

Framingham State University

Syllabus

MATH 220 – Calculus II

Summer 2019

Disclaimer: This syllabus is intended to give the student guidance in what may be covered in the course and will be followed as closely as possible. However, the professor reserves the right to modify, supplement and make changes as needs arise.

Instructor: Professor Sandberg

Email: ssandberg@framingham.edu

Office Hours: By appointment

Credit: 4

Time: 2 hours/day Mon – Fri

Classroom: TBD

Catalog Description

A study of the applications of integration, first-order linear and separable differential equations, techniques of integration, improper integrals, sequences, series, and Taylor and Maclaurin Series. Prerequisite: Completion of MATH 219 Calculus I with a minimum grade of C (2.00) or better.

Content

This course is the second part of a traditional two semester long sequence with a focus on integration. It will cover single variable integral calculus and its applications.

We assume students are familiar with the standard content of a Calculus I course for scientists and engineers. This includes the study of limits, derivatives, optimization of functions of a single

variable, using derivatives to sketch graphs, ant derivatives and the method of substitution, definite integrals and Riemann sums, and the fundamental theorem of calculus. Moreover, they should have studied this material in the context of algebraic, exponential, logarithmic, and trigonometric functions.

Required Textbook

Calculus: Early Transcendentals, Single Variable, 11th edition by Anton, Bivens and David.

Coverage: Chapters 6 – 7, 9 - 10, Select Sections

Chapter	Sections	Topic
Chapter 6	6.1 – 6.6	Applications of the Definite Integral
Chapter 7	7.1 – 7.8	Principals of Integral Evaluation
Chapter 8	8.1 – 8.4	Differential Equations
Chapter 9	9.1 – 9.10	Infinite Series

Course Hours

The course has 25 sessions in total. Each class session is 120 minutes in length. The course meets from Monday to Friday. Federal regulations dictate that students be required to engage in two hours of work outside of class for each credit hour. So a summer school student is expected to spend 4 hours per day outside the regular classroom reviewing notes, working homework problems and preparing for exams.

Calculators and Cell phones: No calculators may be used on tests. Cell phones must be turned off and put away during tests.

Homework: There will be regular homework assignments. Students are encouraged to work together on the homework problems, but the homework will not be graded. However, it is very important to do all the homework

Attendance and in-class work: Students are expected to be in class every day for the full class period. Material will be covered very quickly; it will be difficult to catch up, should one fall

behind. We will spend some time in class working on problems. Some of this work may be presented or turned in.

Approximate Day-to-Day Schedule: This schedule is subject to change.

	<u>Topics</u>	<u>Textbook Sections</u>
Week 1		
	Area Between Two Curves	section 6.1
(8 th July-	Volumes by Slicing, Disks and Washers	section 6.2
12 th July)	Volumes by Cylindrical Shells	section 6.3
	Length of a Plane Curve	section 6.4
	Area of a Surface of Revolution	section 6.5
	Work	section 6.6
	Moments, Centers of Gravity, Centroids	section 6.7

Exam 1

Week 2

	Fluid Pressure and Force	section 6.8
(15 th July	Overview of Integration Methods	section 7.1
-19 th July)	Integration by Parts	section 7.2
	Integrating Trig Function	section 7.3
	Trig Substitutions	section 7.4
	Partial Fractions	section 7.5
	Tables of Integrals	section 7.6

Exam 2

Week 3

	Numerical Integration	section 7.7
(22 nd July	Improper Integrals	section 7.8
-26 th July)	Modeling with Differential Equations	section 8.1

Separation of Variables	section 8.2
First Order Differential Equations	section 8.4
Sequences	section 9.1

Exam 3

Week 4

	Monotone Sequences	section 9.2
(29 th July	Infinite Series	section 9.3
-2 nd August)	Convergence Tests	section 9.4
	Ration and Root Tests	section 9.5
	Alternating Series Convergence	section 9.6
	Absolute and Conditional Convergence	section 9.6

Exam 4

Week 5

	Maclaurin and Taylor Polynomials	section 9.7
(5 th August	Maclaurin and Taylor Series, Power Series	section 9.8
-9 th August)	Convergence of Taylor Series	section 9.9
	Differentiating and Integrating Power Series	section 9.10
	Review	

Final Exam

Exams: There will be an hour-long, closed-book exam each week. THERE WILL BE NO MAKE-UP EXAMS. In the event that a student misses an exam and presents an acceptable reason to the instructor, the final exam grade will be counted for the missed exam. If you are able to do the homework problems, then you should do well on the exams because the questions on the exams will look very similar to the homework. If they don't, please come and see me right away.

I have frequent exams so that you and I both know how you are doing throughout the semester. If you start doing poorly on the exams, please come and see me so that we can together figure out how you can improve. Don't get behind in this class because it is very difficult to catch up when you do.

Final Exam: A comprehensive final exam will be given during the last week.

Grading: The exam average will count 70% of the final grade and the final exam will count 30%. The letter grade will be calculated as follows:

Overall Average Grade	Letter Grade
95 – 100	A
90 - 94	A-
87 - 89	B+
83 - 86	B
80 - 82	B-
77 - 79	C+
74 - 76	C
70 - 72	C-
67 - 69	D+
63 - 66	D
60 - 62	D-
00 - 59	F

Academic Honesty: I expect that all of your work will be your own. Please review the [Academic Honesty Policy](#) of Framingham State University, the Academic Regulations on pages 28-46 of the Framingham State University [Undergraduate Catalog 2018-2019](#), and the information below.

Integrity is essential to academic life. Consequently, students who enroll at Framingham State University agree to maintain high standards of academic honesty and scholarly practice. They

shall be responsible for familiarizing themselves with the published policies and procedures regarding academic honesty.

Academic honesty requires but is not limited to the following practices: appropriately citing all published and unpublished sources, whether quoted, paraphrased, or otherwise expressed, in all of the student's oral and written, technical, and artistic work; observing the policies regarding the use of technical facilities.

Infractions of the Policy on Academic Honesty include, but are not limited to:

1. Plagiarism: claiming as one's own work the published or unpublished literal or paraphrased work of another. It should be recognized that plagiarism is not only academically dishonest but also illegal.
2. Cheating on exams, tests, quizzes, assignments, and papers, including the giving or acceptance of these materials and other sources of information without the permission of the instructor(s).
3. Unauthorized collaboration with other individuals in the preparation of course assignments.
4. Submitting without authorization the same assignment for credit in more than one course.
5. Use of dishonest procedures in computer, laboratory, studio, or field work.

Further clarification on academic honesty will be provided, when appropriate, in individual courses.

6. Misuse of the University's technical facilities (computer machinery, laboratories, media equipment, etc.), either maliciously or for personal gain. Examples include but are not necessarily limited to: (a) accessing the private files of another person or agency without express permission, and (b) the unauthorized use of technical facilities for purposes not connected with academic pursuits. When evidence indicates that a student has improperly used a technical facility, an appropriate supervisor (faculty or staff member) may take appropriate action reflecting the seriousness of the infraction, ranging from a verbal warning to, but not beyond, denial of use of the facility. If coursework may have been plagiarized, the supervisor will also inform all concerned faculty members, who may take action as described in the procedures for handling cases of alleged infractions of academic honesty.

7. Falsification of forms used to document the academic record and to conduct the academic business of the University

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Framingham State University is committed to a policy of non-discrimination, equal opportunity, diversity, and affirmative action. The University is dedicated to providing educational, working, and living environments that value the diverse backgrounds of all people. Furthermore, the Massachusetts Civil Rights Act ("MCRA," M.G.L. c. 12, §§ 11H, 11I, 11J) protects the rights of all residents of and visitors to Massachusetts to be free from bias-motivated threats, intimidation, and coercion that interfere with their civil rights. The MCRA protects the right to attend school, live peacefully, and enjoy other basic rights.

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