INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

July – November, 2017

MA101: MATHEMATICS I [3-1-0-8]

Syllabus and Course Plan

Linear Algebra: Systems of linear equations and their solutions; vector space R^n and its subspaces; spanning set and linear independence; matrices, inverse and determinant; range space and rank, null space and nullity, eigenvalues and eigenvectors; diagonalization of matrices; similarity; inner product, Gram-Schmidt process; vector spaces (over the field of real and complex numbers), linear transformations.

Calculus: Convergence of sequences and series of real numbers; continuity of functions; differentiability, Rolle's theorem, mean value theorem, Taylor's theorem; power series; Riemann integration, fundamental theorem of calculus, improper integrals; application to length, area, volume and surface area of revolution.

Texts:

1. D. Poole, **Linear Algebra: A Modern Introduction**, 2nd Edition, Brooks/Cole, 2005.
2. G. B. Thomas and R. L. Finney, **Calculus and Analytic Geometry**, 9th Edition, Pearson Education India, 1996.

References:

1. G. Strang**, Linear Algebra and Its Applications**, 4th Edition, Brooks/Cole India, 2006.
2. W. Cheney and D. Kincaid, **Linear Algebra: Theory and Applications,** 1st Edition, Jones & Bartlett, 2010.
3. R. G. Bartle and D. R. Sherbert, **Introduction to Real Analysis**, 3rd Edition, Wiley India, 2005.

Instructors:

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Anjan Kumar Chakrabarty (Calculus Part), Office: E - 104 (Maths Dept.), Ph. 2622, Email: anjankc@iitg.ernet.in

Course Web sites: http://www.iitg.ernet.in/vinay.wagh/ and http://www.iitg.ernet.in/anjankc/

Attendance: It is expected that you attend all the classes.

Grading: Grading will be done based on the total marks obtained in the quizzes, mid semester exam and end semester exam. Exams / quizzes will have the following weight-ages:

Quiz I: 10 marks (on 31st August 2017, Thursday)

Mid Semester Exam: 30 marks (on 20th September 2017, Wednesday)

Quiz II: 10 marks (on 9th November 2017, Thursday)

End Semester Exam: 50 marks (on 26th November 2017, Sunday)

Availability of Course Materials: All course related materials like Detailed Syllabus, Tutorial Problem Sets/ Solutions, Practice Problem Sets/Solutions, Lecture Slides, Summary of Lectures etc., will be available for photocopying in the stationary shop at Lecture Hall Complex/Core-I Academic Building, and will also be uploaded in the course websites.

Tutorial Group	Venue	Tutor	Tutor's email @iitg.ernet.in
T 1	L1	Rupak Kumar Dalai	rupak.dalai
T 2	L2	Sneh Bala Sinha	sinhasneh
T 3	L3	Vidushi	rinkyguptaiitg
T 4	L4	Nilanjan Bag	b.nilanjan
T 5	1006	Sumit Kumar Rano	s.rano
T 6	1G1	Sunil Das	sunil.das
T 7	1G2	Sabyasachi Mondal	m.sabyasachi
T 8	1207	Rakesh Jana	j.rakesh
T 9	2101	Neelam Saikia	neelam16
T 10	2102	Ramesh Prasad Panda	r.panda
T 11	4001	Zakir Ahmed	zakirahmed
T 12	4G3	Jibrail Ali	jibrail
T 13	4G4	Somnath Ghosh	gsomnath
T 14	4005	Nandita Roy	nandita.roy