האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

Syllabus

Singularities of Mean Curvature Flow - 80968

Last update 11-07-2018

HU Credits: *3*

Responsible Department: *Mathematics*

Academic year: *0*

Semester: *2nd Semester*

Teaching Languages: *Hebrew*

Campus: *E. Safra*

Course/Module Coordinator: *Jake Solomon*

Coordinator Email: *jake@math.huji.ac.il*

Coordinator Office Hours: *By appointment.*

Teaching Staff:
Prof Jake Solomon

Course/Module description:
Given a submanifold, it is natural to look for an isotopic submanifold with minimal

volume. Minimal submanifolds play an important role in fields ranging from the study of soap bubbles to boundary conditions in quantum gravity. Mean curvature flow is an evolution equation for submanifolds that reduces volume as quickly as possible. In good cases, it converges to a volume minimizing submanifold. However, in general, singularities develop that prevent the continuation of the flow. In this this course, we will learn about the classification of singularities.

Course/Module aims:

Classification of singularities in mean curvature flow.

Learning outcomes - On successful completion of this module, students should be able to:

To understand the basic techniques for classifying singularities of mean curvature flow. To prove long term existence in dimension 2 and for convex hypersurfaces.

Attendance requirements(%):

While there is no formal attendance requirement, students are expected to learn the content of lectures, which may not be available from any of the course reading. Moreover, students are expected to be aware of any announcements made in lecture.

Teaching arrangement and method of instruction: Lecture and exercises.

Course/Module Content:

Introduction to mean curvature flow, blow-up arguments, type 1 singularties, type 2 singularities, long term existence for convex hypersurfaces, long term existence for curves in the plane.

Required Reading:

Mategazza, Carlo, Lecture Notes on Mean Curvature flow

Additional Reading Material:

Ecker, Klaus, Regularity Theory for Mean Curvature Flow
Zhu, Xi-Ping, Lectures on Mean Curvature Flows

Course/Module evaluation:

End of year written/oral examination 0 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 0 %
Assignments 100 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information: