Spring 2016: Math 5321-1 Complex Variable II

Instructor: Dr. Alexander Solynin	**Place:** MATH 109
Office Hours: MWF 3:00-4:00pm or by appointment	**Text:** *Class Notes; Functions of One Complex Variable,* 2nd Edition by John Conway; *Complex Analysis* by Theodore W. Gamelin
Office: MA 231	**Time:** 12:00-12:50 MWF
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- **Course Prerequisite:** Complex Variable I. Some familiarity with real analysis of one variable and multivariable calculus is required but the fundamental necessary ideas will be reviewed. Basic knowledge of high school algebra and trigonometry will be useful.

Learning Outcomes: Upon completion Complex Variable I and Complex Variable II students will master concepts and theories of calculus of one complex variable, geometry and topology of the complex plane. In particular, students will learn the following subjects:

- The residue calculus,
- The argument principle,
- The maximum modulus theorem,
- Schwarz lemma,
- Schwarz reflection principle,
- Compactness and convergence in the space of analytic functions,
- The Riemann mapping theorem,
- Runge's theorem,
- Basic properties of harmonic functions.

Assessment of the learning outcomes will be achieved through one or more activities such as class discussion, board work, selected non-graded homework, and other optional activities deemed appropriate by the instructor. It is important to note that these assessments are for learning benefit.

STUDENT EVALUATION:

- The final exam is comprehensive. It consists of **Take Home Segment @ 80 pts** and **In-Class Segment which is Optional! @ 80 pts**
These 80 pts can be used to substitute any other exam of your choice.

♦ **Friday, May 13 FINAL EXAMINATION 1:30 – 4:00 pm 80 pts**

This exam is scheduled before the semester begins. Students should **eliminate any conflicts NOW.**

- **MIDTERM EXAM:** (March 9) **80 pts**
- **HOMEWORK**: There will be 5 homework assignments. **4×20 = 80 pts**
- 5 min **QUIZZES**:

There will be several 5 minute quizzes (usually first 5 minutes of a class) total = **80 pts** where students will be asked to write a particular formula/definition/theorem/etc.

- **Perfect attendance** (≤ 3 missed classes, **20 pts**

all excused absences must be supported by official notes)

- **MAXIMAL TOTAL:** **340 pts**

- **Problem Solving Session:** All students are invited to attend an optional problem solving session which will be held every Friday from 2:00 to 2:50 pm, Room: MATH 209. During these sessions I will answer your questions and give hints to solutions of some homework exercises.

GRADING PROCEDURE:

A - 90 - 100%
B - 80 - 89%
C - 70 -79%
D - 60 - 69%
F - ≤ 59%

Students with Disabilities: Any student who because of a disability may require special arrangements in order to meet course requirements should contact the instructor as soon as possible to make any necessary accommodations. Students should present appropriate verification from AccessTECH. No requirement exists that accommodations be made prior to completion of this approved university procedure.

Absence due to religious observance: The Texas Tech University Catalog states that a student who is absent from classes for the observance of a religious holy day will be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. Notification must be made in writing and delivered in person no later than 15th class day of the semester.

Absence due to officially approved trips: The Texas Tech University Catalog states that the person responsible for a student missing class due to a trip should notify the instructor of the departure and return schedule in advance of the trip. The student may not be penalized and is responsible for the material missed.

Academic Integrity: It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and a high standard of integrity. There will no tolerance for cheating or plagiarism. Texas Tech University policies will be enforced in such cases.

Important Dates:

January 21 - Classes Begin.
March 12-20 - Spring Vacation.
March 31 - Last day to drop a course.
March 28 - No Classes.
May 10 - Last Day of classes.
Friday, May 13 - 1:30 – 4:00 pm. Final Exam (Examinations will be given in the rooms in which the individual classes have been meeting unless otherwise announced**).**
May 23 - Final Grades Due via Web.

Course Calendar

Date	Tentative Lecture Topics
Jan.21-March 7	The residue calculus. The argument principle. Schwarz lemma. Schwarz reflection principle. Spaces of analytic functions. Convergence.
March 9	**Midterm Exam**
March 21-May 6	Riemann mapping theorem. Weierstrass factorization theorem. Special functions. Runge's theorem. Mittag-Leffler's theorem. Return to harmonic functions.
May 9	Review of the Course. Last class.
May 13 MATH 109	**FINAL EXAMINATION 1:30 –4:00 pm**

HOMEWORK ASSIGNMENTS

Homework Assignment #1, due February 3
Homework Assignment #2, due
Homework Assignment #3, due
Homework Assignment #4, due
Homework Assignment #5, due