Syllabus for Math 226/227, Spring 2026

Contact Information

The instructor for your section will provide you with contact information.

Course Coordinator:

- Dr. L. William Kazmierczak, Director of Calculus [226/227]

Class Meeting Schedule - All Sections

The drop deadline is February 2 and the withdrawal deadline is February 25

Math 226: Integration Techniques and Applications, January 21 - March 11.

The drop deadline is March 27 and the Withdrawal deadline is April 23

Math 227: Infinite Series, March 16 - May 6.

(227 Final Exam Date TBA)

The drop deadline is February 2 and the withdrawal deadline is February 25

Math 227: Infinite Series, January 21 - March 11.

The drop deadline is March 27 and the Withdrawal deadline is April 23

Math 226: Integration Techniques and Applications, March 16 - May 6.

(226 Final Exam Date TBA)

Prerequisites

A grade of C- or better in both MATH 224 and 225 is required to take MATH 226, but a grade of C or better is HIGHLY RECOMMENDED. Historical data shows that students with just C- in Calculus I (224/225) usually had serious trouble in Calculus II (226/227). You have been warned! A grade of a C- or better in MATH 226 is required to take MATH 227.

Office Hours

Each instructor will inform you of office hours or scheduled problem sessions outside of class times.

Textbook

``Calculus Single Variable'' by James Stewart, Ninth Edition (with WebAssign Access Code), Cengage Learning, 20 Channel Center Street, Boston, MA.

Objectives and Course Contents

Calculus II is being taught in two half-semester courses; Math 226: Integration Techniques and Applications, and Math 227: Infinite Series.

The main goal of Calculus II is to continue the development of differential and integral calculus started in Calculus I, including specific topics which have been found to be valuable for applications in many other fields. Students will be introduced to new classes of functions including the exponential functions, logarithm functions, and inverse trig functions. Students will then learn how to apply the techniques of Calculus (differentiation and integration) to those functions. The method of L'Hospital's Rule will be taught for dealing with certain limits. Various techniques for integration will be taught (integration by parts, trig integrals, inverse trig substitutions, partial fractions, and improper integrals). We will study several applications of integration, including: finding the length of arc of a curve, finding the area of a surface of revolution (even when the equations are given in parametric form, in rectangular or polar coordinates).

Infinite sequences and series will be studied, and methods for investigation of their convergence will be taught (the integral test, the comparison tests, the ratio and root tests, alternating series, absolute convergence and power series). Methods of representing functions as power series with a radius of convergence will be taught, as well as the Taylor series representations of a given function.

The course material is vital to the study of Calculus III and Differential Equations, and is very useful in many other courses in the Department of Mathematical Sciences and in other departments (e.g., Physics, Chemistry, Biology, and Economics).

Help Outside of Class

The **Calculus Help Rooms**, located on the 2nd floor of Whitney Hall, are staffed by instructors who teach the course and will be open after the first week of classes. Students can walk in with no appointment and ask questions of any available instructor. **Click here for the Help Room schedule.** There are no Help Room or office hours after the final exam during the week of midsemester grading.

There is free tutoring offered though University Tutoring Services. All information regarding tutoring can be found here: http://www.binghamton.edu/clt/tutoring-services/index.html

People learn in many different ways: through reading, listening, practicing and working with others. Students may wish to work with others while doing the practice problems or preparing for an exam. That is acceptable and even encouraged. However, unethical behavior in this class will not be tolerated. Cheating on an examination, or any other ethics violation, will result in a serious penalty. See the section below on Academic Honesty.

General Comments

Regular class attendance is required for success in this course. Lack of attendance will most likely result in a lower grade. The instructor may assign 2% of your total score based on attendance or classroom participation, and will decide borderline cases. The material is a combination of theory and calculation, and it is necessary to understand the theory in order to do sensible calculations and interpret them correctly. Lectures can be interrupted at any time for questions. At the start of each class be ready to ask questions about homework problems or about the previous lecture. A grade of C or better in Calculus I is strongly recommended for this course. If you do not meet that condition, see the instructor immediately for advice.

Student use of cell phones and other electronic devices is becoming increasingly disruptive in class and is actually insulting to the instructor. Holding the cell phone in your lap and looking down to text does not make you invisible! All electronics should be turned off and put away before the beginning of class. Students found using such devices may be asked to leave the class.

University Attendance Policy

Students are expected to attend all scheduled classes, laboratories and discussions. Instructors may establish their own attendance criteria for a course. They may establish both the number of absences permitted to receive credit for the course and the number of absences after which the final grade may be adjusted downward. In such cases it is expected that the instructor stipulate such requirements in the syllabus and that the syllabus be made available to students at or near the beginning of classes. In the absence of such statements, instructors have the right to deny a student the privilege of taking the final examination or of receiving credit for the course or may prescribe other academic penalties if the student misses more than 25 percent of the total class sessions.

Students are expected to attend all scheduled calculus classes. It is important to attend class in order to learn the material and successfully complete the course. University policy states that if a student misses more than 25 percent of the total class sessions, then the instructor has the option to fail that student. University policy states that if a student misses more than 25 percent of the total class sessions, then the instructor has the option to fail that student and not allow them to take the final exam. So, **if a student has more than 5 unexcused absences for our half semester course and they fail the midterm exam, then they will not be permitted to take the final exam and will receive a course grade of “F” if they do not withdraw from the course.**

If you are seriously ill (running a fever, upset stomach) you should not come to class. Documented illness of this sort is an excused absence and will not be counted against your attendance grade. Absence for more than one or two days needs to be documented by health services. If you are going to be ill for an extended period of time (a week or more) be sure to contact your instructor as soon as you can so that plans can be made for you to make up the work you will be missing.

Homework and WebAssign

For each section of material covered there will be an assignment of problems on WebAssign. Your WebAssign homework counts towards your grade. Study groups are encouraged, but students should not become too dependent on others. Watching the instructor, or other students, do the problems will not be enough to learn the material. It will be necessary for you to do many exercises yourself in order to be successful on the exams. Attempts to solve homework problems provide the best way to learn the material and to prepare for exams.

WebAssign is an online homework system which includes an e-book version of our text. If you purchased the textbook/WebAssign or Cengage Unlimited (1 semester) from our bookstore when taking 224/225, then you do not need to purchase it again. If you bought the book through the Binghamton University Bookstore then it comes with an access code. This Access Code works for multiple semesters including Calculus III. This is the most affordable package with textbook that you'll find. If you did not buy the textbook package through the bookstore, then you'll need to purchase “Cengage Unlimited” (1 semester, 4 months). This comes with the ebook and also gives you access through Calculus III. It can also be purchased through our bookstore. You will have temporary free access to WebAssign for two weeks into the semester without an access code.

To gain access to your WebAssign HW section you need to self-enroll by submitting the “Class Key” supplied to you by your instructor. All information regarding how to login with Class Key and purchase an access code can be found here Binghamton University WebAssign Registration

Your username is your Binghamton University username and the institution code is “Binghamton”.

Just submit your section's “Class Key” here WebAssign Login Page

Exams and Grading

In each half-semester course, Math 226 and Math 227, there will be the following grade distribution:

WebAssign Homework	10%
Quizzes (in-class), Attendance, Other	15%
Skills Test (at Math Testing Center)	13%
Exam 1	31%
Exam 2	31%

A detailed description of the Skills Test, and how it will be administered, is given below. The above

distribution is not used for online courses.

The Midterm and Final will cover higher-level problems. These are paper tests, graded by the instructors, (and you will not be allowed to re-take these). They will not focus on the sort of basic computational problems covered by the Basic Skills Tests, although of course you may be required to do some basic computations as part of a bigger problem. **Your average on both exams (Midterm and Final) must be at least a 50% to pass Math 227 and a 50% to pass Math 226, regardless of what your other course scores are.**

The grade category of “Quizzes” may include written assignments, group quizzes, attendance, or in-class work at the discretion of your instructor. But most or all of your score/grade for Quizzes will be determined by the numerical scores from the 15–20 minute quizzes that you take in class. The numerical score of each exam will be given a letter grade interpretation in order to give you some idea of how you stand in relation to all other students in the course. Your Total of all points at the end of the course will also be given a letter grade interpretation, which will be your course grade, but borderline cases can be adjusted up or down based on your instructor's judgment.

We may post some practice exams and their solutions here to help you prepare. They have the questions first, which you should try to answer without looking at the solutions. If you do not understand your mistakes after receiving your graded exam back, or think your exam was not correctly graded, you should immediately (at most within two days) bring the test to your instructor for re-evaluation. DO NOT MAKE ANY CHANGES OR WRITE NEW MATERIAL ON YOUR GRADED EXAM!! Turning in a modified exam for extra points is CHEATING. Instructors may be making copies of random exams before they are returned, so if a student changes a graded exam, it will be clearly shown by comparison with the copy.

Any cases of cheating will be subject to investigation by the Academic Honesty Committee of Harpur College.

One final, extremely important, note about grading: instructors do not “give grades.” Instructors simply award points based on the work the student produces. Each student's point total will correspond to a letter grade decided at semester's end, and it will be the same for all sections. Very little subjectivity is involved in the grading process. The following is a typical letter grade distribution given for past semesters. This distribution could change due to exam scores.

Your Percentage	Grade
92% - 100%	A
89% - 91%	A-
86% - 88%	B+
81% - 85%	B
78% - 80%	B-
73% - 77%	C+
69% - 72%	C
63% - 68%	C-
60% - 62%	D
< 60%	F

Exams with Solutions

226 Exam 1 with solutions, Spring 2017

226 Exam 1 with solutions, Spring 2016 A

226 Exam 1 with solutions, Spring 2016 B

226 Final with solutions, Spring 2016 v1

226 Final with solutions, Spring 2016 v2

226 Final with solutions, Fall 2017 v1

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227 Exam 1 Spring 2016 with solutions

227 Exam 1 Fall 2017 _:_ Solutions Here

227 Final Spring 2016 with solutions

227 Practice Finals (three) The solutions for these are located here: solutions

There are links to three pdf files below (Supplementary Materials and Links) to help guide your strategy understanding series.

Academic Honesty

Cheating is considered a very serious offense. The full strength of Binghamton Academic Honesty Policy will be applied to anyone caught cheating. This may include failing the course, and further disciplinary action.

Exams: According to the University Bulletin, cheating consists of: “Giving or receiving unauthorized help before, during or after an examination”.

Homework: Please keep in mind that plagiarism on HW is also considered cheating. You are encouraged to work with others when doing your HW, but you still need to submit your own work. In regards to WebAssign, under NO CIRCUMSTANCE are you permitted to submit an answer from Wolfram Alpha into WebAssign.

The shift to remote and hybrid teaching due to the COVID-19 pandemic has required that both instructors and students make changes to their normal working protocols for courses. Students are asked to practice extra care and attention in regard to academic honesty, with the understanding that all cases of plagiarism, cheating, multiple submission, and unauthorized collaboration are subject to penalty. Students may not collaborate on exams or assignments, directly or through virtual consultation, unless the instructor gives specific permission to do so. Posting an exam, assignment, or answers to them on an

online forum (before, during, or after the due date), in addition to consulting posted materials, constitutes a violation of the university's Honesty policy. Likewise, unauthorized use of live assistance websites, including seeking "expert" help for specific questions during an exam, can be construed as a violation of the honesty policy. All students should be familiar with the University's Student Academic Honesty Code.

Basic Skills Test

Math 226 and 227 will have a Basic Skills Test which will cover basic computational skills that you absolutely must be able to do for any class that has Math 226/227 as a prerequisite. There will be one Basic Skills Test for 226 and one Basic Skills Test for 227. The Basic Skills test will be administered and evaluated by computer, with no partial credit, but you may take it twice. A Practice Basic Skills Test will be available on WebAssign containing all the possible problems you could be asked on the actual Basic Skills Test.

The Basic Skills Test will be administered by computer in Whitney Hall, Rooms G12 & G18, using the same software as the WebAssign homework, so you must have a WebAssign key for the Skills Test section before you take the test. For security reasons, you must use the computers provided. You are not assigned a particular time to take the test – you will reserve a time for your test via the following link: Calculus Testing Center Reservation System. You'll receive an email once the Reservation System is ready.

You have a window of about 10 weekdays to take it twice. You cannot take it twice in one day.

Only exact answers are accepted in WebAssign. For example, 1/3 cannot be written as .33 and pi cannot be written as 3.14. No calculators or electronic devices are permitted during the test. No calculators or electronic devices are permitted during the test. **You cannot use your cell phone for any reason while taking the test.** If a proctor catches a student looking at their cell phone while taking the test then that student will receive a score of "0" and their instructor will be notified.

If you take the Basic Skills test more than once, only your highest score is counted.

To take into account the lack of partial credit, scores on the Skills Test will be rounded up, so that scores between 70% and 79% will count as a 79%, scores between 80% and 89% will be recorded as 89%, and scores 90% to 100% will receive 100%. If a student's highest score is lower than 70%, their highest percentage among the attempts will be recorded and will not be rounded up.

Administration of Exams

Exams for all sections will be administered at your normal meeting time, except for the Math 227 Exam 2 (Final Exam).

The dates and times are given in the weekly schedule below and will be confirmed or modified before each exam.

The Exam 2 (Final Exam) for Math 227 for all sections will be administered on a common exam date.

A detailed contents of each exam will be determined one week before the exam, but we expect it to be as follows:

Math 226 Basic Skills Test: Sects 6.2*, 6.3*, 6.4*, 6.6.

Math 226 Exam 1: Sects 6.1, 6.2*, 6.3*, 6.4*, 6.5, 6.6, 6.8, 7.1

Math 226 Exam 2: Sects 7.2, 7.3, 7.4, 7.8, 10.1, 10.2

Math 227 Basic Skills Test: Sects 10.3, 11.1, 11.2

Math 227 Exam 1: Sects 10.3 - 10.4, 11.1 - 11.5.

Math 227 Exam 2 (Final Exam): Will cover sects 11.2 - 11.11 with a focus on 11.5 - 11.11.

Students may need to know and use results from the Chapter 11 sections covered on Exam 1 in order to answer questions on each Exam 2, so you should treat Exam 2 as if it were a Final Exam for that course.

Important Note: No use of calculators, cellphones or laptop computers will be allowed during exams.

Students are not allowed to take a cellphone to the lavatory during any exam.

Scientific calculators may be needed for some homework.

ANYONE UNABLE TO TAKE AN EXAM SHOULD CONTACT THEIR INSTRUCTOR AHEAD OF TIME TO EXPLAIN THE REASON.

Note: Students who miss an exam because of illness must contact the instructor ahead of the exam (or as soon afterwards as possible) and provide proof of the illness (doctor's note or call from health service).

Schedule for Math 226/227 (Beginning Wednesday, January 21)

Next to certain sections below you'll see “**Video Required**”. These videos are located at the beginning of that section's assignment in WebAssign. You are required to watch these videos before that section is covered in class.

Week	Dates	Sections	Topics	Basic Skills Tests

1	Jan 21 - 23	6.1 (Video Required)	Functions and their Inverses	None
		6.2*	The Natural Logarithmic Function	
2	Jan 26 - 30 (**Add Deadline** - Monday, Jan 26)	6.3*	The Natural Exponential Function	
		6.4*	General Logarithmic & Exponential Functions	
		6.5 (Video Required)	Exponential Growth and Decay (No Newton's Law of Cooling)	
3	Feb 2 - 6 (**Drop Deadline** is Monday, Feb 2)	6.6	Inverses of Trigonometric Functions	
		6.6 & 6.8	Inverses of Trigonometric Functions & “Indeterminate Forms” & L'Hospital's Rule	
		6.8	“Indeterminate Forms” & L'Hospital's Rule	
4	Feb 9 - 13	7.1 (Video Required)	Integration by Parts	The Basic Skills Test begins on Monday Feb 9 and you have until Feb 13 to take at least your first attempt. **Last day to take your last (2nd) attempt is Feb 24.**
		7.2	Trigonometric Integrals	
		7.2 & Review	More Trig Integrals	
5	Feb 16 - 20	**Exam 1** Topics cover Sections 6.1-7.1	Exam will take place in class during normal class time	
		7.3 (Video Required)	Inverse Trig Substitution	
		7.3 & 7.4 (Video required)	More Inverse Trig Subst. & Integration of Rational Functions	
6	Feb 23 - 27 (**Withdraw Deadline** - Wednesday, Feb 25)	7.4 (Video required)	Integration of Rational Functions	Feb 24 is the last day to take your last (2nd) attempt of the Basic Skills Test
		7.8 (Video Required)	Improper Integrals	None
		No Class	Rejuvenation Day	
7	March 2 - 6	7.8 & 10.1	More Improper Integrals & Parametric Curves	
		10.1/10.2 (Video Required)	Calculus with Parametric Curves	
		10.2 (Video Required)	Calculus with Parametric Curves (No Surface Area, No Area Under Curve)	
8	March 9 - 11	Catch up & Review		
		Final Exam	The exam is during normal class time on Wed March 11 and covers all topics from the course but with a focus on Sections 7.2-10.2	
9	March 13	**No Class on Fri March 13**	Math 226 has ended	

Math 227 Begins Monday, March 16

Week	Dates	Sections	Topics	Basic Skills Tests

9	Mar 16 - 20 (**Add Deadline** - Friday, March 20)	10.3	Polar Coordinates	
		10.4	Calculus Using Polar Coordinates	
		10.4	More Calculus Using Polar Coordinates	
10	Mar 23 - 27 (**Drop Deadline** - Friday, March 27)	11.1 (Video)	Sequences	
		11.1 & 11.2	More Sequences & Infinite Series	None
		11.2	More Infinite Series	
11	Mar 30 - April 3	No Class	Spring Break	
		No Class	Spring Break	
		No Class	Spring Break	
12	April 7 - 10 (**Monday Classes Meet on Tuesday April 7**)	11.3 (Video)	Integral Test (No estimating the sum)	Skills Test 1 Begins on Tuesday, April 7 and covers sections 10.3, 11.1, & 11.2. **Last day to take your last attempt is Tuesday, April 21**
		11.4	Comparison Tests (No Estimating sums)	
		11.5	Alternating Series & Alternating Series Estimation Thm	
13	April 13 - 17	Review Problems		
		Exam 1 Topics cover Sections 10.3 - 11.5	Exam will take place in person during class time	
		11.5 & 11.6	Absolute Convergence, Ratio & Root Tests	
14	April 20 - 24 (**Withdraw and P/F Grade Option Deadline** - Thursday, April 23)	11.8	Power Series	**Last day to take your last attempt is Tuesday, April 21**
		11.8	More Power Series	None
		11.9 (Video)	Representing Functions as a Power Series	
15	April 27 - May 1	11.9 (Video)	More Representing Functions as a Power Series	
		11.10	Taylor Series (No binomial coefficients, No Binomial Series Formula, No Multiplication/Division of Power Series)	
		11.10	More Taylor Series	
16	May 4 - 8	11.11	Taylor Polynomials (No Application to Physics)	None
		Review Problems	11.5 - 11.11	
		No Class	Reading Day	
17	May 9 - 14	**Final Exam on Date and Time Assigned by Registrar, View Final Exam schedule here**	Final Exam covers all topics from the course but with a focus on Sections 11.5 - 11.11	

Schedule for Math 227 (Beginning Wednesday, January 21)

Next to certain sections below you'll see "**Video Required**". These videos are located at the beginning of that section's assignment in WebAssign. You are required to watch these videos before that section is covered in class.

Week	Dates	Sections	Topics	Basic Skills Tests
1	Jan 21 - 23	10.3	Polar Coordinates	None
		10.4	Calculus Using Polar Coordinates	
2	Jan 26 - 30 (**Add Deadline** - Monday, January 26)	10.4	More Calculus Using Polar Coordinates	
		11.1 (Video)	Sequences	
		11.1 & 11.2	More Sequences & Infinite Series	
3	Feb 2 - 6 (**Drop Deadline** is Monday, Feb 2)	11.2	More Infinite Series	
		11.3 (Video)	Integral Test	
		11.4	Comparison Tests	
4	Feb 9 - 13	11.5	Alternating Series	The Basic Skills Test begins on Monday Feb 9 and you have until Feb 13 to take at least your first attempt. **Last day to take your last (2nd) attempt is Feb 24.**
		11.5	Absolute Convergence	
		Review		
5	Feb 16 - 20	**Exam 1** Topics cover Sections 10.3-11.5	Exam will take place during normal class time	
		11.6 & 11.8	Ratio & Root Tests and Power Series	
		11.8	Power Series	
6	Feb 23 - 27 (**Withdraw Deadline** - Wednesday, February 25)	11.9 (Video)	Representing Functions as a Power Series	**Last day to take your last (2nd) attempt is Tuesday Feb 24.**
		11.9 (Video)	More Representing Functions as a Power Series	None
		No Class	Rejuvenation Day	
7	March 2 - 6	11.10	Taylor Series	
		11.10	More Taylor Series	
		11.11	Taylor Polynomials & Taylor's Inequality	
8	March 9 - 11	Review & 11.11	More Taylor's Inequality	
		Final Exam	The Final Exam is during normal class time on Wed March 11 and covers all topics from the course but with a focus on Sections 11.6 - 11.11	
9	March 13	**No Class**	Math 227 has ended	

Schedule for Math 226 (Beginning Wednesday, March 16)

Next to certain sections below you'll see "**Video Required**". These videos are located at the beginning of that section's assignment in WebAssign. You are required to watch these videos before that section is covered in class.

Week	Dates	Sections	Topics	Basic Skills Tests
9	March 16 - 20 (**Add Deadline** - Friday, March 20)	6.1 (Video Required)	Functions and their Inverses	None
		6.2*	The Natural Logarithmic Function	
		6.3*	The Natural Exponential Function	
10	March 23 - 27 (**Drop Deadline** - Friday, March 27)	6.4*	General Logarithmic & Exponential Functions	
		6.5 (Video Required)	Exponential Growth and Decay (No Newton's Law of Cooling)	
		6.6	Inverse of Trigonometric Functions	
11	March 30 - April 3	No Class	Spring Break	
		No Class	Spring Break	
		No Class	Spring Break	
12	April 7 - 10 (**Monday classes meet on Tues April 7**)	6.8	"Indeterminate Forms" & L'Hospital's Rule	Skills Test 1 Begins on Tuesday, April 7 and covers sections 6.1-6.4* & 6.6. **Last day to take your last attempt is Tuesday, April 21**
		6.8 & 7.1	More L'Hospital's Rule & Integration by Parts	
		7.1 (Video Required)	More Integration by Parts	
13	April 13 - 17	Review		
		Exam 1	Exam covers sections 6.1-7.1	
		7.2	Trigonometric Integrals	

14	April 20 - 24 (**Withdraw and P/F Grade Option Deadline** - Thursday, April 23)	7.3 (Video Required)	Inverse Trig Substitution	**The last day to take your last attempt of the Skills Test is Tues, April 21**
		7.3 (Video Required)	More Inverse Trig Substitution	None
		7.4 (Video Required)	Integration of Rational Functions	
15	April 27 - May 1	7.4 & 7.8 (video required)	Improper Integrals	
		7.8 (Video required)	More Improper Integrals	
		10.1	Parametric Curves	
16	May 4 - 8	10.2 (Video Required)	Calculus with Parametric Curves (No Surface Area, No Area Under the Curve)	
		10.2 & Review for Final	More Calculus with Parametric Curves (No Surface Area, No Area Under the Curve) & Review	
		No Class	Reading Day	
17	May 9 - 14	**Final Exam on Date and Time Assigned by Registrar, View Final Exam schedule here**	Exam covers all topics from the course but with focus on Sections 7.2-10.2	

Supplementary Materials and Links

Here we provide links to documents and websites you may find useful throughout the semester. They do not constitute an official part of the course, nor are they endorsed by the Department of Mathematical Sciences. Use them at your own discretion.

Polynomial Long Division (Useful for Partial Fractions)

Factorization of polynomials (Useful for Partial Fractions)

Useful Limits to Know

Guide to Checking Convergence/Divergence of Series (from Prof. Kazmierczak)

Another Guide to Checking Convergence/Divergence of Series

A flowchart to help you check Convergence/Divergence of Series

The following are pdf files with a polar coordinates grid (in radians or degrees) on which you can conveniently make graphs of functions given in polar coordinates.

Polar Coordinates Graph (radians)

Polar Coordinates Graph (degrees)

For Calc II see:

An excellent source for math videos

Another excellent source for math videos

MathWorld - more math resources.

Cycloid