Department of Mathematics, Basirhat College Session: Jan-Jun, 2019

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

- Course Name: Differential EquationsCourse 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**

Semester: II

Month	Course Topic	Teacher	Class-hour	Remarks*
January	Order and degree of partial	BS	01	Theoretical – 01
	differential equations.			Tutorial - 00
	First order exact differential	SM	05	Theoretical – 04
	equations.			Tutorial - 01
	Concept of linear partial differential	PD	01	Theoretical – 01
	equations.			Tutorial - 00
February	Formation of first order partial	BS	06	Theoretical – 04
	differential equations, Linear partial			Tutorial - 02
	differential equation of first order.	CNA	1.0	TD1 .' 1 1.4
	Integrating factors, rules to find an	SM	16	Theoretical – 14
	integrating factor. First order higher			Tutorial - 02
	degree equations solvable for $x, y, p$ .	PD	06	The anatical OF
	Concept of non-linear partial differential equations, Lagrange's	PD	06	Theoretical – 05 Tutorial - 01
	method.			Tulonai - 01
		nal Assessm	ent	
March	Linear homogenous equations with	BS	06	Theoretical – 04
Maich	constant coefficients, Linear non-	DS	00	Tutorial - 02
	homogenous equations.			Tutonar 02
	Methods for solving higher-order	SM	14	Theoretical – 12
	differential equations. Basic theory of			Tutorial - 02
	linear differential equations,			
	Wronskian, and its properties. Solving			
	a differential equation by reducing its			
	order.			
	Charpit's method.	PD	06	Theoretical – 05
				Tutorial - 01
	Classification of second order	PD	03	Theoretical – 02
	partial differential equations into			Tutorial - 01
	elliptic through illustrations only.			
		nal Assessm		
May	The method of variation of	BS	06	Theoretical – 05
	parameters, The Cauchy-Euler			Tutorial - 01
	equation.	G) 1		
	Simultaneous differential equations,	SM	14	Theoretical – 13
	Total differential equations.	מת	0.5	Tutorial - 01
	Classification of second order partial	PD	06	Theoretical – 05
	differential equations into parabolic			Tutorial - 01
	and hyperbolic through illustrations			
	only.			
June	End Seme	ester Examin	ation	

Semester: II Department of Mathematics, Basirhat College Session: Jan-Jun, 2019

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

# **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.

# Semester: II

- 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 higherorder ODEs including properties of Wronskian.
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  - 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
	1 <sup>st</sup> Inter	nal Assessm	ent	
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 rnal Assessm	03	Theoretical – 02 Tutorial - 01
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	End Seme	ester Examin	ation	

Semester: II Department of Mathematics, Basirhat College Session: Jan-Jun, 2019

<b>Assessment:</b> Internal Assessment &	Total: 90	Theoretical – 75
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- ➤ B. Pal, S. Raychowdhury, S. Jana, Differential Equation, Semester-II, Santra Publication Pvt. Ltd., Kolkata-700073.