

**Lesson Plan for Course: B.Sc. (G) Class-2<sup>nd</sup> Year Code: MTMG Paper-II Marks: 100**

- Course Name: Modern Algebra, Geometry of Three Dimensions, Differential Calculus, Integral Calculus, Ordinary Differential Equations.
- Course coordinator: Pintu Debnath
- Course Outcomes:
  - CO-1. Learn some basic properties of Set, Groups and Subgroups.
  - CO-2. To solve problems on formation of basis of a vector space.
  - CO-3. To find Characteristic equation of square matrix and apply Cayley-Hamilton Theorem for inverse
  - CO-4. To solve the problems related to straight lines in three dimensions.
  - CO-5. Learn about Cauchy's general principle of convergence and its applications.
  - CO-6. Learn convergency test, Leibnitz test to Alternating series.
  - CO-7. Understand Rolle's Theorem and its geometrical interpretation.
  - CO-8. Find out Taylor's and Maclaurin's Infinite series of some functions.
  - CO-9. Capable to apply L'Hospital's Rule to find limit.
  - CO-10. To solve the problems related to Maxima and Minima for a function with Lagrange's method.
  - CO-11. Find out Envelope of family of straight lines and of curves and singular points.
  - CO-12. Know properties of Beta and Gamma Function.
  - CO-13. Get Knowledge on Double integral.
  - CO-14. Calculate volume and surface areas of solids formed by revolution of plane curve.
  - CO-15. Solve Second order linear ODE with constant co-efficient and Euler's Homogeneous equations.
  - CO-16. Find out Orthogonal Trajectories.

**Course planner**

Month	Course Topic	Teacher	No. of Classes	Remarks*
July				Theoretical-00 Tutorial-00
August				Theoretical-00 Tutorial-00
Sept	Integral Calculus-II	SM	15	Theoretical-12 Tutorial-03
Oct	Differential Calculus-II	SM	08	Theoretical-06 Tutorial-02
Nov	Differential Calculus-II	SM	06	Theoretical-04 Tutorial-02
Dec	Analytical Geometry Of Three Dimensions	SM	13	Theoretical-10 Tutorial-03
Jan	Ordinary Differential Equations	SM	05	Theoretical-04 Tutorial-01
Feb				Theoretical-00 Tutorial-00
Mar	Modern Algebra	SM	16	Theoretical-13 Tutorial-03
Apr	<b>Final Examination</b>			
May				
Jun				
	<b>Assessment:</b> Test Examination		<b>Total: 63</b>	<b>Theoretical-49 Tutorial-14</b>

**Books:**

- D. Chaterjee & B. K. Pal, Comprehensive Degree Mathematics (Part-2), U. N, Dhur & Sons Pvt. Ltd.
- Cohn, Basic Algebra, Springer

**Lesson Plan for Course: B.Sc. (G) Class-2<sup>nd</sup> Year Code: MTMG Paper-III Marks: 100**

- Course Name: Numerical Methods, Linear Programming, Probability & Statistics.
- Course coordinator: Biswajit Sarkar
- Course Outcomes:
  - CO-1. Learn Newton's Forward Interpolation and Lagrange's Interpolation Formula.
  - CO-2. Calculate numerical Integration by Trapezoidal and Simpson's 1/3rd rule.
  - CO-3. To find a real root of an equation by Bisection and Newton-Raphson methods.
  - CO-4. Learn about LPP and its solution processes.
  - CO-5. Find optimal solution of transportation problem and assignment problem.
  - CO-6. Express velocity and acceleration of Cartesian and polar co-ordinate.
  - CO-7. Learn about Principles of conservation of energy and momentum, motion under impulsive forces, Equation of Energy Conservative forces and Kepler's laws.
  - CO-8. Understand the basic concepts of classical probability, probability distribution and density function, central limit theorem.
  - CO-9. Learn about algebra of difference operator, calculus of variation.
  - CO-10. Solve Brachistochrone, Geodesics and Isoerimetric problems.

**Course planner**

Month	Course Topic	Teacher	No. of Classes	Remarks*
July	Statistics	PD	05	Theoretical-08 Tutorial-03
	Linear Programming	SM	06	
August	Statistics	PD	05	Theoretical-15 Tutorial-03
	Linear Programming	SM	13	
Sept	Statistics	PD	06	Theoretical-04 Tutorial-02
Oct	Statistics	PD	04	Theoretical-02 Tutorial-02
Nov	Probability	PD	05	Theoretical-03 Tutorial-02
Dec	Probability	PD	05	Theoretical-03 Tutorial-02
Jan				Theoretical-00 Tutorial-00
Feb	Probability	PD	05	Theoretical-12 Tutorial-04
	Numerical Methods	SM	11	
Mar	Probability	PD	04	Theoretical-03 Tutorial-01
Apr	<b>Final Examination</b>			
May				
Jun				
	<b>Assessment:</b> Test Examination		<b>Total: 69</b>	<b>Theoretical-50 Tutorial-19</b>

**Books:**

- D. Chatterjee & B. K. Pal, Comprehensive Degree Mathematics (Part-2), U. N, Dhur & Sons Pvt. Ltd.
- S. K. De, S. Sen and Banerjee, Mathematical Probability (U. N. Dhur & Sons Pvt. Ltd.)
- S. K. De and S. Sen, Mathematical Statistics (U. N. Dhur & Sons Pvt. Ltd.)
- P. M. Karak, Linear Programming (New Central Book Agency)

**Lesson Plan for Course: B.Sc. (G) Class-3<sup>rd</sup> Year Code: MTMG Paper-IV Marks: 100**

- Course Name: Elements of Computer Science and Programming, Discrete Mathematics
- Course coordinator: Sudip Mondal
- Course Outcomes:
  - CO-1. To learn Two-element Boolean algebra, Boolean function and their applications.
  - CO-2. Learn Logical Gates.
  - CO-3. Concept on historical development, operating system, hardware and software.
  - CO-4. Able to transfer numbers from a system to another.
  - CO-5. To get some basic knowledge Programming (BASIC, FORTRAN, C, C++,).
  - CO-6. Learn utilities and important features of Algorithms and Flow Charts;
  - CO-7. To know some Programme execution control (logical if, if-then, Arrays, etc.)
  - CO-8. Apply Weierstrass M-Tests for uniform convergence of sequence of functions.
  - CO-9. To find Radius of convergence of power series and use of Abel's Theorems.
  - CO-10. To know elementary properties of Laplace Transform and its inverse in ODE.
  - CO-11. Solve PDE using Lagrange's method.
  - CO-12. Learn mathematical Induction and apply in different problem.
  - CO-13. To use Chinese remainder theorem to solve system of linear congruence.
  - CO-14. To understand Fermat's little theorem, Euler's theorem and Wilson's theorem.

**Course planner**

Month	Course Topic	Teacher	No. of Classes	Remarks*
July	Discrete Mathematics (Unit 1-4)	PD	05	Theoretical-06 Tutorial-03
	Elements of Computer Science and Programming (Unit-A)	BS	03	
August	Discrete Mathematics (Unit 1-4)	PD	11	Theoretical-12 Tutorial-03
	Elements of Computer Science and Programming (Unit-A)	BS	04	
Sept	Discrete Mathematics (Unit 1-4)	PD	09	Theoretical-11 Tutorial-04
	Elements of Computer Science and Programming (Unit-A)	BS	06	
Oct	Elements of Computer Science and Programming (Unit-B)	PD	05	Theoretical-06 Tutorial-03
	Elements of Computer Science and Programming (Unit-A)	BS	03	
Nov	Elements of Computer Science and Programming (Unit-B)	PD	05	Theoretical-06 Tutorial-03
	Discrete Mathematics (Unit 5-6)	BS	03	
Dec	Elements of Computer Science and Programming (Unit-B)	PD	08	Theoretical-09 Tutorial-03
	Discrete Mathematics (Unit 5-6)	BS	04	
Jan	Elements of Computer Science and Programming (Unit-B)	PD	02	Theoretical-02 Tutorial-01
	Discrete Mathematics (Unit 5-6)	BS	01	
Feb	Elements of Computer Science and Programming (Unit-B)	PD	06	Theoretical-09 Tutorial-02
	Discrete Mathematics (Unit 5-6)	BS	05	
Mar	<b>Final Examination</b>			
Apr				
May				
Jun				
	<b>Assessment:</b> Test Examination		<b>Total: 80</b>	<b>Theoretical-52 Tutorial-22</b>

**Books:**

- D. Chatterjee & B. K. Pal, Comprehensive Degree Mathematics (Part-3), U. N, Dhur & Sons Pvt. Ltd.
- C. Xavier, FORTRAN 77 and numerical methods (Wiley Eastern limited).
- Yashvant Kanetkar, Let us C (BPB Publications).