

**Algebraic Number Theory**  
**Math 514B, Spring 2012**  
Prof. Romyar Sharifi

Class meets:

MWF 11-11:50 AM in PAS 316

Office hours:

M 4-5 PM, W 12-1, F 2:30-3:30 PM in Math 607 (subject to change)

You may also make an appointment or drop by unannounced.

Contact info:

Office: Math 607

Phone: (520) 621-3384 (better to email)

Email: [s\\_ari\\_i@math.arizona.edu](mailto:s_ari_i@math.arizona.edu) (please fill in the blanks)

Course materials:

Recommended texts for start of course:

J. Neukirch, Algebraic Number Theory, Springer, 1999

J.S. Milne, Algebraic Number Theory, [www.jmilne.org](http://www.jmilne.org), v.3.03, 2011

Recommended texts for most of course:

J.S. Milne, Class Field Theory, [www.jmilne.org](http://www.jmilne.org), v.4.01, 2011

N. Childress, Class Field Theory, Springer, 2009

Course web page: <http://math.arizona.edu/~sharifi/math514b.html>

Course description:

This course provides the second half of a year-long introduction to algebraic number theory. The course will begin with ramification theory in extensions of local fields and then proceed to local and global class field theory. Class field theory relates objects of a field to the Galois group of its maximal abelian extension. We will examine different approaches to class field theory in our study, and we will consider applications, in particular to higher reciprocity laws.

Examinations:

There will be a take-home final examination.

Homework:

There will be fairly regular homework assignments with due dates to be announced. Selected problems will be graded.

Grading scheme:

The overall score in the course will be calculated using the following percentages:

Homework: 50%

Final exam: 50%

The scale for determining final grades will be set after the final exam has been graded.

Notes:

1. The homework and the final exam in this course will by nature of the material be challenging. However, their completion should be taken very seriously. Office hours are highly recommended if you are having any difficulties, whether with individual problems or the material in general.
2. You are expected to be familiar and comply with the standard university policies. See <http://catalog.arizona.edu/2011-12/policies/aaindex.html> and below for more info.
3. You are expected to attend every class. Please be advised that failure to attend course regularly could result in an administrative drop, as outlined in the above-mentioned policies. Note that all holidays or special events observed by organized religions will be honored for those students who show affiliation with the particular religion, and absences pre-approved by the Dean of Students will be honored. Please inform the instructor in advance of such absences.
4. Late assignments will under most circumstances not be graded.
5. If you drop the course after Feb. 7 and by Mar. 7, you will receive a grade of W (though an E could be given in a case involving academic dishonesty). Late withdrawals, after Mar. 7, require the Dean's signature and extraordinary reason to be given.
6. A grade of I will be awarded only in unusual circumstances, which include but are not limited to: you request it within 24 hours after the final, you have completed nearly all of the work for the course, you are near passing level, you have a valid reason for not completing the course, and you agree to make up the missed material in a short period of time. An I will not be awarded in the place of a failing grade.
7. Academic dishonesty in any area of course work will not be tolerated. Please refer to <http://deanofstudents.arizona.edu/codeofacademicintegrity>.
8. Collaboration is generally encouraged on assignments. However, you must write up your solutions on your own. Copying another student's solutions with minor changes is, for instance, unacceptable.
9. Threatening behavior is prohibited. For information on what constitutes such behavior, see <http://web.arizona.edu/~policy/threatening.pdf>.
10. Students with disabilities: If you anticipate barriers related to the format or requirements of this course, please meet with me so that we can discuss ways to ensure your full participation in the course. If you determine that disability-related accommodations are necessary, please register with Disability Resources (621-3268; <http://drc.arizona.edu>) and notify me of your eligibility for reasonable accommodations. We can then plan best how to coordinate your accommodations.