

Title	Modules of Syllabus, Classes and Examinations
Session	2019-20 (Even Semester)
Department	B.Sc General in Mathematics
Institution Name	Hiralal Bhakat College, Nalhati, Birbhum, W.B.
Coordinator	Dr. Banshidhar Sahoo, Assistant Professor in Mathematics

Details of Courses of B.Sc. General under CBCS

Sl.	Course	Credit		Marks
1.	Core Course (12 Papers) 4 core papers each in 3 disciplines of choice	Theory+Practical $12 \times (4+2) = 72$	Theory+Tutorial $12 \times (5+1) = 72$	$12 \times 75 = 900$
2.	Elective Course DSE (6 Papers)	$6 \times (4+2) = 36$	$6 \times (5+1) = 36$	$6 \times 75 = 450$
3	Ability Enhancement Core Course (AECC) AECC-1 (ENVS) AECC-2 (English/MIL)	$4 \times 1 = 4$ $2 \times 1 = 2$	$4 \times 1 = 4$ $2 \times 1 = 2$	100 50
4.	SEC (4 Papers)	$4 \times 2 = 8$	$4 \times 2 = 8$	$4 \times 50 = 200$
	Total Credit:	122	122	1700

B.Sc. Mathematics General Course Structure

Semester	Course Course (CC)	Discipline Specific Elective (DSE)	Ability Enhancement Course	
			AECC (2)	SEC (4)
I	CC1A (Mathematics) CC2A (Physics) CC3A (Computer Sc.)		AECC-1	
II	CC1B (Mathematics) CC2B (Physics) CC3B (Computer Sc.)		AECC-2	
III	CC1C (Mathematics) CC2C (Physics) CC3C (Computer Sc.)			SEC-1 (Mathematics) or SEC-1 (Computer Sc.)
IV	CC1D (Mathematics) CC2D (Physics) CC3D (Computer Sc.)			SEC-2 (Mathematics) or SEC-2 (Computer Sc.)
V		DSE1A (Mathematics) DSE2A (Physics) DSE3A (Computer Sc.)		SEC-3 (Mathematics) or SEC-3 (Physics)
VI		DSE1B (Mathematics) DSE2B (Physics) DSE3B (Computer Sc.)		SEC-4 (Mathematics) or SEC-4 (Physics)

Semester-II

Core Course (CC 1B): Differential Equations

- Total 75 Marks
- 60 Marks for Semester-end-Examination[#] (will be organized by University)
- 10+5=15 Marks for Internal Assessment (will be organized by College in general and Department in Particular)
- 10 Marks for Class Test/ Assignment/ Seminar
- 5 Marks for Attendance

Attendance: 50% & above but below 60% - 2 Marks

Attendance: 60% & above but below 75% - 3 Marks

Attendance: 75% & above but below 90% - 4 Marks

Attendance: 90% & Above - 5 Marks

Internal Assessment	Component 1 (C ₁)
Weightage	10 Marks (Class test)
Number of Questions	5
Date	21.04.2020
Time	11.30 am
Syllabus	First order exact differential equations, Integrating factor. First order higher degree equation. Solvable for x, y, p. Methods for solving higher-differential equations. Basic Theory of differential equations. Wronskian and its Properties. Linear homogeneous equations with constant coefficients. Linear non-homogeneous equations. Methods of variable of parameters. Cauchy-Euler equation. Simultaneous differential equation.
Name of Teacher	Dr. Banshidhar Sahoo
Number of Classes	75 (Tentative)

** Component 2 (C₂):

- 60Marks for Semester-end-Examination (will be organized by University)
- Answer 10 questions out of 15 carrying 02 marks each = 10 x 02 = 20 marks
- Answer 04 questions out of 06 carrying 05 marks each = 04 x 05 = 20 marks
- Answer 02 questions out of 04 carrying 10 marks each = 02 x 10 = 20 marks

** Syllabus:

First order exact differential equations, Integrating factor. First order higher degree equation. Solvable for x, y, p. Methods for solving higher-differential equations. Basic Theory of differential equations. Wronskian and its Properties.

Linear homogeneous equations with constant coefficients. Linear non-homogeneous equations. Methods of variable of parameters. Cauchy-Euler equation. Simultaneous differential equation. Order and degree of partial differential equations. Concept of linear and non-linear partial differential equations. Formation of first order partial differential equations. Linear partial differential equation of first order. Lagrange's method. Charpit's method.

Classification of second order partial differential equations into elliptic, parabolic and hyperbolic through illustration only.

Semester-IV

Core Course (CC 1D): Algebra

- Total 75 Marks
- 60 Marks for Semester-end-Examination[#] (will be organized by University)
- 10+5=15 Marks for Internal Assessment (will be organized by College in general and Department in Particular)
- 10 Marks for Class Test/ Assignment/ Seminar
- 5 Marks for Attendance

Attendance: 50% & above but below 60% - 2 Marks

Attendance: 60% & above but below 75% - 3 Marks

Attendance: 75% & above but below 90% - 4 Marks

Attendance: 90% & Above - 5 Marks

Internal Assessment	Component 1 (C ₁)
Weightage	10 Marks (Class test)
Number of Questions	5
Date	21.06.2020
Time	11.30 am
Syllabus	<p>Definition and examples of Groups, examples of abelian and non-abelian groups, the group Z_n of integer under addition modulo n and the group $U(n)$ of units under multiplication modulo n. cyclic groups from number systems, complex roots of unity, circle group, the general linear group $GL_n(n, R)$, groups of symmetric of 9i) an isosceles triangle, (ii) an equilateral triangle, (iii) a rectangle, and (iv) a square, the permutation group $Sym(n)$, Group of quaternions.</p> <p>Subgroups, cyclic subgroup, the concept of a subgroup generated by a subset and the commutator subgroup of group, examples of subgroups including the centre of a group.</p>
Name of Teacher	Dr. Banshidhar Sahoo
Number of Classes	64 (Tentative)

**** Component 2 (C₂):**

- 60Marks for Semester-end-Examination (will be organized by University)
- Answer 10 questions out of 15 carrying 02 marks each = 10 x 02 = 20 marks
- Answer 04 questions out of 06 carrying 05 marks each = 04 x 05 = 20 marks
- Answer 02 questions out of 04 carrying 10 marks each = 02 x 10 = 20 marks

**** Syllabus:**

Definition and examples of Groups, examples of abelian and non-abelian groups, the group Z_n of integer under addition modulo n and the group $U(n)$ of units under multiplication modulo n . cyclic groups from number systems, complex roots of unity, circle group, the general linear group $GL_n(n, R)$, groups of symmetric of 9i) an isosceles triangle, (ii) an equilateral triangle, (iii) a rectangle, and (iv) a square, the permutation group $Sym(n)$, Group of quaternions.

Subgroups, cyclic subgroup, the concept of a subgroup generated by a subset and the commutator subgroup of group, examples of subgroups including the centre of a group. Cosets. Index of subgroup. Lagrange's theorem, order of an element. Normal subgroups; their definitions and properties. Quotient group.

Definition and example of rings, examples of commutative and non-commutative rings: rings from number systems, Z_n , the ring of integers modulo n , ring of real quaternions, ring of matrices, polynomial rings and rings of continuous functions. Subrings and ideals. Integral domain and fields, examples of fields. Field of rational functions.

Skill Enhancement Course (SEC 2): Vector Calculus

- Total 50 Marks
- 40 Marks for Semester-end-Examination** (will be organized by University)
- 10 Marks for Internal Assessment (will be organized by College in general and Department in Particular)
- 10 Marks for Class Test/ Assignment/ Seminar

Internal Assessment	Component 1 (C ₁)
Weightage	10 Marks (Assignment)
Number of Questions	5
Date	To be announced.
Time	30 Minutes
Syllabus	Differentiation and partial differentiation of a vector function. Derivative of sum, dot product and cross product of two vectors.
Name of Teacher	Dr. Banshidhar Sahoo
Number of Classes	30 (Tentative)

** Component 2 (C₂):

- 40Marks for Semester-end-Examination (will be organized by University)
- Answer 10 questions out of 15 carrying 02 marks each = 10 x 02 = 20 marks
- Answer 04 questions out of 06 carrying 05 marks each = 04 x 05 = 20 marks

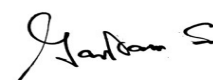
** Syllabus:

Differentiation and partial differentiation of a vector function. Derivative of sum, dot product and cross product of two vectors.

Gradient, divergent and Curl.



Head
Department of.....
Hiralal Bhakat College
Nalhati, Birbhum

Teacher-in-Charge
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