MATH 538.001 - FUNCTIONS OF COMPLEX VARIABLES I

(WEB BASED CLASS)

COURSE SYLLABUS: FALL 2016

Instructor: Dr. Mehmet Celik
Office Location: Binnion 303A
Office Hours: Virtual (eCollege) and On Campus
Mon. 11am-1pm; Tues. 11am-2pm; Wed. 11am-2pm; Thur. 11am-12pm or by appointment
Office Phone: 903-468-3330
Office Fax: 903-886-5945
University Email Address: Mehmet.Celik@tamuc.edu can email the instructor through eCollege
Preferred Form of Communication: email
Instructor Communication Policy: Student course-related questions or concerns through email are answered usually within 24 hours during week days (M-F).
Class Meeting Time: Regularly log into our online course
Class Location: eCollege (Pearson Learning Studio)

COURSE INFORMATION

Materials

Textbook(s) Required: The main text is *A First Course in Complex Analysis* by Matthias Beck, Gerald Marchesi, Dennis Pixton, and Lucas Sabalka, version 1.5, it is free online at math.sfsu.edu/beck/papers/complex.pdf (chapter 1-9). A good source for many solved problems with solutions is *Schaum's Outline of Complex Variables*, second edition, by Murray R. Spiegel, Seymour Lipschutz, John J. Schiller, and Dennis Spellman, McGraw-Hill, 2009, ISBN 9780071615693. There are many other books for Complex Analysis that you may want to look at from time to time, but my suggestion is to stick with as few as possible to stay focused. We may occasionally cover enrichment activities not in the text.

MathType: This software is for typing mathematics symbols and equations. It is easy to use. The mathematics department owns a departmental license. If you want to install it on your computer, please let me know what type of your computer operating system is: Windows, or Macintosh.

Course Description: This course covers the elements of one-dimensional complex analysis: the complex numbers (their algebra, geometry, and topology); analytic functions of a complex variable (definition, examples, properties); integration in the complex plane, particularly Cauchy's integral formula and its consequences; infinite series of complex numbers and of complex variables, including Taylor series and

Laurent series; the residue theorem and the computation of real integrals by complex methods; and conformal mapping. Prerequisites: MATH 436 (Introduction to Analysis), or MATH 438 (Undergraduate course on Complex Analysis), or Consent of Instructor.

Student Learning Outcomes

By the end of the course, students should be able to ***analyze*** functions of a complex variable using series expansions, using line integrals, using geometry, and using partial differential equations; to ***explain*** the major theorems that distinguish complex analysis from real analysis; and to ***apply*** complex analysis to compute geometric mappings and real integrals.

COURSE REQUIREMENTS

Course Evaluation Methods

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course.

Exams – (proctored) There will be two In-term exams. You will have a period of 75 minutes to complete each exam.
Exam 1: Friday *October 7th* (Week #6)
Exam 2: Friday *November 11th* (Week #11)
Make-up exams are possible only if there is a documented emergency.

Final Exam: (proctored) A Comprehensive Final Exam (2 hours of exam time).
Final Exam Date: Monday, December 12th

Each exam is worth of 100 points.

Each exam must be proctored. If you cannot take an exam on the Commerce campus, you need to let your instructor know the location where you want to take a test on or before September 9th, 2016. A location usually is a testing center at a college or university near you. Some colleges and universities may charge you a fee for using the testing center. Once an agreement with the testing center is made, you will be notified. If you have questions, discuss it with your instructor immediately.

Attendance: Online attendance is required. It is critical you keep up with the pace of this class. A term goes quickly. Once you are behind our pace, you can easily get lost. I strongly suggest you to study ahead of our pace continuously review the material. Online attendance in this course is determined by your log in and participation in our course in eCollege.

Attendance means students will participate in watching posted videos, joining online discussions, and submitting required homework assignments on time.

Homework: There will be weekly homework assignments. Each assignment will be graded. Missing questions and answers without work do not earn credit. The questions for a homework assignment will be posted on the assignment under

eCollege. The due date for each homework assignment will be announced with the assignment. Late homework submission won't be accepted.

You may work together and discuss homework on the Student Lounge of eCollege. You may also ask your instructor for a hint in the Virtual Office of eCollege.

Submit your homework to the Dropbox at eCollege as LastName_HW#?_Math538.pdf (Example: Celik_HW#2_Math538.pdf).

The homework assignment you submit must be your own work. Plagiarism is strictly prohibited.

The key to success in this course is regularly working with other students in the class through Student Lounge of eCollege, doing the homework assignment early and asking questions when you have them!!! Please, use the Student Lounge of eCollege if you have additional questions about the homework. You can ask your instructor in the Virtual Office of eCollege.

***Workload and Assistance*:** You should expect to spend about 12 to 14 hours each week, on the course material. This includes studying the posted material, working on homework assignments, and preparing for the exams. Some weeks (those in which an exam is scheduled, for instance) may require more of your time, other weeks may require less, but on average, budget 12 to 14 hours each week. You should spend some time working with other class mates on Student Lounge or Virtual Office under eCollege! Please ask questions and seek assistance as needed. You may email me at any time. Emails are answered usually within 24 hours during week days (M-F).

GRADING

Grading Matrix: This class will be graded on a total points system. 400 points are possible in the class. The following grading matrix presents how your total score is going to be calculated at the end of the semester of Fall 2016 for Math 538.001 course. All the grading instruments are assigned between the first day of class and last day of class of Fall 2016 semester. The Final exam is the last grading instrument of the course; the date of the Final Exam is: Monday, December 12th. The grade is completely objective and is determined solely by student performance on each of the evaluation criteria (Two Mid-term exams, HW assignments, and the final exam). *Do not expect Extra Credit assignments!*

Instrument	**Value (points)**	**Total**
HW Assignments	At the end of the semester the average of all HW assignments will be considered	100pts
Mid-term Exams	2 Mid-term exams at 100	200pts

	points each	
Final Exam	One comprehensive final exam	100pts
Total:		400pts

Grade Determination:

A = 400 – 360 pts; i.e. 90% or better

B = 320 – 359 pts; i.e. 80 – 89 %

C = 280 – 319 pts; i.e. 70 – 79 %

D = 240 – 279 pts; i.e. 60 – 69 %

F = 239 pts or below; i.e. less than 60%

TECHNOLOGY REQUIREMENTS

A computer algebra system will be used for some problem exploration, enhanced conceptual understanding, and to engage students as active participants in the learning process.

- **TI-83/84** or other calculators with similar capability is recommended.
- **Printer** to print homework and tests is recommended.
- **Scanner/digital camera/cell phone** that you can take pictures of your work and submit them to the Dropbox at the eCollege.
- **eCollege:** As a student enrolled at Texas A&M University-Commerce, you have access to eCollege. You will obtain course materials through eCollege. The course materials are only for this course. You cannot distribute the course materials without permission of the instructor. You also have an email account via myLeo - all my emails sent from eCollege (and all other university emails) will go to this account, so please be sure to check it regularly.

GENERAL ECOLLEGE REQUIREMENTS

- You will need regular access to a computer with a broadband Internet connection. The minimum computer requirements for the Epic Web Client are:
  - ❖ Any current Flash-compliant browser (e.g., Internet Explorer 7 or Firefox 3.0)
  - ❖ 512 MB of RAM, 1 GB or more preferred
  - ❖ Broadband connection required courses are heavily video intensive

- ❖ Video display capable of high-color 16-bit display 1024 x 768 or higher resolution
- A sound card and speakers or headphones.
- Current anti-virus software must be installed and kept up to date.
- Some classes may have specific class requirements for additional software. These requirements will be listed on the course offerings page. Most home computers purchased within the last 3-4 years meet or surpass these requirements.
- You will need some additional free software for enhanced web browsing. Ensure that you download the free versions of the following software:
  - ❖ Adobe Reader
  - ❖ Adobe Flash Player
- At a minimum, you must have Microsoft Office 2003, XP, 2007 or Open Office. Microsoft Office is the standard office productivity software utilized by faculty, students, and staff. Microsoft Word is the standard word processing software, Microsoft Excel is the standard spreadsheet software, and Microsoft PowerPoint is the standard presentation software. Copying and pasting, along with attaching/uploading documents for assignment submission, will also be required. If you do not have Microsoft Office, you can check with the bookstore to see if they have any student copies.

TECHNICAL SUPPORT FOR ECOLLEGE

The following eCollege support options are available 24 hours a day / 7 days a week:

Help: Click on the 'Help' button on the toolbar for information regarding working with eCollege (i.e. How to submit to Dropbox, How to post to discussions etc…)

Chat Support: Click on 'Live Support' on the tool bar within your course to chat with an eCollege Representative.

Phone: 1-866-656-5511 (Toll Free) to speak with eCollege Technical Support Representative.

Email: helpdesk@online.tamuc.org to initiate a support request with eCollege Technical Support Representative.

For Specific Course Content Questions: Contact Your Instructor. Please contact your instructor via email or through the Virtual Office of eCollege.

Your myLeo email address is required to send and receive all student correspondence. Please email helpdesk@tamuc.edu or call us at 903-468-6000 with any questions about setting up your myLeo email account. You may also access information at https://leo.tamuc.edu.

ACCESS AND NAVIGATION

eCollege Access and Log in Information

This course will be facilitated using eCollege, the Learning Management System used by Texas A&M University-Commerce. To get started with the course, go to: http://www.tamuc.edu/myleo.aspx.

You will need your CWID and password to log in to the course. If you do not know your CWID or have forgotten your password, contact Technology Services at 903.468.6000 or helpdesk@tamu-commerce.edu.

It is strongly recommended that you perform a "Browser Test" prior to the start of your course. To launch a browser test, login to eCollege, click on the 'myCourses' tab, and then select the "Browser Test" link under Support Services.

Course Navigation

Course readings, assignments and discussions will be completed /turned in through eCollege. Your grades will be available in eCollege. The course materials are only for this course. You cannot distribute the course materials without permission of the instructor

This course is presented using weekly units. Each unit contains video lectures, a discussion area, a Homework assignment, and/or an exam.

You should begin by reading the course syllabus, paying particular attention to the assignments and Suggested Schedule, and then go to the Start Here unit.

COMMUNICATION AND SUPPORT

Interaction with Instructor Statement

An eCollege website has been created for the course which may be accessed from student myLEO accounts following the eCollege and then the My Courses tabs. All files and documents that the instructor shares with the class will be posted in the Document Sharing folder in the course website. eCollege is the Learning Management System used by Texas A&M University-Commerce. **You will need your CWID and password to log in to the course. If you do not know your CWID or have forgotten your password, contact Technology Services at 903.468.6000.**

My primary form of communication with the class will be through the official university Email and Announcements. Any changes to the syllabus or other important information critical to the class will be disseminated to students in this way via your eCollege Email address available to me through MyLeo and in Announcements. It will be your responsibility to check your official university Email and Announcements regularly.

Virtual Office

This space is set aside for students to ask course related questions. Place any questions or concerns about the course here and they will answered within 24

hours on weekdays. (It is possible that I will answer all threads during my office hours as posted on the syllabus.)

Please feel free to answer one another's questions. I will check answers (as well as questions) for correctness, but do not hesitate to respond to a posting if you feel you can answer the question thoroughly and directly.

Student Lounge

This space is for students to communicate with each other. I may visit Student Lounge and join your discussion.

Discussion Areas in Weekly Units

This space is for student questions related to the week's content.

Doc Sharing

This space is used for sharing documents, I will be uploading hints or answers to some of the assignment questions.

If you post a file to Doc Sharing, please use a clear description title, for example, WhatIsSoSpecialAboutComplexVariables.pdf.

Student Academic Resources

Math Lab: Free tutoring service offered by the Mathematics department (Binnion Hall Room 328). Please visit the web site for the hours of operation and more details.
http://www.tamuc.edu/academics/colleges/scienceEngineeringAgriculture/departments/mathematics/students/default.aspx

The TAMUC One Stop Shop - provides as many student resources as possible in one location.
http://www.tamuc.edu/admissions/oneStopShop/

The TAMUC Academic Success Center provides academic resources to help you achieve academic success.
http://www.tamuc.edu/CampusLife/CampusServices/AcademicSuccessCenter/default.aspx

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures

Policy for Reporting Problems with eCollege

If students encounter eCollege-based problems while submitting assignments and assessments, the following procedures MUST be followed.

1. Students must report the problem to the help desk. You may reach the helpdesk at helpdesk@online.tamuc.org or 1-866-656-5511

2. Students MUST file their problem with the helpdesk and obtain a helpdesk ticket number
3. Once a helpdesk ticket number is in your possession, students should email me to advise me of the problem and to provide me with the helpdesk ticket number
4. At that time I will call the helpdesk to confirm your problem and follow up with you.

PLEASE NOTE: Your personal computer/access problems are not a legitimate excuse for filing a ticket with the help desk. You are strongly encouraged to check for compatibility of your browser BEFORE the course begins and to take the eCollege tutorial offered for students who may require some extra assistance in navigating the eCollege platform. ONLY eCollege-based problems are legitimate.

University Specific Procedures

Academic Honesty

Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including (but not limited to) receiving a failing grade on the assignment, the possibility of failure in the course and dismissal from the University. Since dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. In ALL instances, incidents of academic dishonesty will be reported to the Department Head. Please be aware that academic dishonesty includes (but is not limited to) cheating, plagiarism, and collusion.

Cheating is defined as:

- Copying another's test of assignment
- Communication with another during an exam or assignment (i.e. written, oral or otherwise)
- Giving or seeking aid from another when not permitted by the instructor
- Possessing or using unauthorized materials during the test
- Buying, using, stealing, transporting, or soliciting a test, draft of a test, or answer key

Plagiarism is defined as:

- Using someone else's work in your assignment without appropriate acknowledgement
- Making slight variations in the language and then failing to give credit to the source

Collusion is defined as:

- Collaborating with another, without authorization, when preparing an assignment

If you have any questions regarding academic dishonesty, ask. Otherwise, I will assume that you have full knowledge of the academic dishonesty policy and agree to the conditions as set forth in this syllabus.

ADA Statement

Students with Disabilities
Students with Disabilities information: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact: Office of Student Disability Resources and Services, Gee Library, Room 132 (903) 886-5150 or (903) 886-5835 phone (903) 468-8148 fax Email:.

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Gee Library- Room 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Rebecca.Tuerk@tamuc.edu

Student Conduct
All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See *Student's Guide Handbook, Policies and Procedures, Conduct.*) This means that rude and/or disruptive behavior will not be tolerated.
Texas A&M University – Commerce is committed to a safe, accepting environment for all students regardless of sexual orientation, gender identification, or gender expression: A&M-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Copyright Policy
The handouts used in this course are copyrighted. By "handouts," I mean all materials generated for this course, which include but are not limited to syllabi, lecture notes, quizzes, exams, in-class materials, review sheets, projects, and problems sets. Because these materials are copyrighted, you do not have the right to copy and distribute the handouts.

Campus Concealed Carry
Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to

(http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf) and/or consult your event organizer). Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

COURSE OUTLINE / CALENDAR

WEEKLY SCHEDULE:

(Weeks 1&2) CH1: *Complex Numbers*
(Weeks 2,3,&4) CH2: *Differentiation*
(Week 5) CH3: *Examples of Functions*
(Week 6) CH3: Examples of Functions & ***Exam #1***

(Weeks 7&8) CH4: *Integration*
(Week 9&10) CH5: *Consequences of Cauchy's Theorem*
(Week 11) CH7: *Power Series* & ***Exam #2***
(Week 12) CH7: *Power Series.* CH8: *Taylor and Laurent Series*

(Week 13) CH8: *Taylor and Laurent Series*
(Week 14) CH9: *Isolated Singularities and Residue Theorem*
(Week 15) CH9: *Isolated Singularities and Residue Theorem*
(Week 16). *FINAL WEEK*

This schedule is subject to change by the instructor. Any changes to this schedule will be communicated by email and announcements on the course web page.