

MA 425
Complex Variables
Fall/2016

Instructor:	James A. Knisely, Ph.D.
Office:	Alumni 64 / Computer Science Suite in Library
Office Hours:	MWF 8:00 - 8:50 in AL 64; TTh 9:20 - 10:45 in CpS office suite; Other times by appointment
Email:	jknisely@bju.edu
Telephone:	Extension 8144
Communication Policy:	The best way to contact me is by e-mail since I may answer that in the evenings. Feel free to stop by the office at other times for some help.
Classroom:	AL 305
Meeting:	MWF 1:00 - 1:50 p.m.
Credit/Load:	3/3
Textbook(s):	<i>Complex Variables for Scientist and Engineers</i> – 2nd ed. By John d. Paliouras and Douglas S Meadows-MacMillian; ISBN 0-02-390561-1 or 0-48-649347-4

Catalog Description:

Topics include complex numbers, analytic functions, elementary transformations, and complex integration.

Course Context:

Modern Geometry is required for Math Education majors. Most, if not all, of this course's objectives are aligned with the NCTM standards for Math Ed students. Additionally, as an elective course in the Math program, it fulfils the following program goals.

Mathematics Program Goal
MM1. Graduates will exhibit maturity in the development and implementation of mathematical procedures.
MM2. Exhibit independent and abstract thought and make judgments about the value of innovative developments from a Biblical world view.
MM3. Display understanding of what constitutes mathematics, including its role within the framework of Biblical Truth.
MM4. Provide a solid foundation for graduate studies in mathematics.

Course Goal:

The primary goal of all math classes at Bob Jones University is to develop a Christian perspective of mathematics and related scientific endeavor. Included in such a goal is the development of Christ-like qualities such as perseverance, diligence, and dependence on God.

Course Objectives:

In the context of the course goals for advanced-level math classes, a student completing this course will

1. Define, manipulate and develop the properties of complex numbers and functions including
 - i. Complex polynomial functions
 - ii. Complex exponential and log functions
 - iii. Complex trigonometric and hyperbolic functions
2. Graph the image of regions in the complex plane under the above transformations
3. Extend the calculus of the real numbers to the calculus of the complex numbers in
 - i. Limits
 - ii. Continuity
 - iii. Differentiation
 - iv. Analyticity
 - v. Taylor's expansion
 - vi. Integration

4. Use the TI 89 and/or Mathematica to support one's mathematical development of complex variables.

Class Policies:

Homework

Homework is crucial to success in this course. It is also one of the primary means by which you represent yourself as a "professional" in academia, and the way in which you will develop the mathematical habits that will help you be successful on the larger quizzes and tests. Therefore work your homework neatly so that your assignment will not be returned to you to be corrected.

Attendance Policy

We want you to be successful in this class, and to do that you should be in class on time every day. We know that extenuating circumstances arise, and in light of that we have the following attendance policies (in keeping with official university attendance policies).

If you are marked late three times, you will be levied a personal absence. If you are more than twenty minutes late or leave class early, you will be marked absent. The burden of proof will be on a late student to prove that he was not more than twenty minutes late and that he was actually present.

For planned absences, you are expected to notify the instructor a week ahead of time; you can do so by e-mail or in person. Scheduled tests should be taken before your planned absence; please contact the instructor to make arrangements for doing so. You are personally responsible to get notes from your classmates and discuss the missed material with them. You should not expect your teacher to privately re-teach you the material you missed.

For absences due to incapacitating illness or emergency, you should contact the instructor as soon as you realize you will not be in class. If you contact your instructor, you will be able to make arrangements for making up any tests without penalty for the first occurrence. Each subsequent time a test is missed because of incapacitating illness or emergency, an additional 10 percent grade penalty for that test will be incurred.

For university-authorized absences there are no academic penalties for merely missing class. However, a lack of understanding and your personal responsibility regarding what you missed in class are the same as described above.

For test absence due to not being prepared there will be no make-up available and you will receive a 0 on the test.

Naturally, if you are absent on a day when you have been informed in advance that work is due, then late-work policies (10% deduction for each calendar day late) apply regardless of the nature of the absence.

Cell Phones and Laptops:

Cell phones are not needed during class. Make sure they are muted and do not ring during class. Laptops may be used to take notes and to perform calculations and constructions during class. Please do not use the laptop for other purposes during class since studies have demonstrated that one's student's misuse of a laptop during class tends to diminish the learning of the surrounding students.

Accommodations for Students with Disabilities:

Bob Jones University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. Please let me know within the first week of class if you have a documented learning disability or condition that may impair your ability to complete this course successfully. Also, I would appreciate your letting me know if you are receiving help through the BJU Center for Learning and Academic Services this semester, or if you feel you need additional academic support. I am happy to help you access the various academic resources available here on our campus. Please also let me know about any serious medical condition that may hinder your learning this semester or may require specific medical care in case of an emergency.

Academic Honesty and Integrity Policy

Academic ethics are simply an extension of biblical principles of honesty. Cheating in any form is not tolerated. Cheating is defined as any use of unauthorized helps. In today's age of technology, this includes getting unapproved help from a source on the internet and/or using your calculator to store formulas or information that you are to know from memory. If you have a question about any source you are considering using, please gain teacher approval before using it. The presence of any material on your desk containing formulas, notes, etc. (except those allowed by the instructor) while taking a test, will be construed as cheating and will be dealt with as such. Cheating on a test will result in a zero on the test plus any penalties imposed by the administration. You may not work together on any paper (Non-Euclidean, Transformations Application, and Advanced Constructions). You may (and are encouraged to) work together on your homework.

Whenever you are doing research of any kind with the intention of presenting your findings to an audience, you must carefully distinguish between your contribution (e.g., conclusions, explanations, interpretative comment, organization, perception of relationships) and the contribution of your sources (e.g., ideas, reasoning, illustration, statistics, graphics, organization, actual words). Failure to do this constitutes plagiarism.

Learning how to use sources appropriately is a vital part of your development as a student. To assist you in this endeavor, the university uses Turnitin, an academic plagiarism checker. Registration in this course constitutes permission for the teacher to submit any or all assignments to Turnitin.

Course Requirements:

A. Homework	100	<i>Grading Scale</i>
B. B/C Problems	50	A: 90 – 100
C. 6 Tests/Quizzes	430	B: 80 – 89
D. Final Exam	120	C: 70 – 79
Total	700	D: 60 – 69
		F: < 60

Copyright Policy:

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Additional Documents

- [Homework](#)

Proposed Lecture Schedule		
Date	Day	Details
31-Aug	W	pp. 4-10, 26-29
2-Sep	F	pp. 11-25
5-Sep	M	pp. 30-32
7-Sep	W	Quiz, pp. 34- 37
9-Sep	F	pp. 38-45
12-Sep	M	pp. 47-53
14-Sep	W	pp. 54-60
16-Sep	F	pp. 61-73
19-Sep	M	pp. 74-82
21-Sep	W	pp. 85-88; <i>Test given</i>
23-Sep	F	pp. 96-106
26-Sep	M	pp. 136-138; <i>Return test</i>
28-Sep	W	pp. 138-141; <i>Test given</i>
30-Sep	F	Washington Center Day
3-Oct	M	pp. 159-16; <i>Return test</i>
5-Oct	W	pp. 166-177
7-Oct	F	pp. 189-192
10-Oct	M	pp. 177-189
12-Oct	W	Catch up; <i>Test given</i>
14-Oct	F	pp. 224-234
17-Oct	M	pp. 235-241; <i>Return test</i>
19-Oct	W	pp. 197-199
21-Oct	F	pp. 219-220
24-Oct	M	pp. 200-203
26-Oct	W	pp. 204-210
28-Oct	F	pp. 211, 221-222
31-Oct	M	pp. 213, 222-224
2-Nov	W	pp. 248-255a
4-Nov	F	Test
7-Nov	M	pp. 255b-261
9-Nov	W	pp. 262-265
11-Nov	F	pp. 267-272a
14-Nov	M	pp. 272b-278
16-Nov	W	pp. 279-284

18-Nov	F	pp. 289-291
21-Nov	M	Test
23-Nov	W	
25-Nov	F	
28-Nov	M	
30-Nov	W	pp. 299-306
2-Dec	F	pp. 308-316
5-Dec	M	pp. 317-324
7-Dec	W	pp. 325-328
9-Dec	F	pp.329-334
		Final Exams