

Gujarat University



National Education Policy-2020

Syllabus for B. Sc. Sem-I (Mathematics-Multi-Disciplinary)

Effective from June-2023

Subject Code For UG Science Courses: -MAT

Seme ster	Discipline Specific Courses - Core (DSC - C)	Minor (DSC - M)	Multi / Inter disciplinary courses (MDC / IDC)	Ability Enhancement Courses (Language) (AEC)	Enhancement Courses / Internship / Dissertation Skill	Common Value Added Courses (VAC / IKS)	Total Credits
I	DSC - C - MAT - 111T : 4 DSC - C - MAT - 112P : 4	DSC - M - MAT - 113T : 2 DSC - M - MAT - 113P : 2	MDC - MAT - 114T : 2 MDC - MAT - 114P : 2	AEC - 115 : 2	SEC - 116 : 2	IKS - 117 : 2	22
II	DSC - C - MAT - 121T : 4 DSC - C - MAT - 122P : 4	DSC - M - MAT - 123T : 2 DSC - M - MAT - 123P : 2	MDC - MAT - 124T : 2 MDC - MAT - 124P : 2	AEC - 125 : 2	SEC - 126 : 2	VAC - 127 : 2	22
III	DSC - C - MAT - 231T : 4 DSC - C - MAT - 232T : 4 DSC - C - MAT - 233P : 4	-	MDC - MAT - 234T : 2 MDC - MAT - 234P : 2	AEC - 235 : 2	SEC - 236 : 2	IKS - 237 : 2	22
IV	DSC - C - MAT - 241T : 4 DSC - C - MAT - 242T : 4 DSC - C - MAT - 243P : 4	DSC - M - MAT - 244T : 2 DSC - M - MAT - 244P : 2	-	AEC - 245 : 2	SEC - 246 : 2	VAC - 247 : 2	22
V	DSC - C - MAT - 351T : 4 DSC - C - MAT - 352T : 4 DSC - C - MAT - 353P : 4	DSC - M - MAT - 354T : 4 DSC - M - MAT - 355P : 4	-	-	SEC - 356 : 2	-	22
VI	DSC - C - MAT - 361T : 4 DSC - C - MAT - 362T : 4 DSC - C - MAT - 363P : 4	DSC - M - MAT - 364T : 2 DSC - M - MAT - 364P : 2	-	AEC - 365 : 2	Internship - 4	-	22
VII	DSC - C - MAT - 471T : 4 DSC - C - MAT - 472T : 4 DSC - C - MAT - 473P : 4	DSC - M - MAT - 474T : 2 DSC - M - MAT - 474P : 2	-	-	-	OJT / RP - 6	22
VI	DSC - C - MAT - 481T : 4 DSC - C - MAT - 482T : 4 DSC - C - MAT - 483P : 4	DSC - M - MAT - 484T : 2 DSC - M - MAT - 484P : 2	-	-	-	OJT / RP - 6	22

Syllabus for B.Sc. Semester – I (MATHEMATICS)

Course: MDC - MAT - 114T: CALCULUS – I and its APPLICATIONS

Credit: 2

UNIT I

- (a) Successive Derivatives, Standard results for n derivative, Leibniz's theorem.
- (b) Taylor's and Maclaurin's theorems, Using Taylor's and Maclaurin's theorems find power series of various functions.

UNIT II

- (a) Differential Equations of First order and First Degree:
Variable Separable, Homogeneous & non – homogeneous Differential Equations, Exact Differential Equations, Integrating factors, Linear Differential Equations of First order and First Degree, Bernoulli's Differential Equations.
- (b) Method of solving Differential Equations of First order and higher degree:
Solvable for y , Solvable for x , Solvable for p , Clairaut's Differential Equation, Lagrange's Differential Equation.

Reference Books:

- 1) Calculus and Analytic Geometric – G. B. Thomas & R. L. Finney. Pearson Education. Indian Reprint
- 2) Calculus – James Stewart, Sixth Edition (E -Book)
- 3) Calculus - T. M. Apostol. Volume – I
- 4) Differential Calculus – Shanti Narayan, P. K. Mittal, S. Chand & Co
- 5) Differential Calculus – Harikishan, Atlantic Publishers
- 6) Calculus – M. Spivak
- 7) Mathematical Analysis –S C Malik & Savita Arora, Second Edition, New Age Int. (P) Ltd
- 8) Differential Calculus – Shanti Narayan
- 9) Calculus – James Stewart

Syllabus for B.Sc. Semester – I (Mathematics Practical)

Course: MDC - MAT - 114P: CALCULUS – I and its APPLICATIONS

Credit: 2

UNIT I: Problems based -Successive Derivative, Leibniz's theorem.

UNIT II: Problems on solving differential equations

Reference Books:

- 1) Calculus and Analytic Geometric – G. B. Thomas & R. L. Finney. Pearson Education. Indian Reprint
- 2) Calculus – James Stewart, Sixth Edition (e -Book)
- 3) Calculus - T. M. Apostol. Volume – I
- 4) Differential Calculus – Shanti Narayan, P. K. Mittal, S. Chand & Co
- 5) Differential Calculus – Harikishan, Atlantic Publishers
- 6) Calculus – M. Spivak
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- 8) Differential Calculus – Shanti Narayan
- 9) Calculus – James Stewart

MDC - MAT – 114P B.Sc. Sem-1 (Mathematics Practical: Calculus-I and its APPLICATIONS)

List of Practical Problems

Unit:- 1

Practical-1: Problems on Successive Differentiation

Practical-2: Problems on finding n^{th} derivative of the functions by using Leibnitz theorem,

Practical-3: Problems on applications of Leibnitz theorem.

Practical-4: Problems on Successive Derivatives and Leibnitz theorem.

Practical-5: Problems on Expansions of infinite power series using Taylor's formula.

Practical-6: Problems on Expansions of infinite power series using Maclaurin's formula.

Unit:- 2

Practical-7: Problems on solving differential equations based on Variable Separable Method

Practical-8: Problems on solving Homogeneous Differential equations.

Practical-9: Problems on solving Linear Differential equations.

Practical-10: Problems on solving Bernoulli's Differential equations.

Practical-11: Problems on solving Exact and Non-Exact Differential Equations.

Practical-12: Problems on solving First order and Higher degree Differential equations.
