

**Lesson Plan for Course: B.Sc (Sem-II) (DSC) Code: MTMGCOR02T Credit: 6**

- Course Name: Differential Equations
- Course coordinator: Biswajit Sarkar
- Course Outcomes:
  - CO-1. To solve first order first degree ODEs including exact and non-exact equations and higher-order ODEs including properties of Wronskian.
  - CO-2. To solve linear homogenous and non-homogeneous ODEs including Cauchy-Euler equation.
  - CO-3. To solve simultaneous and total differential equations.
  - CO-4. Able to form first order partial differential equations, to solve PDE by Lagrange's method and Charpit's method.
  - CO-5. To classify second order partial differential equations.

**Course planner**

Month	Course Topic	Teacher	Class-hour	Remarks*
January	Order and degree of partial differential equations.	BS	01	Theoretical – 01 Tutorial - 00
	First order exact differential equations.	SM	05	Theoretical – 04 Tutorial - 01
	Concept of linear partial differential equations.	PD	01	Theoretical – 01 Tutorial - 00
February	Formation of first order partial differential equations, Linear partial differential equation of first order.	BS	06	Theoretical – 04 Tutorial - 02
	Integrating factors, rules to find an integrating factor. First order higher degree equations solvable for $x, y, p$ .	SM	16	Theoretical – 14 Tutorial - 02
	Concept of non-linear partial differential equations, Lagrange's method.	PD	06	Theoretical – 05 Tutorial - 01
	<b>1<sup>st</sup> Internal Assessment</b>			
March	Linear homogenous equations with constant coefficients, Linear non-homogenous equations.	BS	06	Theoretical – 04 Tutorial - 02
	Methods for solving higher-order differential equations. Basic theory of linear differential equations, Wronskian, and its properties. Solving a differential equation by reducing its order.	SM	14	Theoretical – 12 Tutorial - 02
	Charpit's method.	PD	06	Theoretical – 05 Tutorial - 01
	Classification of second order partial differential equations into elliptic through illustrations only.	PD	03	Theoretical – 02 Tutorial - 01
<b>2<sup>nd</sup> Internal Assessment</b>				
May	The method of variation of parameters, The Cauchy-Euler equation.	BS	06	Theoretical – 05 Tutorial - 01
	Simultaneous differential equations, Total differential equations.	SM	14	Theoretical – 13 Tutorial - 01
	Classification of second order partial differential equations into parabolic and hyperbolic through illustrations only.	PD	06	Theoretical – 05 Tutorial - 01
June	<b>End Semester Examination</b>			

	<b>Assessment:</b> Internal Assessment & Assignment		<b>Total: 90 Hrs</b>	<b>Theoretical – 75 Tutorial - 15</b>
--	---	--	----------------------	---------------------------------------

**Books:**

- Shepley L. Ross, Differential Equations, 3rd Ed., John Wiley and Sons, 1984.
- Sneddon, Elements of Partial Differential Equations, McGraw-Hill, International Edition, 1967.
- B. Pal, S. Raychowdhury, S. Jana, Differential Equation, Semester-II, Santra Publication Pvt. Ltd., Kolkata-700073.

**Lesson Plan for Course: B.Sc(Sem-II) (GE) Code: MTMHGEC02T Credit: 6**

- Course Name: Differential Equations
- Course coordinator: Biswajit Sarkar
- Course Outcomes:
  - CO-1. To solve first order first degree ODEs including exact and non-exact equations and higher-order ODEs including properties of Wronskian.
  - CO-2. To solve linear homogenous and non-homogeneous ODEs including Cauchy-Euler equation.
  - CO-3. To solve simultaneous and total differential equations.
  - CO-4. Able to form first order partial differential equations, to solve PDE by Lagrange's method and Charpit's method.
  - CO-5. To classify second order partial differential equations.

**Course planner**

Month	Course Topic	Teacher	Class-hour	Remarks*
January	Order and degree of partial differential equations.	BS	01	Theoretical – 01 Tutorial - 00
	First order exact differential equations.	SM	05	Theoretical – 04 Tutorial - 01
	Concept of linear partial differential equations.	PD	01	Theoretical – 01 Tutorial - 00
February	Formation of first order partial differential equations, Linear partial differential equation of first order.	BS	06	Theoretical – 04 Tutorial - 02
	Integrating factors, rules to find an integrating factor. First order higher degree equations solvable for $x, y, p$ .	SM	16	Theoretical – 14 Tutorial - 02
	Concept of non-linear partial differential equations, Lagrange's method.	PD	06	Theoretical – 05 Tutorial - 01
<b>1<sup>st</sup> Internal Assessment</b>				
March	Linear homogenous equations with constant coefficients, Linear non-homogenous equations.	BS	06	Theoretical – 04 Tutorial - 02
	Methods for solving higher-order differential equations. Basic theory of linear differential equations, Wronskian, and its properties. Solving a differential equation by reducing its order.	SM	14	Theoretical – 12 Tutorial - 02
	Charpit's method.	PD	06	Theoretical – 05 Tutorial - 01
	Classification of second order partial differential equations into elliptic through illustrations only.	PD	03	Theoretical – 02 Tutorial - 01
<b>2<sup>nd</sup> Internal Assessment</b>				
May	The method of variation of parameters, The Cauchy-Euler equation.	BS	06	Theoretical – 05 Tutorial - 01
	Simultaneous differential equations, Total differential equations.	SM	14	Theoretical – 13 Tutorial - 01
	Classification of second order partial differential equations into parabolic and hyperbolic through illustrations only.	PD	06	Theoretical – 05 Tutorial - 01
June	<b>End Semester Examination</b>			

	<b>Assessment:</b> Internal Assessment & Assignment		<b>Total: 90 Hrs</b>	<b>Theoretical – 75 Tutorial - 15</b>
--	---	--	----------------------	---------------------------------------

**Books:**

- Shepley L. Ross, Differential Equations, 3rd Ed., John Wiley and Sons, 1984.
- Sneddon, Elements of Partial Differential Equations, McGraw-Hill, International Edition, 1967.
- B. Pal, S. Raychowdhury, S. Jana, Differential Equation, Semester-II, Santra Publication Pvt. Ltd., Kolkata-700073.