MTH 413; Fall 2015 **Instructor: Hobbs**

Syllabus

Class Time & Location: Tu & Th 11:00-12:15 in RS 13
Instructor: Dr. Stephen Hobbs
Email: shobbs3@san.rr.com Home Phone: 858-560-7385
Office Location & Hours: to be discussed on first day of class

Textbook: Marsden & Hoffman; *Basic Complex Analysis*, 3ed, Freeman.

References: Churchill & Brown; *Complex Variables and Applications*.
Greenleaf; *Introduction to Complex Variables*.
Fisher; *Complex Variables*, 2ed, Dover.
Silverman; *Complex Analysis with Applications*, Dover.
Kreyszig; *Advanced Engineering Mathematics*.
Rudin; *Real and Complex Analysis*. (graduate text, chapters 10+)

Catalog Description
MTH 413 (3 Units) Complex Analysis
Complex numbers, analytic functions, integration, series, contour integration, residues and conformal maps.

Corequisite(s): MTH 274 (Calculus III)

Course Learning Outcomes:
- Students will be able to demonstrate facility with analytical concepts.
- Students will be able to apply their mathematical knowledge to solve problems.

Objectives: The overall objectives of Math413 are stated in the PLNU Catalog and consist of the material covered in standard textbooks for a first undergraduate course in complex variables such as those listed above. Students will be expected to become proficient with complex numbers, complex valued functions of a complex variable, complex derivatives, elementary analytic functions, power series, complex line integrals, and Cauchy's theorem and some of its applications.

Course Philosophy: Mathematics is learned by practice. The class time will be used to introduce new material (and for testing your skill during exams). Your time outside of class should mostly be spent in working homework problems. *Doing all of the assigned homework before the next class will almost certainly ensure that you successfully master the course material*. *The exams will be like the homework; there should be no surprises*. You must be persistent in solving homework problems; when you need help ask the instructor, fellow classmates, or other friends, but be sure to keep up with the pace of the class. *Almost every new class, and every new homework assignment, is built on previously introduced concepts, so falling behind is disastrous*.

Homework: Homework assignments will be made every class, and homework assigned on any given class will be due the following class. Only 1 or 2 problems will be (more or less randomly) selected per class for careful grading, and I (or a grader) will just check your paper that the rest were done. Most points will be given for the problems carefully graded. *Answers to odd numbered exercises are in the back of the* book. Please hand homework in at the beginning of lecture on the due date; no late homework except for extreme cases. (If you have to miss a lecture have a classmate hand in your homework.) You are welcome to discuss homework problems with other students, but you should *write up your solutions independently*.

Exams: There will be two in-class midterm exams (see class schedule for projected dates) and a final exam. These exams will make most of your grade. I plan to weight all three tests equally. The final is on Dec 17th at 10:30 in the class room.

Grading: The grade for the class will be computed approximately as follows:

Homework	(25%)	200 points
Exams	(75%)	600 points
Total		800 points

Grade: A if at least 720 points (90%) are scored during the term,
B if at least 640 points (80%) are scored,
C if at least 560 points (70%) are scored,
D if at least 480 points (60%) are scored.

Attendance:
Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day.

Regular and punctual attendance at all classes in which a student is registered is considered essential to optimum academic achievement. Therefore, regular attendance and participation in each course are minimal requirements to be met. There are no allowed or excused absences except as approved in writing by the Provost for specific students participating in certain university-sanctioned activities. Excused absences still count toward the 10%-20% limits, but allow students to make up work, quizzes, or tests missed as a result of a university-sanctioned activity. Activities of a unique nature, such as labs or other activities identified clearly on the syllabus, cannot be made up except in rare instances when instructors have given advanced, written approval for doing so. Whenever the number of accumulated absences in a class, for any cause, exceeds ten (10) percent of the total number of class meetings, the faculty member should send an e-mail to the student and the Vice Provost for Academic Administration (VPAA) warning of attendance jeopardy. If more than twenty (20) percent of the total number of class meetings is reported as missed, the faculty member or VPAA may initiate the student's de-enrollment from the course without further advanced notice to the student. If the date of de-enrollment is past the last date to withdraw

from a class, the student will be assigned a grade of W or WF consistent with university policy in the Grading section of the catalog. There are no refunds for courses where a de-enrollment was processed. For more details see the PLNU catalog:
http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Class_Attendance

Class Enrollment:
It is the student's responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

Academic Accommodations:
While all students are expected to meet the minimum academic standards for completion of their courses as established by the instructors, students with special needs may require academic accommodations. At Point Loma Nazarene University, students requesting academic accommodations must file documentation with the Disability Resource Center (DRC), located in the Bond Academic Center. Once the student files documentation, the Disability Resource Center contacts the student's instructors and provides written recommendations for reasonable and appropriate accommodations to meet the individual needs of the student. This policy assists the university in its commitment to full compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities (ADA) Act of 1990, and ADA Amendments Act of 2008, all of which prohibit discrimination against students with special needs and guarantees all qualified students equal access to the benefits of PLNU programs and activities. For more details see the PLNU catalog:
http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Academic_Accommodations

Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class.

Academic Honesty:
The Point Loma Nazarene University community holds the highest standards of honesty and integrity in all aspects of university life. Any violation of the university's commitment is a serious affront to the very nature of Point Loma's mission and purpose. Violations of academic honesty include cheating, plagiarism, falsification, aiding academic dishonesty, and malicious interference. The details of PLNU's meaning of each of these words can be found in the PLNU catalog at:
http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Academic_Honesty

A student remains responsible for the academic honesty of work submitted in PLNU courses and the consequences of academic dishonesty beyond receipt of the final grade in

the class and beyond the awarding of the diploma. Ignorance of these catalog policies will not be considered a valid excuse or defense. Students may not withdraw from a course as a response to a consequence.

A student who is caught cheating on any item of work will receive a zero on that item and may receive an "F" for the semester. See the PLNU Catalog for a further explanation of the PLNU procedures for academic dishonesty (http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Academic_Honesty) .

Final Exam: Date and Time

The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. Only in the case that a student is required to take three exams during the same day of finals week is an instructor authorized to change the exam date and time for that particular student.

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Class Schedule

Class	Day	Date	Topic	Text Chapter
1	Th	9/3	Intro & Complex Numbers	1.1
2	Tu	9/8	Complex Numbers	1.2
3	Th	9/10	Elementary Functions	1.3
4	Tu	9/15	Elementary Functions	1.3
5	Th	9/17	R^n Topology	1.4
6	Tu	9/22	Limits & Continuity	1.4
7	Th	9/24	Complex Derivatives	1.5
8	Tu	9/29	Elementary Functions	1.6
9	Th	10/1	Complex Line Integrals	2.1
10	Tu	10/6	Green's Theorem	2.2
11	Th	10/8	Cauchy's Theorem	2.3
12	Tu	10/13	MIDTERM EXAM 1	
13	Th	10/15	Cauchy's Integral Formula	2.4

14	Tu	10/20	Maximum Modulus Theorem	2.5
15	Th	10/22	Harmonic Functions	2.5
16	Tu	10/27	Series of Analytic Fns	3.1
17	Th	10/29	Power Series	3.2
18	Tu	11/3	Laurent Series & Residues	3.3, 4.1
19	Th	11/5	Residue Theorem	4.2
20	Tu	11/10	Evaluation of Integrals	4.3
21	Th	11/12	Evaluation of Integrals	4.3
22	Tu	11/17	MIDTERM EXAM 2	
23	Th	11/19	Ordinary Differential Equations	
24	Tu	11/24	Bessel's Equation	7.3
	Th	11/26	Thanksgiving - No Class	
25	Tu	12/1	Bessel Functions	7.3
26	Th	12/3	Poisson's Formula	2.5
27	Tu	12/8	Conformal Mapping	5.1, 5.2
28	Th	12/10	Laplace's Equation	5.3
29	Th	12/17	FINAL EXAM 10:30 – 1:00	