

## Calculus and Analytic Geometry II

### MATH-132

CG Section 16WK 11/08/2019 to 04/16/2020 Modified 05/26/2022

### Course Description

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A continuation of [MATH 131 \(https://catalog.liberty.edu/search/?p=MATH%20131\)](https://catalog.liberty.edu/search/?p=MATH%20131). Techniques of integration, improper integrals, applications of integration, introduction to differential equations, sequences, infinite series, parameterizations of curves.

#### Requisites

For information regarding prerequisites for this course, please refer to the [Academic Course Catalog \(https://catalog.liberty.edu/\)](https://catalog.liberty.edu/).

### Rationale

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This course provides a standard introduction to the study of calculus. It presents the theory and applications of elementary calculus necessary for further study of mathematics.

### Course Learning Outcomes

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Upon successful completion of this course, the student will be able to:

- A. Integrate functions by parts, partial fractions, and trigonometric substitutions.
- B. Demonstrate knowledge of computing arc length and parametrization.
- C. Be able to solve elementary differential equations.
- D. Sketch and understand functions in polar coordinates.
- E. Set up integrals in polar coordinate and compute areas.
- F. Determine if a series converges or diverges.
- G. Demonstrate knowledge of the application of integration by solving problems in written form using proper mathematical notation and terminology.
- H. Begin to develop the ability to accurately and effectively communicate mathematics to others.
- I. Gain an appreciation for mathematics as a major factor in modern society.

#### General Education Foundational Skill Learning Outcomes (FSLOS): Technological Solutions And Quantitative Reasoning

- A. TSQR 1: Analyze data and inform action through a structured method.
- B. TSQR 2: Predict the output based on an input in practical scenarios using technological solutions and/or quantitative reasoning.
- C. TSQR 3: Apply the skills needed for successful financial stewardship in various contexts.

### Course Resources

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Click on the following link to view the required resource(s) for the term in which you are registered: [Liberty University Online Bookstore \(https://bncvirtual.com/liberty\)](https://bncvirtual.com/liberty).

#### Additional Materials for Learning:

- A. Computer with basic audio/video output equipment
- B. Internet access (broadband recommended)
- C. Canvas [recommended browsers \(https://community.canvaslms.com/t5/Canvas-Basics-Guide/What-are-the-browser-and-](https://community.canvaslms.com/t5/Canvas-Basics-Guide/What-are-the-browser-and-)

## ☰ Course Assignments

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### Textbook readings and lecture presentations

### Course Requirements Checklist

After reading the Course Syllabus and [Student Expectations \(https://www.liberty.edu/institutional-effectiveness/student-expectations/\)](https://www.liberty.edu/institutional-effectiveness/student-expectations/), the student will complete the related checklist found in the Course Overview.

### Homework Assignments (16)

Homework will be assigned through WebAssign, and the student will have multiple attempts at each problem. Even though homework problems are given online, students are encouraged to work out solutions on paper using correct mathematical notation before entering data into WebAssign. (CLO: A-I;FSLO: TSQR 1-3)

### WebAssign Quizzes (11)

Each quiz will be timed and taken in WebAssign. The student will have 3 attempts at these quizzes. The questions will be randomized after each attempt. The best score from the student's 3 attempts will be recorded in the grade book.

(CLO: A-I;FSLO: TSQR 1-3)

### Exam Assignments (3)

Each Exam will be timed, handwritten, open-book/open-notes, and cover the material for the assigned modules. On all written work, students are expected to write correct mathematics to avoid point deductions. Unlike the quizzes, the exams will be handwritten and submitted through BlackBoard. It is imperative that the student knows how to submit a PDF to Gradescope. Not submitting the PDF of their exam to Gradescope correctly, will result in a deduction in points. (CLO: A-I;FSLO: TSQR 1-3)

### Final Exam Assignment

The Final Exam will be timed, handwritten, open-book/open-notes, and cover all of the material from the course. On all written work, students are expected to write correct mathematics to avoid point deductions. Like the previous exams, the final exam will be handwritten and submitted through BlackBoard. It is imperative that the student knows how to submit a PDF to Gradescope. Not submitting the PDF of their exam to Gradescope correctly, will result in a deduction in points. (CLO: A-I;FSLO: TSQR 1-3)

## ✓ Course Grading

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Course Requirements Checklist	10
Homework Assignments (16 @ 20 pts ea)	320
WebAssign Quizzes (11 @ 10 pts ea.)	110
Exam Assignments (3 at 120 pts ea)	360
Final Exam Assignment	210

Total	1010
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## Policies

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### Mathematical Late Assignment Policy

*Mathematical* assignments that are submitted after the due date without prior approval from the instructor will receive the following deductions

1. Late *mathematical* assignments submitted within one week after the due date will receive a 10% deduction.
2. *Mathematical* assignments submitted more than one week late or after the final date of the course will not be accepted.
3. Discussion board assignments submitted within one week after the due date will receive a 10% deduction.
4. Discussion board submitted more than one week and less than 2 weeks late will receive a 20% deduction.
5. Discussion board submitted more than 2 weeks late will not be accepted.
6. Group projects, including group discussion board threads and/or replies, and assignments will not be accepted after the due date.

Special circumstances (e.g. death in the family, personal health issues) will be reviewed by the instructor on a case-by-case basis.

For other assignments, please refer to the standard Late Assignment Policy, below.

### Late Assignment Policy

Course Assignments, including discussions, exams, and other graded assignments, should be submitted on time.

If the student is unable to complete an assignment on time, then he or she must contact the instructor immediately by email.

Assignments that are submitted after the due date without prior approval from the instructor will receive the following deductions:

1. Late assignments submitted within one week after the due date will receive up to a 10% deduction.
2. Assignments submitted more than one week and less than 2 weeks late will receive up to a 20% deduction.
3. Assignments submitted two weeks late or after the final date of the course will not be accepted outside of special circumstances (e.g. death in the family, significant personal health issues), which will be reviewed on a case-by-case basis by the instructor.
4. Group projects, including group discussion threads and/or replies, and assignments will not be accepted after the due date outside of special circumstances (e.g. death in the family, significant personal health issues), which will be reviewed on a case-by-case basis by the instructor.

### Disability Assistance

Students with a disability and those with medical conditions associated with pregnancy may contact Liberty University's Online Office of Disability Accommodation Support (ODAS) at [LUOODAS@liberty.edu](mailto:LUOODAS@liberty.edu) for accommodations. Such accommodations require appropriate documentation of your condition. For more information about ODAS and the accommodations process, including how to request an accommodation, please visit <https://www.liberty.edu/online/online-disability-accommodation-support/> (<https://www.liberty.edu/online/online-disability-accommodation-support/>). Requests for accommodations not related to disabilities or pregnancy must be directed to the Registrar's Office, which generally handles medical needs support.

If you have a complaint related to disability discrimination or an accommodation that was not provided, you may contact ODAS or the Office of Equity and Compliance by phone at (434) 592-4999 or by email at [equityandcompliance@liberty.edu](mailto:equityandcompliance@liberty.edu). Click to see a full copy of Liberty's [Discrimination, Harassment, and Sexual Misconduct Policy](https://www.liberty.edu/media/1226/Liberty_University_Discrimination_Harassment_and_Sexual_Misconduct_Policy.pdf) ([https://www.liberty.edu/media/1226/Liberty\\_University\\_Discrimination\\_Harassment\\_and\\_Sexual\\_Misconduct\\_Policy.pdf](https://www.liberty.edu/media/1226/Liberty_University_Discrimination_Harassment_and_Sexual_Misconduct_Policy.pdf)) or the [Student Disability Grievance Policy and Procedures](http://www.liberty.edu/media/8021/Disability_Grievance_Procedures.pdf) ([http://www.liberty.edu/media/8021/Disability\\_Grievance\\_Procedures.pdf](http://www.liberty.edu/media/8021/Disability_Grievance_Procedures.pdf)).

### Course Attendance

In an effort to comply with U.S. Department of Education policies, attendance is measured by physical class attendance or any

submission of a required assignment within the enrollment dates of the course (such as examinations, written papers or projects, any discussion posts, etc.) or initiating any communication with one's professor regarding an academic subject. More information regarding the [attendance policy \(https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FOnline%2BAttendance%2BAnd%2BNon-Attendance&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C637315433613719138&sdata=%2BNBTsPOoXuHAPLfISQRugK7cRSuV6UyC7qD3agf3l2k%3D&reserved=0\)](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FOnline%2BAttendance%2BAnd%2BNon-Attendance&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C637315433613719138&sdata=%2BNBTsPOoXuHAPLfISQRugK7cRSuV6UyC7qD3agf3l2k%3D&reserved=0) can be found in the [Academic Course Catalogs \(https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.liberty.edu%2Findex.cfm%3FPID%3D791&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C637315433613729132&sdata=DjjhMiRBFnF%2B2ZJUC8eBd1OdNb26S9ADukODYsilXIA%3D&reserved=0\)](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.liberty.edu%2Findex.cfm%3FPID%3D791&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C637315433613729132&sdata=DjjhMiRBFnF%2B2ZJUC8eBd1OdNb26S9ADukODYsilXIA%3D&reserved=0). Regular attendance in online courses is expected throughout the length of the term. Students who do not attend within the first week of a sub-term by submitting a required academic assignment (such as the Course Requirements Checklist, an examination, written paper or project, discussion post, or other academic activity) will be dropped from the course. Students who wish to re-engage in the course are encouraged to contact Academic Advising to discuss their enrollment options. Students who begin an online course, but at some point in the semester cease attending, and do not provide official notification to withdraw, will be assigned a grade of "FN" ([Failure for Non-Attendance \(https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FUnofficial%2BWithdrawals&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C637315433613729132&sdata=MoMvZdPfza69InuhVHMHAVgu59ZP0Fw45xJTU9PIBrU%3D&reserved=0\)](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FUnofficial%2BWithdrawals&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C637315433613729132&sdata=MoMvZdPfza69InuhVHMHAVgu59ZP0Fw45xJTU9PIBrU%3D&reserved=0)). Students wishing to withdraw from courses after the official start date should familiarize themselves with the [withdrawal policy](#).

## Grading Scale

A	B	C	D	F
900-1010	800-899	700-799	600-699	0-599

For courses with a Pass/NP final grade, please refer to the Course Grading section of this syllabus for the assignment requirements and/or point value required to earn a Passing final grade.

## Add/Drop Policy

The full policy statement and procedures are published in the [Policy Directory \(https://wiki.os.liberty.edu/display/IE/Dropping+and+Adding+Online+Classes\)](https://wiki.os.liberty.edu/display/IE/Dropping+and+Adding+Online+Classes).

## Honor Code

Liberty University comprises a network of students, Alumni, faculty, staff and supporters that together form a Christian community based upon the truth of the Bible. This truth defines our foundational principles, from our Doctrinal Statement to the Code of Honor. These principles irrevocably align Liberty University's operational procedures with the long tradition of university culture, which remains distinctively Christian, designed to preserve and advance truth. Our desire is to create a safe, comfortable environment within our community of learning, and we extend our academic and spiritual resources to all of our students with the goal of fostering academic maturity, spiritual growth and character development.

Communities are predicated on shared values and goals. The Code of Honor, an expression of the values from which our Doctrinal Statement was born, defines the fundamental principles by which our community exists. At the core of this code lie two essential concepts: a belief in the significance of all individuals, and a reliance on the existence of objective truth.

While we acknowledge that some may disagree with various elements of the Code of Honor, we maintain the expectation that our students will commit to respect and uphold the Code while enrolled at Liberty University.

Adherence to the principles and concepts established within facilitates the success of our students and strengthens the Liberty community.

The Code of Honor can be viewed in its entirety at <http://www.liberty.edu/index.cfm?PID=19155> (<http://www.liberty.edu/index.cfm?PID=19155>).

When	Topic	Notes
<b>Course Overview</b>	Student Acknowledgements	Course Requirements Checklist
	Technology Integration Set-Up	Interact: Getting Started with WebAssign
<b>Module 1</b>	Learn	Read: 2 items Watch: 5 items
	Apply	HW: Intro to Integration Techniques Assignment Quiz: Integration Techniques U-Sub, IBP, T-Sub
<b>Module 2</b>	Learn	Read: 2 items Watch: 2 items
	Apply	HW: Advanced Integration Techniques Assignment Quiz: Integration Techniques: PFD & Impr. Int.
<b>Module 3</b>	Learn	Read: 1 items Watch: 3 items
	Apply	HW: Geometric App. of Integration Assignment Quiz: Applications of Integration: ArcLen, SA, F&HP
<b>Module 4</b>	Learn	Read: 2 items Watch: 2 items
	Apply	HW: Physical App. of Integration Assignment Quiz: Applications of Integration; Moments/COM, PDF
<b>Module 5</b>	Learn	Read: 2 items
	Apply	HW: Calculus with Parametric Equations Assignment Quiz: Calculus with Parametric and Polar Equations
<b>Module 6</b>	Learn	Read: 2 items Watch: 1 item Review: 1 item
	Apply	HW: Calculus with Polar Equations Assignment Exam: Integration
<b>Module 7</b>	Learn	Read: 2 items Watch: 5 items
	Apply	HW: Intro to Series and Convergence Assignment Quiz: Int Test, Geo Series, Comp. Tests
<b>Module 8</b>	Learn	Read: 2 items Watch: 3 items

When	Topic	Notes
	Apply	HW: Series Convergence Tests Assignment Quiz: AST, ASET, Ratio Test, and Root Test
<b>Module 9</b>	Learn	Read: 2 items Watch: 2 items
	Apply	HW: Intro to Power Series Assignment Quiz: Power Series
<b>Module 10</b>	Learn	Read: 2 items Watch: 2 items Review: 1 item
	Apply	HW: Taylor's & Maclaurin Assignment Exam: Series and Power Series
<b>Module 11</b>	Learn	Read: 2 items Watch: 1 item
	Apply	HW: Intro to Differential Equations Assignment Quiz: Intro to Differential Equations
<b>Module 12</b>	Learn	Read: 2 items Watch: 2 items
	Apply	HW: Advanced Differential Equations Assignment Quiz: Separable Equations and IFT
<b>Module 13</b>	Learn	Read: 3 items Watch: 4 items
	Apply	HW: Introduction to Linear Algebra Assignment HW: Linear Algebra Assignment Quiz: Introduction to Linear Algebra Exam: Differential Equations and Linear Algebra
<b>Module 14</b>	Learn	Read: 3 items Watch: 1 item Review: 1 item
	Apply	HW: Course Review Assignment HW: Final Course Review Assignment Exam: Final