MAS 7216 Graduate Number Theory 2 SYLLABUS

This syllabus is subject to change. Last change was made 4:15pm, January 3, 2015.

Course: MAS 7216 Graduate Number Theory 2(3 credits)

Topic: Modular Forms and Mock-Theta Functions

Lecturer: Dr. F. Garvan (Office: LIT 408; Email: fgarvan@ufl.edu;
Phone: 294-4305)

Section: 3F74

Location: LIT 221

Time: MWF 6 (12:50 – 1:40pm)

Office Hours: Monday, Wednesday and Thursday (11:00am – 12:00pm). Also available by appointment.

Prerequisites:
A basic knowledge of analysis and complex function theory.

Outline:
This course begins with an introduction to elliptic functions and modular forms. A modular form is a complex analytic function defined on the complex upper half plane which has a certain symmetry with respect to the action of SL(2,Z) (or some subgroup) on the upper half plane and which satisfies some growth condition. The theory of modular forms was crucial to Wiles proof of Fermat's Last Theorem. We will consider the application of modular forms to congruences for partition functions.

In his 2003 Thesis Sander Zwegers showed how Ramanujan's mock-theta functions fit into the theory of real analytic modular forms. These are functions that transform like modular forms but are non-holomorphic. We will develop this theory and apply to mock theta functions and their connections with partitions.

Text:

There is no required text. Links to online reading will be given.

Grading:
Grades will be based on homework.

Homework Assignments:
Homework assignments will be assigned regularly and graded.

Additional Information:

Grades: Grading will be in accord with the UF policy stated at
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

Honor Code: UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Class Attendance: Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

Accommodations for Students with Disabilities: Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Online Evaluations: Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

Contact information for the Counseling and Wellness Center:
http://www.counseling.ufl.edu/cwc/Default.aspx, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

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