MA201 Mathematics III

Complex Analysis & Partial Differential Equations

Monsoon Semester of AY 2025-2026 (July-November 2025)

AC, MGPP, SN, SNB

IIT Guwahati

Office Locations & Emails of the Instructors

Division	Complex Analysis	Partial Differential Equations
Division-1 (ECE, EEE, EN)	Dr. S. Natesan (natesan@iitg.ac.in, E-308)	Dr. S. Natesan (natesan@iitg.ac.in, E-308)
Division-2 (CL, CST, ME)	Dr. Arup Chattopadhyay (arupchatt@iitg.ac.in, E1-209)	Dr. Swaroop Nandan Bora (swaroop@iitg.ac.in, E-306)
Division-3 (CE, M&C, BT)	Dr. M. Guru Prem Prasad (mgpp@iitg.ac.in, E-207)	Dr. M. Guru Prem Prasad (mgpp@iitg.ac.in, E-207)

Course Coordinators: Dr. M. Guru Prem Prasad (Complex Analysis) and Dr. Swaroop Nandan Bora (Partial Differential Equations)

For any queries or doubts or help in MA201, Please feel free to approach any of the course instructors.

Tutors & their Emails (Pl. Note the Tutorial Class Venue)

T. Group	T. Venue	Tutors	Email (@iitg.ac.in)
T01			
T02			
T03			
T04			
T05			
T06			
T07			
T08			
T09			
T10			
T11			
T12			

Syllabus of MA102

Complex Analysis: Complex numbers and elementary properties; Complex functions - limits, continuity and differentiation, Cauchy-Riemann equations, analytic and harmonic functions, elementary analytic functions, anti-derivatives and line (contour) integrals, Cauchy-Goursat theorem, Cauchy's integral formula, Morera's theorem, Liouville's theorem, Fundamental theorem of algebra and maximum modulus principle; Power series, Taylor series, zeros of analytic functions, singularities and Laurent series, Rouche's theorem and argument principle, residues, Cauchy's Residue theorem and applications, Mobius transformations and applications.

Partial differential equations: Fourier series, half-range Fourier series, Fourier transforms, finite sine and cosine transforms; First order partial differential equations, solutions of linear and quasilinear first order PDEs, method of characteristics; Classification of second-order PDEs, canonical form; Initial and boundary value problems involving wave equation and heat conduction equation, boundary value problems involving Laplace equation and solutions by method of separation of variables; Initial-boundary value problems in non-rectangular coordinates. Laplace and inverse Laplace transforms, properties, convolutions; Solution of ODEs and PDEs by Laplace transform; Solution of PDEs by Fourier transform.

MA201: Texts and References

Text Books:

1. J. W. Brown and R. V. Churchill, Complex Variables and Applications, 7th Edition, Mc-Graw Hill, 2004.
2. K. Sankara Rao, Introduction to Partial Differential Equations, 3rd Edition, Prentice Hall of India, 2011.
3. E. Kreyszig, Advanced Engineering Mathematics, 10th Edition, Wiley, 2015.

Reference Books:

1. J. H. Mathews and R. W. Howell, Complex Analysis for Mathematics and Engineering, 3rd Edition, Narosa,1998.
2. I. N. Sneddon, Elements of Partial Differential Equations, McGraw Hill, 1957.
3. S. J. Farlow, Partial Differential Equations for Scientists and Engineers, Dover Publications, 1993.

Course Webpage at Moodle

- The course webpage for MA201 Mathematics-III July-November 2025 is maintained at Moodle site. The course information, notices, tutorial sheets, lecture slides, and everything will be uploaded in this moodle webpage of MA102.
- You are requested to login at https://www.iitg.ac.in/moodle/login/index.php with your IITG Email ID and ERP Password and do enrollment / registration for the course MA201 Mathematics-III July-November 2025 with the student enrolment key complexpde.
- All students of MA201 should login to Moodle regularly in every week and see the updates of MA201.

Continuous Assessments & Grading Policy

Assessments	**Day & Date**	**Weightage** (% of Marks)
Quiz-1	Monday 25-August-2025	15%
Mid-Semester Exam	During Septemeber 14 to 21, 2025	35%
Quiz-2	Monday 27-October-2025	15%
End-Semester Exam	During November 16 to 24, 2025	35%

- Grading of the course will be done based on the total marks scored by the students in ALL the above mentioned Assessments.
- For absentees, NO MAKE UP Test will be conducted for Quiz-1, Quiz-2, and Mid Semester Exam, irrespective of any reasons.
- You should preserve the evaluated answer scripts of Quiz-1, Quiz-2, Mid Semester Exam till 15.12.2025, if you need to seek clarification in awarded grades.

Attendance Policy

- Attendance in all lecture and tutorial classes is compulsory.
- Students, who do not meet 75% attendance requirement will be dereigstered from the course. Further such students are NOT eligible for appearing in the Supplementary Examination of MA201.
- For attendance in the lecture classes, biometric attendance will be taken.
- For attendance in the tutorial classes, attendance sheets will be circulated.
- In the tutorial classes, each student is expected to sign against his/her name only in the attendance sheets. In case, any student is found marking proxy for some other student, an appropriate disciplinary action will be taken on both students involved in the proxy matter.

Lecture Policy

- In the Lecture Classes, Definitions, Theorems, Proofs, Examples, Concepts, etc., are explained using mainly slides.
- The slides will serve as the lecture material and are normally uploaded in the Moodle Course Webpage after the lecture. Please see MA201 Lecture Slides Folder regularly.
- In the Lecture Classes, the details or any material worked out on the black board should be noted down by the students.
- The materials worked out on the black board will NOT be available in the slides.

Tutorial Policy

- Tutorial sheets will be uploaded in the moodle webpage of MA201 in the folder MA201 Tutorial Sheets. Students are instructed to visit this folder frequently and see & download tutorial sheets.
- All students should work out problems as much as possible from the tutorial sheets before coming to the tutorial classes. The aim of tutorials is to clear doubts of the students by working out important/ difficult problems. Students should note it down the material / answers worked out on the board by the tutors.
- Solutions to the Tutorial Sheets will NOT be uploaded in the course webpage of MA201 or anywhere.