MATH 4342 Complex Variables (tentative)
Fall 2018

Instructor: Dr. Anahit Galstyan
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Office hours: Monday, Wednesday 11.00 am -12.00 pm; Friday 11.45am-12.45 pm or by appointment

Meeting time Monday, Wednesday - 12.15 pm -1.30 pm at
LIBERAL ARTS BUILDING SOUTH 185 (Edinburg)
LIFE & HEALTH SCIENCES #61 (Brownsville)


Course Description This course is an introduction to the theory of functions of a complex variable with basic techniques and some applications. Topics include complex numbers and the extended complex plane, elementary functions of a complex variable, differentiation, conformal mappings, contour integration, Cauchy's theorem, Cauchy's formula, Taylor and Laurent series, and residue theory. (Chapters 1,2,3,4,5,6,7,8,10)

Prerequisite MATH 2415 Calculus III. In particular, exposure to functions of two variables, limits of functions of two variables, partial derivatives, vector analysis, and line integrals.

Homework: Daily assignments will consist of problems and reading from the text. Completing these assignments is the most important part of this course. You will be expected to spend at least 4 hours each week to complete all assigned work at the minimum acceptable level of understanding. The assigned problems from each week will usually be collected at the beginning of class the following Monday to be graded. Although you may work with others, the homework you turn in must be your own work (your own writing, in your own words, using your own organization, etc...).

Examinations: There will be three exams (two midterm exams during the semester and the comprehensive final exam). Each will count 20% of your course grade. These will most likely be in-class closed-book exams, but may contain a portion to be completed outside of class. All students are expected to take the examinations at the announced time. On all problems, you must show your work. Write clearly and show all your work; a correct answer alone may not receive any credit. No make-up tests.

Final Exam: The comprehensive common final exam is on December 12, 2018, 10.15 am-12.00 pm in the regular classroom.

Grading policy Two one-hour exams: 40% (=2x20%); Homework’s and Project: 40%; Comprehensive final 20%.

Calculators: The use of graphing/programmable calculators or computers is recommended but not required. On some tests graphing/programmable calculators will be prohibited.

Grade Distribution:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100%</td>
<td>C</td>
</tr>
<tr>
<td>B</td>
<td>80-89%</td>
<td>D</td>
</tr>
<tr>
<td>C</td>
<td>70-79%</td>
<td>F</td>
</tr>
<tr>
<td>D</td>
<td>60-69%</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0-59%</td>
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**Tutoring:** There are all kinds of math tutoring available on campus. Math Lab I, II (MAGC 1.106, MAGC 1.308) and the Math Learning Center in the LEAC Building room 114.

**Attendance**

Attendance is mandatory. You are required to come to all class-meetings; please come on time. Please turn off your cell-phones during the class. Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV’s attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

**Students with disabilities:**

Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact Student Accessibility Services (SAS) as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services.

**Pregnancy, Pregnancy-related, and Parenting Accommodations**

Title IX of the Education Amendments of 1972 prohibits sex discrimination, which includes discrimination based on pregnancy, marital status, or parental status. Students seeking accommodations related to pregnancy, pregnancy-related condition, or parenting (reasonably immediate postpartum period) are encouraged to contact Student Accessibility Services for additional information and to request accommodations.

**Student Accessibility Services:**

**Brownsville Campus:** Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu. **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

**Drop Policy**

According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.

**Student Services**

Students who demonstrate financial need have a variety of options when it comes to paying for college costs, such as scholarships, grants, loans and work-study. Students should visit the Students Services Center (U Central) for additional information. U Central is located in BMAIN 1.100 (Brownsville) or ESSBL 1.145 (Edinburg) or can be reached by email (ucentral@utrgv.edu) or telephone: (888) 882-4026. In addition to financial aid, U Central can assist students with registration and admissions.

Students seeking academic help in their studies can use university resources in addition to an instructor’s office hours. University Resources include the Learning Center, Writing Center, Advising Center and Career Center. The centers provide services such as tutoring, writing help, critical thinking, study skills, degree planning, and student
employment. Locations are:

- Learning center: BSTUN 2.10 (Brownsville) or ELCTR 100 (Edinburg)
- Writing center: BLIBR 3.206 (Brownsville) or ESTAC 3.119 (Edinburg)
- Advising center: BMAIN 1.400 (Brownsville) or ESWKH 101 (Edinburg)
- Career center: BCRTZ 129 (Brownsville) or ESSBL 2.101 (Edinburg)

**Makeup Policy**

In the case of illness and in rare cases of other conflicts, students with documented excuses may request to take a makeup exam after scheduled exam. In all cases, makeup must be requested before the regularly scheduled exam.

**Calendar of Activities**

Some important dates for Fall 2018 include:

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>August 27</td>
<td>First day of classes</td>
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<tr>
<td>August 30</td>
<td>Last day to add a course or register for fall 2018</td>
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<tr>
<td>September 3</td>
<td>Labor Day – NO classes</td>
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<tr>
<td><strong>November 14</strong></td>
<td>Last day to drop a course; will count toward the 6-drop rule</td>
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<tr>
<td>November 22-24</td>
<td>Thanksgiving Holiday – NO classes</td>
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<tr>
<td>December 5</td>
<td>Last day of classes</td>
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<td><strong>December 6</strong></td>
<td>Study Day – NO class</td>
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<tr>
<td>December 7-13</td>
<td>Fall 2017 Final Exams</td>
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<tr>
<td>December 14-15</td>
<td>Commencement Ceremonies</td>
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**Electronic Communication Policy:**

The university policy requires all electronic communication between the University and students be conducted through the official University supplied systems. Therefore, please use your UTRGV assigned e-mail for all future correspondence with UTRGV faculty and staff.

**Mandatory Course Evaluations**

Mandatory Course Evaluations Period (November 15 – December 5). Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu); students will be contacted through email with further instructions. **Students who complete their evaluations will have priority access to their grades.** Online evaluations will be available Nov. 15 – Dec. 5, 2018.

**Scholastic Integrity**

As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

**SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE:**

In accordance with UT System regulations, your instructor is a “Responsible Employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at [www.utrgv.edu/equity](http://www.utrgv.edu/equity), including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct and discrimination.
Course SLO’s (Student Learning Outcomes)

After completing this course students will

1. Work with complex numbers, and functions of a complex variable including complex exponential, logarithmic, and trigonometric functions;

2. Understand the ideas of continuity, analyticity (differentiability), and the multi-valued nature of (some) functions of a complex variable;

3. Understand the theory of analytic functions, including Liouville's Theorem, Maximum Modulus Theorem, Cauchy's Theorem, Cauchy's Integral formula, path independence and the Fundamental Theorem of Calculus for analytic functions, Taylor's Theorem, Laurent's Theorem, and the Residue Theorem;

4. Apply residue theory to evaluate integrals and series that could not be evaluated with the methods of Calculus II;

5. Analyze mappings, such as conformal mappings and complex-valued functions of a complex variable;

6. Apply the theory of analytic functions to problems in science and engineering.