MAT 493E: Knot Theory
Fall 2012

Time: TH 10:00-11:15
Room: TH ARM 313
Instructor: Ryan Hansen
Office: 307-D Armstrong Hall
Phone:
Email: rhansen@math.wvu.edu

Office Hours:

<table>
<thead>
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<th>Day</th>
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<tbody>
<tr>
<td>Monday</td>
<td>11:30 am – 12:30 pm</td>
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<tr>
<td>Tuesday</td>
<td>11:30 am – 12:30 pm</td>
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<td>Wednesday</td>
<td>1:30 pm – 3:00 pm</td>
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<td>Otherwise: By Appointment</td>
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Course Information

Course Homepage: http://math.wvu.edu/~rhansen/493E

Text: Required:


Optional:


Classroom: Tuesdays & Thursdays: Armstrong 313 from 10:00-11:15
Pre-requisites: MAT 283

Objectives:

Selected topics in this course may include knot operations, notation of knots, knot invariants including colorability, surfaces derived from knots, knot classifications, knot polynomials, knots in graphs, topological knot theory and higher dimensional knotting. We will also study the application of knot theory to biology, chemistry and physics as well as the connections between knot theory and graph theory. This course will emphasize techniques for proving theorems and present some accessible open problems.

Topology is, roughly speaking, the study of those properties of an object that are preserved by stretching, shrinking expanding, twisting, bending and otherwise deforming the object without tearing or gluing.
Evaluation:

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<th>Assessment</th>
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<td>Assignments</td>
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<td>Test 1</td>
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<td>Test 2</td>
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<td>Test 3</td>
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<td>Class Participation</td>
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Reading: You are expected to read the section that will be covered in class prior to class. This will be expected to participate fully in class discussions. Additionally, there will be small group activities and opportunities to present mathematics at the board.

Homework: Homework will be assigned, collected and graded regularly. Your homework will be due at the beginning of class on the designated day. Homework will be accepted one day late, starting one hour after the class in which it was due, with a 15% late penalty. Solutions of the problems should consist of several sentences explaining the problem, your approach to the problem and your steps toward the solution. You will almost always need some kind of picture, but be sure to explain them.

Participation: Since mathematics is not a spectator sport, your participation in class discussions is expected and there will be opportunities for you to present mathematics at the board. You should expect to present something at least three times during the semester. These presentations may be individual presentations of work you have done on your own, or leading a group discussion of an item or small topic not specifically covered by the instructor.

Paper: There will be a short paper given to reinforce the idea that not all math happens in textbooks.

Working Together:

While working together or in groups is often useful, you must acknowledge (ie. list sources of help for) any work that you have not done solely on your own. Plagarism is serious and will not be tolerated (see the integrity statement below).

Furthermore, I have the following advice: try to work on the assignments by yourself first before discussing the problems with course-mates. After this discussion, write the solution on your own, by yourself, to ensure that you understand the idea. I am always available for discussion as well. A few well asked questions may clarify the problem.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, you must make appropriate arrangements with Disability Services (293-6700).

West Virginia University is committed to social justice. This course conforms to that commitment by fostering a nurturing learning environment based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis
of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration.

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at http://studentlife.wvu.edu/studentconductcode.html. Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.