

**Information of the course on Calculus (SMD001U1M) for B.Tech.
1st semester at IIT Jammu, India**

Course contents:

- Review of limit, continuity and differentiability, uniform continuity. Mean value theorems and applications, Taylor's theorem, maxima and minima
- Sequences and series, limsup, liminf, convergence of sequences and series of real numbers, absolute and conditional convergence
- Riemann integral, fundamental theorem of integral calculus, applications of definite integrals, improper integrals and its applications
- Functions of several variables, limit and continuity, partial derivatives and differentiability, gradient, directional derivatives, chain rule, Taylor's theorem, maxima and minima and the method of Lagrange multipliers. Double and triple integration, Jacobian and change of variables formula
- Parameterization of curves and surfaces, vector fields, divergence and curl. Line integrals, Green's theorem, surface integral, Gauss and Stokes' theorems with applications.

Credit system for the course:

- 20 marks for quizzes, Quizzes will be on 30/11/2020, 14/12/2020, 28/12/2020, 25/01/2021, 8/02/2021 and 22/02/2021.
- 30 marks for Mid-Sem exam. Mid-sem exam will be on January 11, 2021.
- 50 marks for End-Sem exam. Date of end-Sem exam shall be announced later.

References for the course:

1. A Basic Course in Real Analysis by Ajit Kumar and S. Kumaresan.
2. Calculus with Applications by Peter D. Lax and Maria Shea Terrell.
3. Multivariable Calculus with Applications by Peter D. Lax and Maria Shea Terrell.
4. Calculus - early transcendentals by James Stewart (latest edition).