

MTH 201 MULTIVARIABLE CALCULUS AND DIFFERENTIAL EQUATIONS

SEMESTER 1, 2016-2017

COURSE INFORMATION

- **Lectures:** Mon, Wed, Thurs 12 : 00 – 12.55 in L4
- **Instructor:** Dr. Sanjay Kumar Singh <sanjayks@iiserb.ac.in>
- **Office:** 210, Academic Building 1
- **Webpage:** <http://home.iiserb.ac.in/~sanjayks>
- **Tutorial:** Fri 3 : 00 – 3 : 55PM
- **Tutors:**
 - Dr. Anandateertha Mangasuli, (Roll Nos. 15001 – 15064) in L1
 - Dr. Saurabh Shrivastava, (Roll Nos. 15065 – 15129) in L10
 - Dr. Siddhartha Sarkar, (Roll Nos. 15130 – 15195) in L6
 - Dr. Sanjay Kumar Singh, (Roll Nos. 15196 – 15231 and backlogs) in L4
- **Office Hour:** Monday 4 : 00 – 5 : 00 PM, Tuesday 5.00 – 6.00 PM or by appointment.

Syllabus: Vectors in \mathbb{R}^3 , dot product of vectors, length of a vector, orthogonality of vectors, cross product of vectors, Lines, planes, and quadric surfaces, Continuity and differentiability of vector-valued functions, tangent vectors, Functions of two or more variables, limits and continuity, partial derivatives, gradient, directional derivatives, maxima, minima and saddle points, Lagrange multipliers, Double and triple integrals, change of coordinates, vector fields, line integrals, surface integrals, Greens theorem, Divergence theorem, Stokes theorem.

First order ordinary differential equations: variables separable, homogeneous, linear and exact equations

[http : //acad.iiserb.ac.in/cc/mth201.php](http://acad.iiserb.ac.in/cc/mth201.php)

Textbook: Thomas' Calculus, 11th edition (Maurice D. Weir, Joel Hass, Frank R. Gioedano).

Reference books:

- **T. M. Apostol, Calculus, Volumes 2, 2nd edition, Wiley Eastern, 1980.**
- J. Stewart, Multivariable Calculus (7th Edition), Thomas Brooks/Cole, 2011.
- G. B. Thomas and R. L. Finney, Calculus and Analytic Geometry, 9th edition, Indian student edition, Addison-Wesley, 1998
- J. E. Marsden and A. Tromba, Vector Calculus, W.H. Freeman & Company, 2004.
- R. Courant, F. John, Introduction to Calculus and Analysis, Vol. 2, Classics in Mathematics, Springer, 1989.

Grading Policy:

- Surprise Quizzes: 5%
- Quizzes: 15%
- Mid Semester Exam: 30%
- Final Exam: 50%

Assignment. There will be 12 assignments in this course. It will be assigned (posted online on course web page) on Friday, and will be discussed on the following Friday during tutorial.

You can discuss your solutions with your tutors in class and give your assignment for checking if you need.

Quiz: There will be 3 planned quizzes and two or three surprise quizzes in the semester. Proposed dates for planned quizzes are as follows:

- Quiz 1: 26/08/2016.
- Quiz 2: 25/10/2016.
- Quiz 3: 11/11/2016

For grading only best 2 will be counted.

Home work and class exercise. In every class you will get some home work which you don't need to submit. You can discuss it in office hours.

Problems in your examination will be based on assignments, home works and class exercises.

*. In case of any further questions regarding the course, please send me an email.