

INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

November 2020 – February 2021

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

Syllabus and Course Plan

**Single variable 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.

**Multivariable calculus:** Vector functions of one variable - continuity and differentiability; Scalar valued functions of several variables, continuity, partial derivatives, directional derivatives, gradient, differentiability, chain rule; Tangent planes and normals, maxima and minima, Lagrange multiplier method; Repeated and multiple integrals with applications to volume, surface area; Change of variables; Vector fields, line and surface integrals; Green's, Gauss and Stokes' theorems and their applications.

Textbook: G. B. Thomas, Jr. and R. L. Finney, Calculus and Analytic Geometry, Pearson India, 9th Edition, 2006

Instructors:

Sukanta Pati (Single variable calculus), Office: E - 307 (Maths Dept.), Ph. 2607, email: [pati@iitg.ac.in](mailto:pati@iitg.ac.in)

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Course Webpage: [http://www.iitg.ac.in/rksri/MA101\\_2020.htm](http://www.iitg.ac.in/rksri/MA101_2020.htm)

**Attendance:** Classes and tutorials will be held online through the MS team. It is expected that you attend all the classes and tutorials.

Regarding Classes: Pre-recorded video lectures will be uploaded on MS team [Grp MA101 2020 Teaching Materials](#) for each class before the schedule of the lecture. You are expected to go through the video lectures at your convenience. Further, the instructor of the course will hold live sessions once a week for discussion and doubt clearing with each Division of the students as per the following schedule:

Division	Day	Duration	MS Team for Division
I (CSE & CE)	Wednesday (C1)	15:00 to 15:55	Grp_MA101_2020_LiveSession_Div-I
II (BT, ECE & EEE)	Thursday (C1)	15:00 to 15:55	Grp_MA101_2020_LiveSession_Div-II
III (ME and M&C)	Wednesday (C)	10:00 to 10:55	Grp_MA101_2020_LiveSession_Div-III
IV (CL, CST & EPH)	Thursday (C)	10:00 to 10:55	Grp_MA101_2020_LiveSession_Div-IV

**Regarding tutorials:** The allotted slots for class/tutorial of MA101 are C & C1. All tutorials will be held live on Monday from 7:55 to 8:50 through the MS Team. Each tutorial group will have a dedicated MS Team. Do the tutorial problems in advance and proceed with the respective live tutorial as mentioned below:

Tutorial group	Tutor	Tutor's email	MS Team
T1	Papi Ray	<a href="mailto:popiroy93@iitg.ac.in">popiroy93@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T1
T2	Deepa Antony	<a href="mailto:deepa172123009@iitg.ac.in">deepa172123009@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T2
T3	Uttam Kumar	<a href="mailto:uttam.maths@iitg.ac.in">uttam.maths@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T3
T4	Jaitra Chattopadhyay	<a href="mailto:jaitra@iitg.ac.in">jaitra@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T4
T5	Anjali Singh	<a href="mailto:anjalisingh@iitg.ac.in">anjalisingh@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T5
T6	Ashish Poonia	<a href="mailto:apoonia@iitg.ac.in">apoonia@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T6
T7	Deb Narayan Barik	<a href="mailto:d.narayan@iitg.ac.in">d.narayan@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T7
T8	Rik Ghosh	<a href="mailto:rik.ghosh@iitg.ac.in">rik.ghosh@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T8
T9	Devang Sinha	<a href="mailto:dsinha@iitg.ac.in">dsinha@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T9
T10	Gopinath Sadhu	<a href="mailto:gsadhu@iitg.ac.in">gsadhu@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T10
T11	Madhab Mondal	<a href="mailto:m.mondal@iitg.ac.in">m.mondal@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T11
T12	Prakash Raj	<a href="mailto:prakashraj@iitg.ac.in">prakashraj@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T12

T13	Ramendra S. Chauhan	<a href="mailto:ramendra.singh@iitg.ac.in">ramendra.singh@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T13
T14	Shyam S. Mondal	<a href="mailto:shyam.mondal@iitg.ac.in">shyam.mondal@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T14
T15	Rupchand Sutradhar	<a href="mailto:rsutradhar@iitg.ac.in">rsutradhar@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T15
T16	Shilpi Jain	<a href="mailto:shilpi.jain@iitg.ac.in">shilpi.jain@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T16
T17	Sirshendu Pan	<a href="mailto:sirshendu_pan@iitg.ac.in">sirshendu_pan@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T17
T18	Abhilash Sahu	<a href="mailto:sahu.abhilash16@iitg.ac.in">sahu.abhilash16@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T18
T20	Ajit Singh	<a href="mailto:ajit18@iitg.ac.in">ajit18@iitg.ac.in</a>	Grp_MA101_2020_Live_Tut_T20

Regarding Grading: There will be four quizzes for MA101, and each quiz will be of 25 marks. Grading will be done based on the total marks obtained in the quizzes. Each quiz will be of multiple choice and negative marking.

Note: In case the end-semester examination will be held offline (to be decided by the academic section), the grading will be done based on the total marks obtained in the four quizzes and the end-semester examination.

#### Quizzes Schedule:

Quiz	Date	MS Form
Quiz-I	12.12.2020 (Saturday) 10:00 --11:00	QP and MS form will be uploaded at appropriate time on <a href="#">MS team Grp_MA101_2020_Teaching_Materials</a>
Quiz-II	02.01.2021 (Saturday) 10:00 –11:00	QP and MS form will be uploaded at appropriate time on <a href="#">MS team Grp_MA101_2020_Teaching_Materials</a>
Quiz-III	30.01.2021 (Saturday) 10:00 –11:00	QP and MS form will be uploaded at appropriate time on <a href="#">MS team Grp_MA101_2020_Teaching_Materials</a>
Quiz-IV	20.02.2021 (Saturday) 10:00 –11:00	QP and MS form will be uploaded at appropriate time on <a href="#">MS team Grp_MA101_2020_Teaching_Materials</a>

#### Guidelines for Quizzes:

1. You will be given 5 minutes extra for the submission of each quiz.
2. The quiz portal will automatically be close at 11:005hrs.
3. No complaint will ever be entertained on the above matter under any circumstance.

4. There will be a mock-no-value-quiz on 5th December 2020 to make you acquainted with the process in advance.

**Availability of Course Materials:** All course-related materials, Tutorial Problem Sets/ Solutions, Pre-recorded Video lectures, Lecture Slides, etc., will be available on the [MS team Grp\\_MA101\\_2020\\_Teaching\\_Materials](#) and course webpage in due course of time.

Keep checking the course webpage and the MS team [Grp\\_MA101\\_2020\\_Teaching\\_Materials](#) at least once a week for more details and updates. We are not responsible if you miss any of them.