

Syllabus

Indiana Wesleyan University
MATH-503: Advanced Calculus (Online)
Session Dates: 7/9/18 – 9/2/18
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Course Description

This course is an advanced multivariate treatment of calculus for the mature student of mathematics. Course content will include advanced treatment of differentiation and integration as well as advanced topics including Fourier Series and special functions. Prerequisite: A bachelor's degree with a Mathematics major or must be state certified (in any state) to teach Mathematics at a secondary school level and show evidence of completing an undergraduate course in Calculus (through multivariate) with a minimum grade of "C".

Credit Hours: 3

Prerequisite: A bachelor's degree with a Mathematics major or must be state certified (in any state) to teach Mathematics at a secondary school level.

Prerequisite Skills and Knowledge: Multivariate Calculus and Familiarity with Vector Analysis including Dot Product (Inner Product) and Cross Product (Vector Product)

Course Outcomes

Upon completion of this course, you should be able to:

1. Compare different coordinate systems
2. Solve Complicated Optimization Problems using Lagrange Multipliers
3. Evaluate Derivative of Integrals using Leibnitz's Rule
4. Evaluate Iterated Integrals including Changing Coordinates
5. Solve Advanced Integral Problems with Vector Integral Theorems (Green, Stokes, Divergence)
6. Develop Systems of Orthogonal Functions with Emphasis on Fourier Series
7. Demonstrate Familiarity (and some Mastery) of Important Special Functions (e.g. Gamma Function)

Course Textbook

Kaplan, W. (2003). Advanced Calculus (5th ed.). Boston, MA: Pearson Education.

IWU Diversity Statement

IWU, in covenant with God’s reconciling work and in accordance with the Biblical principles of our historic Wesleyan tradition, commits to build a community that reflects Kingdom diversity. We will foster an intentional environment for living, teaching and learning, which exhibits honor, respect, and dignity. Acknowledging visible or invisible differences, our community authentically values each member’s earthly and eternal worth. We refute ignorance and isolation and embrace deliberate and courageous engagement that exhibits Christ’s commandment to love all humankind.

Grading Scale

Grade	Quality Points Per Credit	Percentage	Score
A	4.0	95%–100%	950–1000
A-	3.7	92%–94.9%	920–949
B+	3.3	89%–91.9%	890–919
B	3.0	85%–88.9%	850–889
B-	2.7	82%–84.9%	820–849
C+	2.3	79%–81.9%	790–819
C	2.0	75%–78.9%	750–789
C-	1.7	72%–74.9%	720–749
D+	1.3	69%–71.9%	690–719
D	1.0	65%–68.9%	650–689
F	0.0	0%–64.9%	0–649

Grading Policies

Your grading policy for your course is dependent on your school and program. Your grading policies can be found in the IWU Catalog.

Letter Grade Equivalencies

Grade	Description of Work
A	Clearly stands out as excellent performance. Has unusually sharp insights

	into material and initiates thoughtful questions. Sees many sides of an issue. Articulates well and writes logically and clearly. Integrates ideas previously learned from this and other disciplines. Anticipates next steps in progression of ideas. Example "A" work should be of such nature that it could be put on reserve for all cohort members to review and emulate. The "A" cohort member is, in fact, an example for others to follow.
B	Demonstrates a solid comprehension of the subject matter and always accomplishes all course requirements. Serves as an active participant and listener. Communicates orally and in writing at an acceptable level for the degree program. Work shows intuition and creativity. Example "B" work indicates good quality of performance and is given in recognition for solid work; a "B" should be considered a good grade and awarded to those who submit assignments of quality less than the exemplary work described above.
C	Quality and quantity of work in and out of class is average. Has marginal comprehension, communication skills, or initiative. Requirements of the assignments are addressed at least minimally.
D	Quality and quantity of work is below average. Has minimal comprehension, communication skills, or initiative. Requirements of the assignments are addressed at below acceptable levels.
F	Quality and quantity of work is unacceptable and does not qualify the student to progress to a more advanced level of work.

Course Module Summary

Module	Discussion	Assignment	Test/Project	Total Points
Module One	2/30	2/70		100
Module Two	2/30	3/105		135
Module Three	1/20	2/70		90
Module Four	2/30	2/70		100
Module Five	1/20	2/70	1/115	205
Module Six	2/30	2/70		100
Module Seven	2/30	2/70		100

Module Eight	1/20	1/35	1/115	170
Course Totals	13/210	16/560	2/230	1000

* Number of Activities/Sum Point Totals. These timings are based on estimations of average times to complete each assignment. Actual assignment completion times will vary.

Module One Outline

Assignments	Type	Due Date	Estimated Time*	Points
1.1 Biblical Wisdom	Discussion	Initial post due by the fourth day of the module. Two responses due by the end of the module.	2 hours	10
1.2 Module One Exercises	Dropbox	By the end of the module.	7 hours	70
1.3 Discussion	Discussion	Initial post due by the fourth day of the module. Two responses due by the end of the module.	3 hours	20
Totals			12 hours	100

Module Two Outline

Assignments	Type	Due Date	Estimated Time*	Points
2.1 Biblical Wisdom	Discussion	Initial post due by the fourth day of the module. Two responses due by the end of the module.	2 hours	10
2.2 Module Two Exercises	Dropbox	By end of the module.	11 hours	105

2.3 Discussion	Discussion	Initial post due by the fourth day of the module. Two responses due by the end of the module.	3 hours	20
Totals			15 hours	135

Module Three Outline

Assignments	Type	Due Date	Estimated Time*	Points
3.1 Discussion	Discussion	Initial post due by the fourth day of the module. Two responses due by the end of the module.	3 hours	20
3.2 Module Three Exercises	Dropbox	By the end of the module.	7 hours	70
Totals			10 hours	90

Module Four Outline

Assignments	Type	Due Date	Estimated Time*	Points
4.1 Biblical Wisdom	Discussion	Initial post due by the middle of the module. Two responses due by the end of the module.	2 hours	10
4.2 Module Four Exercises	Dropbox	Due by the end of the module.	7 hours	70
4.3 Discussion	Discussion	Initial post due by the fourth day of the module. Two responses due by the end of the module.	3 hours	20
Totals			12 hours	100

Module Five Outline

Assignments	Type	Due Date	Estimated Time*	Points
5.1 Test 1	Dropbox	By the end of the module.	5 hours	115
5.2 Module Five Exercises	Dropbox	By the end of the module.	7 hours	70
5.3 Discussion	Discussion	Initial post due by the fourth day of the module. Two responses due by the end of the module.	3 hours	20
Totals			15 hours	205

Module Six Outline

Assignments	Type	Due Date	Estimated Time*	Points
6.1 Biblical Wisdom	Discussion	Initial post due by the fourth day of the module. Two responses due by the end of the module.	2 hours	10
6.2 Module Six Exercises	Dropbox	By end of the module.	7 hours	70
6.3 Discussion	Discussion	Initial post due by the fourth day of the module. Two responses due by the end of the module.	3 hours	20
Totals			12 hours	100

*These times are only estimates. Actual assignment completion times will vary.

Module Seven Outline

Assignments	Type	Due Date	Estimated Time*	Points
7.1 Biblical Wisdom	Discussion	Initial post due by the fourth day of the module. Two responses due by the end of the module.	2 hours	10
7.2 Discussion	Discussion	Initial post due by the fourth day of the module. Two responses due by the end of the module.	3 hours	20
7.3 Module Seven Exercises	Dropbox	By end of the module.	7 hours	70
Totals			12 hours	100

Module Eight Outline

Assignments	Type	Due Date	Estimated Time*	Points
8.1 Final Exam	Dropbox	Due by the end of the module.	5 hours	115
8.2 Discussion	Discussion	Initial post due by the fourth day of the module. Two responses due by the end of the module.	3 hours	20
8.3 Module Eight Exercises	Dropbox	Due by the end of the module.	4 hours	35
8.4 End of Course Survey	Dropbox	Due by the end of the module.	30 minutes	10 extra credit

	Totals	12 hours	170
	Course Totals	100:30 hours	1000

Pacing Guide

- **MOD 1 is due by the end of Week 1.**
- **MOD 2 is due by the end of Week 2.**
- **MOD 3 is due by the end of Week 3.**
- **MOD 4 is due by the end of Week 4.**
- **MOD 5 is due by the end of Week 5.**
- **MOD 6 is due by the end of Week 6.**
- **MOD 7 is due by the end of Week 7.**
- **MOD 8 is due by the end of Week 8.**

Course Development Resources

Kaplan, W. (2003). *Advanced Calculus* (5th ed.). Boston, MA: Pearson Education.

Expectations, Policies, and Important Student Information

Expectations

Instructor Expectations of Students

- Submit assignments on time. If there are circumstances beyond your control, discuss possible options for completion with your instructor.
- Accomplish work on your own unless otherwise instructed (i.e., do not cheat or plagiarize).
- Contribute substantively to discussions according to assignment guidelines provided.
- Contribute to discussions throughout each workshop rather than waiting until the end of the workshop.
- Contribute substantively to group assignments (if required in course).
- After spending a reasonable amount of time on it, ask your instructor if you do not understand content or instructions. Ask for help early while there is time to fix problems.
- Treat other students courteously and respectfully.
- Every time you enter your course, read and abide by postings made in the Announcements and Faculty Forum. These postings are critical.
- If you exceed the allowed absences and do not contact the Office of Student Services to officially withdraw before the last class session, the instructor is directed to issue the grade of "F."
- If you need to withdraw while in a course you may do so by arrangement with the Office of Student Services prior to the end of the course, but the regular refund and academic withdrawal policies apply.

Students' Expectations of Instructor

- Set a friendly, open, and encouraging learning environment.
- Guide discussions as needed.
- Set clear rules, standards, and expectations.
- Provide workshop grades and feedback within seven days of assignment due date.
- Provide final grades and feedback within seven days after the last day of class.
- Ensure students treat each other respectfully.
- Respond to student inquiries within 48 hours.

Policies

Late Policy

- No credit is available for postings of any kind made in the discussion forums after a given workshop ends.
- If your instructor approves your submission of late assignments, each assignment score will be penalized 10% per day up to six days late. After the end of the sixth day, late assignments will not be accepted. An assignment is a paper, a project, a team presentation, etc., but not a discussion or quiz/test.
- No late assignments will be accepted after the close of the final workshop.
- **Unless otherwise stated by the course instructor, all assignments are due by 11:59pm EST.**

University Policies

- IWU Catalog - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog>

Wesley Seminary at Indiana Wesleyan University Policies

- Wesley Seminary at Indiana Wesleyan University Policies - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/Wesley-Seminary-at-Indiana-Wesleyan-University/Policies-and-General-Information-Wesley-Seminary-at-Indiana-Wesleyan-University>
- Attendance Policy - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/Wesley-Seminary-at-Indiana-Wesleyan-University/Policies-and-General-Information-Wesley-Seminary-at-Indiana-Wesleyan-University/Academic-Information-Wesley-Seminary/Attendance-Policy-Wesley-Seminary>
- Student Address/Email Information - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/Wesley-Seminary-at-Indiana-Wesleyan-University/Policies-and-General-Information-Wesley-Seminary-at-Indiana-Wesleyan-University/General-Information-Wesley-Seminary/Student-AddressEmail-Information>
- Grading and Evaluation - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/Wesley-Seminary-at-Indiana-Wesleyan-University/Policies-and-General-Information-Wesley-Seminary-at-Indiana-Wesleyan-University/Academic-Information-Wesley-Seminary/Grading-and-Evaluation>
- Honesty, Cheating, Plagiarism, and Forgery Policy - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/Indiana-Wesleyan-University-at-a-Glance/Honesty-Cheating-Plagiarism-and-Forgery>
- Graduation - Graduate Degree Programs - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/Wesley-Seminary-at-Indiana-Wesleyan-University/Policies-and-General-Information-Wesley-Seminary-at-Indiana-Wesleyan-University/Academic-Information-Wesley-Seminary/Graduation-Graduate-Degree-Programs>
- Program Readmission Requirement - <http://indwes.smartcatalogiq.com/en/2014-2015/Catalog/Wesley-Seminary-at-Indiana-Wesleyan-University/Policies-and-General-Information-Wesley-Seminary-at-Indiana-Wesleyan-University/Academic-Information-Wesley-Seminary/Former-Student-Re-Enrollment-Wesley-Seminary>

Important Student Information

Off Campus Library Services

As an IWU student, you have library privileges through Off Campus Library Services. Go to <http://www.indwes.edu/ocls/> to learn more about the library. These are your privileges. You can do the following:

- Access to books (print and e-books), article databases, services and web resources.
- Access to many full text articles.
- Document delivery, which includes mailing print books, scanning PDF articles (that are only available in paper in the IWU library), providing a service of interlibrary loan whereby items not owned by IWU are obtained on your behalf from other libraries that own the item.
- Consultation with APA writing style. The librarians are not editors but they are extremely knowledgeable about APA and are glad to answer your specific questions regarding correct ways to use APA.
- Provision of customized research guides for your particular topic that will walk you through the steps to locate appropriate articles/books on your topic.
- A general go-to source for helping you find information for your research projects.

In order to use many of the library databases, you must use your Library Access Number which you should receive via email from OCLS to your MYEMAIL account at the beginning of your program. It will be needed to get into the proprietary subscription-based databases, to check out print books and for some classes you will be asked to access specific articles as additional reading. Links directly to these articles will be provided

If you need help, contact OCLS; 800-521-1848 or <http://www2.indwes.edu/forms/request.aspx>.

Special Needs

If you need accommodations for your course, you can email ADARquest@indwes.edu with your request, and you will be forwarded forms to fill out and return. Once all forms are received and reviewed, a determination is made on reasonable accommodations and you will receive an Academics Adjustment Notification. You will be required to give this notification to your instructor before the beginning of each of your courses.

Tutoring Services:

Access to both live and online tutoring can be found through your course under *Content>>Course Dashboard>>IWU Resources*.

Netiquette

In the online classroom, people cannot see your face, they cannot hear the tone or inflection of your voice, and they cannot observe your body language to determine your intention. Therefore, when responding to another student's post, or even in creating your own, it is very important to write your thoughts out and take a few minutes away from them. Then reread what you wrote and make sure it answers the question(s) and is worded in a way that is not likely to offend others.

- It is okay to disagree, but do so in a manner that is constructive, rather than destructive, encouraging rather than denigrating.

- It is very easy to say the right words, but for them to be "heard" incorrectly. Take the time to review what you type. This is one of the benefits of online education: you have the ability to wait and rethink what you will say before you say it.
- USING ALL CAPITAL LETTERS IS THE SAME AS SHOUTING!!!!!! Use capitals only to emphasize a point; do not type full posts in capital letters.
- Respect others' opinions as you would have yours respected.
- This is a Christian school; please respect the religious beliefs of those around you.