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or 10 to 12 weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time, or;

2. At least an equivalent amount of work as outlined in item 1 above for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.

To this end, all students in courses offered by the Department of Mathematics and Statistics that wish to be successful should plan to spend a minimum of two hours outside of class for every credit hour associated with this course. Expected activities to be completed in the time outside of class include reviewing notes from previous class meetings, reading assigned course resources, completing all assigned exercises and projects, and performing periodic assessment preparation.

Course Prerequisites and Corequisites: MTH 2313

Course outline:

- **Applications of the definite integral**
  
  - Volumes of surfaces of revolution
  - Arc length
  - Surface area
  - One or more from the following applications:
    - Work
    - Fluid pressure and forces
    - Moments and centers of mass
  
  30%

- **Techniques of Integration**
  
  - Basic integration techniques
  - Integration by parts
  - Integration by partial fractions
  - Trigonometric substitutions
  - Numerical integration
  - Improper integrals
  
  30%

- **Infinite Sequences and Series**
  
  - Sequences
  - Infinite series
    - Geometric series
    - Harmonic series
  
  40%

www.sfasu.edu
Program Learning Outcomes (PLO): Students graduating from SFA with a B.S. Degree and a major in mathematics will:

1. Written Communication - SFA Mathematics majors communicate mathematical ideas effectively in written form, integrating mathematical notation correctly and consistently.

2. Verbal Communication - SFA Mathematics majors communicate mathematics effectively to diverse audiences.

3. Mathematical Maturation - SFA Mathematics majors grow from a computational understanding of mathematics to an integrated approach which includes critical thinking proficiency, computational facility, conceptual understanding, and problem-solving persistence.

Student Learning Outcomes (SLO): At the end of MATH 2314, a student who has studied and learned the material should be able to:

1. Extend the definition of the definite integrals to applications, other than area under a curve, including volumes of surfaces of revolution, arc length, and surface area, as well as to examples from other academic fields which might include work, fluid forces, or moments and centers of mass. [PLO: 1, 2, 3]

2. Demonstrate mastery of basic integration techniques. [PLO: 1, 2, 3]

3. Solve more complicated integrals by applying techniques including integration by parts, partial fractions, and trigonometric substitutions. [PLO: 1, 2, 3]

4. Recognize that the Fundamental Theorem of Calculus does not allow for the computation of all definite integrals and be able to apply approximation techniques as an alternative. [PLO: 1, 2, 3]

5. Recognize an improper integral and apply limits to find a solution. [PLO: 1, 2, 3]

6. Define infinite sequences and series and determine convergence and divergence behavior by appropriately applying strategies such as the integral test, comparison tests, and ratio and root tests. [PLO: 1, 2, 3]

7. Recognize alternating series and determine absolute and conditional convergence behavior. [PLO: 1, 2, 3]

8. Determine the radius and interval of convergence of a power series. [PLO: 1, 2, 3]

9. Develop Taylor/Maclaurin Series expansions for basic functions. [PLO: 1, 2, 3]

This course meets educator preparation standards for one or more certification programs; a complete listing of all the educator preparation standards this course meets can be found at: https://sfasu.edu/docs/jacksteach/jacksteach-standards-alignment-chart.xlsx.

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terms the WH will automatically become an F and will be counted as a repeated course for the purpose of
computing the grade point average. The circumstances precipitating the request must have occurred after the last
day in which a student could withdraw from a course. Students requesting a WH must be passing the course with
a minimum projected grade of C. For additional information, go to [https://www.sfasu.edu/policies/course-grades-5.5.pdf](https://www.sfasu.edu/policies/course-grades-5.5.pdf).

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[www.sfasu.edu/deanofstudents](http://www.sfasu.edu/deanofstudents)
936.468.7249
The Health and Wellness Hub “The Hub”
Location: corner of E. College and Raguet St.

To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit. Services include:

- Health Services
- Counseling Services
- Student Outreach and Support
- Food Pantry
- Wellness Coaching
- Alcohol and Other Drug Education

Crisis Resources:

- Burke 24-hour crisis line: 1.800.392.8343
- National Suicide Crisis Prevention: 9-8-8
- Suicide Prevention Lifeline: 1.800.273.TALK (8255)
- Crisis Text Line: Text HELLO to 741-741

Acceptable Student Behavior
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy 10.4). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom.

Date of document: 08/23/2023