

Geometry F10PG2/F11PG2
Second Semester 2010/11
Course Document¹

Lecturer: David Rule

Office: CM G12

Phone: 0131 451 8353

Email: d.rule@hw.ac.uk

Lectures: Monday 4.15pm, Wednesday 12.15pm and Thursday, 11.15am (1 hour) in CM G01

Tutorials: Tuesday, F10PG2 at 9.15am and F11PG2 at 10.15am

Website: www.ma.hw.ac.uk/~rule/geometry/

Useful References: If you are looking for references for further reading, the following texts may be useful. You are not required to purchase any books, but obviously may if you so wish.

- J.A. Thorpe, *Elementary Topics in Differential Geometry*
- M.P. Do Carmo, *Differential Geometry of Curves and Surfaces*
- J. McCleary, *Geometry from a Differentiable Viewpoint*
- P.M.H. Wilson, *Curved Spaces*

Course Summary: The aim of this course is to provide an introduction to ideas in geometry, primarily differential geometry. We will study this mainly by studying n -dimensional surfaces in $(n + 1)$ -dimensional Euclidean space which arise as level sets of functions.

F10PG2 Syllabus: The principal material in this course will be roughly the following.

Vector fields, the tangent space, orientation, the Gauss map, geodesics, arc length, curvature, surface area and volume, and minimal surfaces

If there is time, we will cover additional material.

F11PG2 Syllabus: All of the above, plus assigned reading.

Assessment: There will be an examination later in the year. The University sets the date and time of the examination. The F10PG2 version has is a two hour exam, with a choice of three questions from four. The F11PG2 version has is a three hour exam, with 5 compulsory questions.

Homework: Problems will be assigned regularly to help you understand and gain familiarity with the material. You are encouraged to work on problems together but should write up solutions independently. We will discuss solutions in the tutorials the following week, but you must spend time thinking about problems before hand. It is essential that you spent a significant amount of time thinking about the material taught and problems assigned in order to gain understanding of it and so pass the course. You are also welcome to ask me questions after class or arrange an appointment at some other time.

Academic Misconduct: Zero marks for the course will be assigned if evidence of cheating or academic misconduct is found in any part of your work for it. Please refer to the University guidelines on plagiarism and related matters.

David Rule

¹Date: 10/1/11