

Math 5026 Syllabus

Location: TuTh 2:00PM-3:15PM in MSB 415

- **Instructor:** Asher Kach

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Office Hours: By Appointment

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- **The Course and the Internet:** Course Webpage and Course Email

The syllabus and other course materials, links to references, and miscellaneous other things pertaining to the course will be kept at the course webpage:

<http://www.math.uconn.edu/~kach/teaching/spring2009/math5026/>

- **References:** Books and Notes

(Ash & Knight) *Computable Structures and the Hyperarithmetical Hierarchy*

(Lempp) *Priority Constructions in Computability Theory, Model Theory, and Complexity Theory*

(Lerman) *Degrees of Unsolvability*

(Soare CTA) *Computability Theory and Applications*

(Soare RESD) *Recursively Enumerable Sets and Degrees*

- **Grading Policy:** Semester Grades

Questions (from routine to open problems) will often appear on the blackboard. Though I encourage and recommend that they be attempted, I do not expect answers to be submitted (though I will happily “grade” any that are submitted). Less often, I will distribute questions on paper. Answers to these questions should be submitted in a timely fashion.

In addition, your attendance and participation are expected.

- **Academic Integrity:** Academic Honesty and Academic Misconduct

Breaches of academic honesty and cases of academic misconduct will not be tolerated. For more information, please consult http://www.dosa.uconn.edu/student_code_appendixa.html.

- **Course Goals:** For You and For Me

My intention is to spend some amount of time covering the fundamentals of computability theory: computable and computably enumerable sets, Turing reducibility, the arithmetic hierarchy, and so on. After doing so, the course will focus on priority arguments: moving markers, finite injury, degenerate infinite injury, and infinite injury. Though early examples will be drawn primarily from degree theory, as the semester progresses examples may be drawn from effective algebra, computable model theory, randomness, reverse mathematics, and elsewhere depending on interest and time.

Consequently, the intention is for you to leave the course with an understanding of the mechanics of priority arguments and knowledge of some of the results so obtained. My hope for myself is to also gain a better understanding and appreciation of the techniques and results.