

Peter B Gilkey

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Mathematics Department, University of Oregon, Eugene Oregon 97403 USA

Math 4/515 Introductory Analysis III Spring 2012 CRN TBA

Syllabus Version 1

Calculus on Manifolds

MWF 1300-1350 (209 Deady) + F 1500-1550 (TBA)

Office hours Monday, Wednesday, Friday 1000-1050

Text: Spivak: Calculus on manifolds (paperback). (Benjamin/Cummings Publishing Company).

Homework will be due each Monday on the material of the subsequent week. The Friday discussion hour is an opportunity for you to ask questions about the homework. The homework problems will be challenging and it is essential that you have thought about the homework before coming to the discussion hour. You should also feel free to ask questions regarding the lecture that have come up then (or during class of course). I will drop your 2 lowest homework scores in computing the homework average. This is to allow for life's little emergencies in case you have to miss turning in 1 or 2 homeworks. Late homework will not be accepted.

Grade: Will be based

25% on the homework

25% on the mid term Wednesday 2 May 2012

50% on the Final Exam 15:15 Monday 11 June 2012 Owing to faculty legislation, final exams may not be given early under any circumstances

Notes: No class Memorial Day Monday May 27 2011.

Teaching Associate: Ekaterina Puffini. Academic Calendar

Here are tentative reading and homework assignments. Subject to change

Week 1 (2 Apr - 6 Apr 2012): Read 1-34. Do 1.7, 1.10, 1.22, 1.30, 2.4, 2.5, 2.7.

Week 2 (9 Apr - 13 Apr 2012): Read 34-45. Do 2.12, 2.13., 2.21, 2.22, 2.23, 2.24, 2-25, 2-26. Also Extra problem

Week 3 (16 Apr - 20 Apr 2012): Read 46-56. Do 2.29, 2.30, 2.31, 2.32, 2.35, 2.36, 2.37 [not part b], 2.38, 2.39

Week 4 (23 Apr 23- 27 Apr 2012): Read 56-73. Do 3.1-3.10.

Week 5 (30 Apr - 4 May 2012): Read 56-73. Do 1.18, 3.11, 3.12, 3.14, 3.15, 3.16, 3.17, 3.18, 3.19. Exam Friday May 01

Week 6 (7 May - 11 May 2012): Do 3.13, 3-20, 3.21, 3.22, 3.23, 3.26, 3.28, 3.29, 3.36.

Week 7 (14 May - 18 May 2012): Do 1.17, 3.30, 3.31, 3.32, 3.33, 3.34, 3.37, 3.38

Problem A1: Prove or disprove the following assertion: "Let U be a bounded open subset of \mathbb{R}^n . Then the characteristic function of U is integrable in the extended sense over U .

Problem A2: Prove or disprove the following assertion: "If U is any unbounded open subset of \mathbb{R}^n , then the characteristic function of U is not integrable in the extended sense over U ."

Week 8 (21 May - 25 May 2012): Assignment #8

Week 9 (29 May - 01 June 2012): Assignment #9

(28 May 2012 is Memorial Day)

Week 10 (04 Jun - 08 Jun 2012): TBA

Week 11 (11 June - 15 June 2012) Final Exam Monday 11 June 2011 15:15. Owing to faculty legislation, final exams may not be given early under any circumstances

Notes available in the class:

Change of variable Theorem

Green's, Gauss's, Stokes Theorem