42174 Math 472 Section 001 | **Spring Semester 2019**
Introduction to Complex Analysis | **Monday – Wednesday**
3 credits | **0920 - 1020**
LA 721

Instructor Dr. Mark D. Jacobson

Office Hours Monday and Tuesday: 10:30 – 12:00 p.m.; Thursday: 0920 – 1020 a.m. or by appointment

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Text ***Fundamentals of Complex Analysis with Applications to Engineering and Science***, Third Edition. E.B. Staff and A.D. Snider. Prentice Hall, Pearson Education, Inc. 2003.

Catalog Description M 472, 3 credits.

Prerequisite: M 273 or equivalent.

Covers topics in multivariable calculus and/or complex variables. Exact topics may vary year to year.

Course Description

Introduction to Complex Analysis is an introductory course to complex analysis in one variable. The course starts with a thorough study of complex numbers, analytic functions and elementary functions. Then we study the fundamental concepts of complex integration, series representations, and contour integrals (Residue Theory).

Learning Outcomes

1. Explain the basics of complex analysis (definitions, terminology, concepts, techniques, methods).
2. Explain the different ways in which analyticity can be defined.
3. Explain Cauchy's theorem and integral formula and some of their applications.
4. Apply complex analytic methods to evaluate real integrals.
5. Write a clear proof involving above items.
6. Think independently and write clearly.

Course Outline

Chapter 1: Complex Numbers

Chapter 2: Analytic Functions

Chapter 3: Elementary Functions

Chapter 4: Complex Integration

Chapter 5: Series Representations for Analytic Functions

Chapter 6: Residue Theory

Assessment

Progress by the students will be assessed primarily through written homework and exams. The written homework are designed to serve as a medium of practice of the concepts covered in the daily class lectures while the exams are to assess the mastery of the material by the student. The purpose of all forms of assessment is to measure mastery of material as well as encourage development of problem solving and critical thinking skills.

Format for Written Homework:

- **Number and briefly state** each problem if appropriate.
- You are to use a **pencil** and write on only **one side** of the paper.
- Enter **legible, organized, bound and complete** solutions (Narratives are crucial!).

The following weights are given:

Item	Percentage	Date
1 Mid-Term Exam	25 %	February 26
1 Final Exam	50 %	May 1 at 12:00 - 1:50 p.m.
10 Written Homework	25 %	
Total	**100 %**	

No Incompletes will be given unless the requirements as per student handbook are met. ALL work must be completed no later than the DUE DATES. Work turned in after the DUE DATES will receive a 0.

IMPORTANT! You cannot make up missed exams. Therefore, if you will be out of town for sports or work or whatever and you see that a deadline is coming, you MUST consult with the instructor to determine if you can take the exam before you leave. You must plan your schedule; I cannot do that for you. You will be held responsible for taking your exams on or before the deadlines set for the four exams. I will accept no reasons for missed exams.

Percentage	Grade	Points
100 – 93 %	A	4.0
92 – 90 %	A-	3.7
89 – 87 %	B+	3.3
86 – 83 %	B	3.0
82 – 80 %	B-	2.7
79 – 77 %	C+	2.3
76 – 73 %	C	2.0
72 – 70 %	C-	1.7
69 – 67 %	D+	1.3
66 – 63 %	D	1.0
62 – 60 %	D-	0.7
Below 60%	F	0.0

Homework: 10 homework assignments are on my web site.

Exams: The Mid-Term and Final Exams will be given in class on the dates shown above. There will be a review day before each Exam. NO CALCULATORS, SMART PHONES, or ANY ELECTRONIC DEVICES DURING EXAMS.

Gradebook: Your homework and exam grades can be viewed by accessing D2L:

http://www.msubillings.edu/elearning/D2LLogin.htm .

Calendar: There is no set calendar for this class. We will cover the first 6 chapters in this book.

Calculators What you personally choose depends on your needs, finances, etc. The TI-30 X IIS is a choice. The next level would be a graphing calculator like the TI-83 Plus. This has matrix capabilities which will be useful later in the course. Other options make this useful and easy to operate. Approx $80 - $100. Finally, the TI-89, TI-92 or TI-200 have an easy to use equation solver, matrix capabilities, and the ability to do derivatives. Approx $150 to $200. All three (excluding the TI-200) are available for your use at the Academic Support Center. Just leave ID at the front desk and you can use them in the building for as long as you wish.

Web Help For additional math help, go to the following site: **http://www.msubillings.edu/asc/algebra_helps.htm**

Attendance In a class such as this one – which is structured on sequentially learned skills – attendance is important! You are responsible for all material covered in each class – whether you are there or not. In addition, any quizzes or 'minute papers' that are given on a particular day will not be

available to you on a later date unless alternate plans have been made ahead of time.

Incompletes

An Incomplete (grade) is given only when students have been in attendance for at least three-fourths of the semester but have been prevented by circumstances beyond their control from completing all the requirements of the course. The student must provide adequate evidence to the instructor as to the reason why they were unable to complete the requirements of the course. An Incomplete must be made up within one calendar year or the grade will revert to an F. In general, to make up an incomplete for this class, the student must retake the course and will be required to submit all material required by the new instructor of a regular student.

Plagiarism / Cheating

Neither will be tolerated in this class. Stealing others work – with or without their permission – is not acceptable for the simple reason that is blocks your learning. It will catch up with you eventually. You are expected to come out of any course with a knowledge base. If you do not have it, your success later may be in jeopardy. I cannot guarantee that I will catch all acts of dishonesty. However, for those I do catch, the first instance is a zero on that assignment and the second is an F for the course. Don't do it! You have more integrity than that. Refer also to page 134 of your student handbook.

Cell phones, et el

I expect all modes of electronic communication as well as games, etc. to be off during class time. If there is some reason that you must be available for a call, please talk to me about it.

On-campus evacuations

There will be times when you will be exiting your classroom due to evacuation drills or a real emergency. Keep two things in mind:

- Treat all instances seriously!
- **TAKE ALL PERSONAL BELONGINGS WITH YOU**. Any that you leave behind may be confiscated for several days!!

Phone numbers

Admissions and records (657) 2158 Campus police (657) 2147

Disability Statement

If you have a physical, learning, or psychological disability and require accommodations, please let me know as soon as possible. You have the responsibility to identify yourself, request appropriate accommodations and reasonable modifications. You are encouraged to contact Disability Support Services in College of Education Room 135, (406) 657-2283 (Phone), (406) 545-2518 (Video Phone).