

MA 310
Mathematical Problem Solving for Teachers
Spring 2015
MWF 1:00–1:50 pm — CB 339

Instructor: Carl Lee.

Office: 967 Patterson Office Tower.

Mailbox: 715 Patterson Office Tower.

Email: lee@uky.edu (preferred method for reaching me).

Phone: 257-1405 (or 257-3336 to leave a message).

Office Hours: MWF 11:00 am – 12:00 noon, and by appointment, since I realize that this time may not be convenient for everyone.

Course Web Page: I will use the UK Blackboard course site and also post materials here: <http://www.ms.uky.edu/~lee/ma310sp15/ma310sp15.html>.

Course Description: Heuristics of problem solving. Practice in solving problems from algebra, number theory, geometry, calculus, combinatorics and other areas. Primarily for secondary school teachers. Note: If you are a middle school math teacher major, you should take MA 308.

Prerequisites: MA 123, MA 113, or MA 137.

Student Learning Outcomes: Students will solve problems from a variety of mathematical areas, articulate and demonstrate various problem-solving techniques, and make connections with the Standards for Mathematical Content and the Standards for Mathematical Practice of the *Common Core State Standards for Mathematics*.

Required Materials: Paul Zeitz, *The Art and Craft of Problem Solving*, Wiley; second edition, ISBN-13: 978-0471789017. I encourage you to bring a laptop, if you have one, but this is not required. We will make use of some online materials, such as

- Common Core State Standards for Mathematics, http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf
- GeoGebra, <http://www.geogebra.org/cms>.

Attendance and Participation: Attendance is expected. For *each* unexcused absence beyond the first three, your final grade will be reduced by 2 percentage points.

This class is designed for active involvement of the students. You will be actively supporting each other as you gain experience and understanding. Multiple ideas and points of view are important. You will benefit from hearing others' approaches to analysis and problem solving, and they will benefit from you. So attendance and active participation are expected. I expect activities in class to be related to the course. In particular, cellphones should be silenced, and use of laptops and other electronic devices should be devoted to the course activities.

If you miss a class for any reason, please let me know the reason immediately—an email message will suffice. I will give you an opportunity to make up graded work missed due to an excused absence.

S.R. 5.2.4.2, <http://www.uky.edu/StudentAffairs/Code/part2.html>), defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit “reasonable cause for nonattendance” by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (859-257-2754).

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request “appropriate verification” when students claim an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

Homework: There will be frequent homework assignments, usually assigned weekly, with specified due dates. The homework problems will have varying length and complexity. Some homework might actually be classwork collected in class. It is fine to discuss the homework together, but you must write up your own solutions in your own words.

Exams: I am planning to have three in-class exams during the semester. It is possible that some of these might be taken-home exams or have take-home components.

Final Exam: Wednesday, May 6, 1:00–3:00 pm, in our regular classroom, though part or all of this exam might be take-home.

Grading: Your course score will be based on on the following percentages:

48% Homework
39% In-Class Exams
13% Final Exam

Your letter grade will be determined according to the common 10% scale, rounded to the nearest percent:

90–100% A
80–89% B
70–79% C
60–69% D
0–59% E

In addition, for *each* unexcused absence beyond the first three, your final grade will be reduced by 2 percentage points.

Academic Integrity: Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code

of Student Rights and Responsibilities. Complete information can be found at the following website: <http://www.uky.edu/Ombud>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of Student Rights and Responsibilities (available online <http://www.uky.edu/StudentAffairs/Code/part2.html>) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else's work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student's assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1).

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Accommodations Due to Disability: If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, email address: jkarnes@email.uky.edu) for coordination of campus disability services available to

students with disabilities.

Suggestions and Other Course Issues: Suggestions for improvement are welcome at any time. Any concern about the course should be brought first to my attention. Further recourse is available through the Mathematics Director of Undergraduate Studies and the Department Chair, both accessible from the Main Office in 715 Patterson Office Tower.

Important Dates:

January 14 — Wednesday — First day of classes

January 19 — Monday — Martin Luther King, Jr., Birthday — Academic Holiday

January 21 — Wednesday — Last day to add a class for the 2015 Spring Semester

January 21 — Wednesday — Last day to officially withdraw from the University or reduce course load and receive an 80 percent refund

February 4 — Wednesday — Last day to drop a course without it appearing on the student's transcript

February 11 — Wednesday — Last day to officially withdraw from the University or reduce course load and receive a 50 percent refund

March 9 — Monday — Midpoint of the Semester

March 16–21 — Monday–Saturday — Spring Vacation — Academic Holiday

April 10 — Friday — Last day to withdraw from the University or reduce course load. Students can withdraw or reduce course load after this date only for urgent nonacademic reasons.

May 1 — Friday — Last day of classes

May 6 — Wednesday — Final exam, 1:00–3:00 pm, in our regular room

May 9 — Saturday — Commencement