

## Tentative Course Structure and Evaluation Scheme:

**B. S. Program (Mathematics and Data Science)**  
**Semester wise Course Structure and Evaluation Scheme**  
**(With effect from Session 2023-2024)**

**Year I, Semester-I**

S. No.	Course Type	Course Title	Subject Code *	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	BSC	Engineering Physics	NPH-101	4	3	0	2	15	20	15	50	50	100
2	BSC	Engineering Mathematics-I	NMA-101	4	3	1	0	30	20	-	50	50	100
3	ESC	Introduction to Electrical Engineering	NEE-101	4	3	0	2	15	20	15	50	50	100
4	ESC	Introduction to Mechanical Engineering	NME-101	4	3	1	0	30	20	-	50	50	100
5	HSMC	Professional Communication	NHS-101	4	2	1	2	15	20	15	50	50	100
6	ESC	Engineering Graphics	NCE-103	2	0	0	4	30	20	-	50	50	100
<b>Total Credits: 22</b>												<b>600</b>	

**Year I, Semester-II**

S. No.	Course Type	Course Title	Subject Code*	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	BSC	Engineering Chemistry	NCY-102	4	3	0	2	15	20	15	50	50	100
2	ESC	Introduction to Computer Science & Engineering	NCS-102	4	3	1	0	30	20	-	50	50	100
3	ESC	Introduction to Electronics Engineering	NET-102	4	3	1	0	30	20	-	50	50	100
4	ESC	Introduction to Data Science and Analytics	NMA-112	4	3	1	0	30	20	-	50	50	100
5	ESC	Python for Data Science	NMA-114	4	3	0	2	15	20	15	50	50	100
6	ESC	Workshop Practice		2	0	0	4	-	20	30	50	50	100
<b>Total Credits: 22</b>												<b>600</b>	

**Remark:** The above 44 credit hours will be followed by an exit-credits 10 with skill-enhancement courses of 4 credits and job-specific internship of 6 credits in summer vacation for the award of Certificate after the study of One year.

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**Year II, Semester-III**

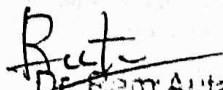
S. No.	Course Type	Course Title	Subject Code *	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	BSC	Engg. Math-II	NMA-201	4	3	1	0	30	20	-	50	50	100
2	ESC	Data Structures and Algorithms	NMA-211	4	3	0	2	15	20	15	50	50	100
3	PCC	Statistical methods	NMA-213	4	3	0	2	15	20	15	50	50	100
4	PCC	Probability and Random processes	NMA-215	4	3	0	2	15	20	15	50	50	100
5	PCC	Real Analysis	NMA-217	3	3	0	0	30	20	-	50	50	100
6	HSMC	Industrial Economics & Management	NHS-201	3	3	0	0	30	20	-	50	50	100
7	PCC	Data Science Lab-I	NMA-219	2	1	0	2	15	20	15	50	50	100
<b>Total Credits: 24</b>												<b>700</b>	

**Year II, Semester-IV**

S. No.	Course Type	Course Title	Subject Code*	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	BSC	Engineering Maths-3	NMA-202	4	3	0	2	15	20	15	50	50	100
2	ESC	CONM	NMA-204	4	3	0	2	15	20	15	50	50	100
3	PCC	Numerical Optimization	NMA-212	4	3	0	2	15	20	15	50	50	100
4	PCC	Linear Algebra	NMA-214	4	3	0	2	15	20	15	50	50	100
5	PCC	Discrete Mathematical Structures	NMA-216	3	3	0	0	30	20	-	50	50	100
6	PCC	R for Data Science	NMA-218	3	2	0	2	15	20	15	50	50	100
7	PCC	Data Science Lab -2	NMA-220	2	2	0	0	30	20	-	50	50	100
<b>Total Credits: 24</b>												<b>700</b>	

**Remark:** The above 92 credit hours will be followed by an exit-credits 10 with skill-enhancement courses of 4 credits and job-specific internship of 6 credits in Summer Vacation for the award of Diploma after the study of Two years.

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**Year III, Semester-V**

S. No.	Course Type	Course Title	Subject Code *	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	PCC	Principles of Data Science	NMA-311	4	3	0	2	15	20	15	50	50	100
2	PCC	Machine Learning	NMA-313	4	3	0	2	15	20	15	50	50	100
3	PCC	Modern Algebra	NMA-315	3	3	0	0	30	20	-	50	50	100
4	PCC	Topology & Geometry	NMA-317	3	3	0	0	30	20	-	50	50	100
5	PCC	Computational Statistics	NMA-319	3	3	0	0	30	20	-	50	50	100
6	PCC	Data Science Lab-3	NMA-321	3	2	0	2	15	20	15	50	50	100
7	HSMC	Entrepreneurship Development		2	2	0	0	30	20	-	50	50	100
<b>Total Credits: 22</b>												<b>700</b>	

**Year III, Semester-VI**

S. No.	Course Type	Course Title	Subject Code*	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	PCC	Deep Learning	NMA-312	4	3	0	2	15	20	15	50	50	100
2	PCC	Big Data Analytics	NMA-314	4	3	0	2	15	20	15	50	50	100
3	PCC	Multivariate Analysis	NMA-316	3	3	0	0	30	20	-	50	50	100
4	PCC	Functional Analysis	NMA-318	3	3	0	0	30	30	-	50	50	100
5	PCC	Fundamentals of Computing	NMA-320	3	3	0	0	30	20	-	50	50	100
6	PEC-I			3	3	0	0	30	20	-	50	50	100
7	OEC-I			2	2	0	0	30	20	-	50	50	100
<b>Total Credits: 22</b>												<b>700</b>	

**PEC-I:** Mathematical Modeling and Numerical Simulation (NMA-322), Statistical Computing (NMA-324), Cloud Computing for Data Science (NMA-326)

**Remark:** The above 136 credit hours will be followed by an exit-credits 10 with skill-enhancement courses of 4 credits and job-specific Internship of 6 credits in Summer Vacation for the award of B.Sc. Degree after the study of Three years.

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**Year IV, Semester- VII**

S. No.	Course Type	Course Title	Subject Code *	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	PEC-II			4	3	1	0	30	20	-	50	50	100
2	PEC-III			3	3	0	0	30	20	-	50	50	100
3	PEC-IV			3	3	0	0	30	20	-	50	50	100
4	OEC-II			2	2	0	0	30	20	-	50	50	100
5	BS Project-I		NMA-429	8	0	0	8				50	50	100
6	Internship/Seminar		NMA-431	2	0	0					50	50	100
<b>Total Credits: 22</b>												<b>600</b>	

**PEC-II : Mathematical Methods (NMA-411), Bayesian Analysis (NMA-413), Computer Vision (NMA-415).**

**PEC-III : Graph Theory (NMA-417), Time Series Analysis(NMA-419), Natural Language Processing (NMA-421).**


**PEC-IV : Convex Optimization (NMA-423), Stochastic Processes & Applications(NMA-425), Design and Analysis of Algorithms (NMA-427).**

**Year IV, Semester- VIII  
[BS (HONORS)]**

S. No.	Course Type	Course Title	Subject Code *	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	PCC	Differential Equations	NMA-412	4	3	0	2	15	20	15	50	50	100
2	PCC	Data Mining	NMA-414	3	2	0	2	15	20	15	50	50	100
3	PEC-V			3	3	0	0	30	20	-	50	50	100
4	OEC-II			2	2	0	0	30	20	-	50	50	100
5	BS Project-II		NMA-422	10	0	0	6				50	50	100
<b>Total Credits: 22</b>												<b>500</b>	

**PEC-V : Fluid Mechanics (NMA-416), Statistical Pattern Recognition (NMA-418), Recommender Systems with Python (NMA-420).**

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OR

Year IV, Semester- VIII  
[BS (HONORS WITH RESEARCH)]

S. No.	Course Type	Course Title	Subject Code*	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	PEC-V			4	3	1	0	30	20	-	50	50	100
2	OEC-III			2	2	0	0	30	20	-	50	50	100
3	BS Project-II		NMA-424	16	0	0	8				200	200	400
Total Credits: 22													600

PEC-V: Fluid Mechanics (NMA-416), Statistical Pattern Recognition (NMA-418),  
Recommender Systems with Python (NMA-420).



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**BS-MS PG (Mathematics and Data Science) (from the same program)**

**Year V, Semester - IX**

S. No.	Course Type	Course Title	Subject Code *	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	PCC	Abstract Algebra	NMA-511	4	3	0	2	15	20	15	50	50	100
2	PCC	Ethics and Data Science	NMA-513	4							50	50	100
3	PEC-VI			4							50	50	100
4	OEC-IV			2							50	50	100
5	MS Project-I			8							50	50	100
<b>Total Credits: 22</b>												<b>500</b>	

**Year V, Semester - X**

S. No.	Course Type	Course Title	Subject Code *	Credits	Periods			Sessional Marks				ESE	Total Marks
					L	T	P	MSE	TA	Lab	Total		
1	PCC	Complex Analysis	NMA-512	4	3	0	2	15	20	15	50	50	100
2	PCC-VII			3							50	50	100
3	PEC-VIII			3							50	50	100
4	OEC-V			2							50	50	100
5	MS Project-II			10							50	50	100
<b>Total Credits: 22</b>												<b>500</b>	

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LIST OF OPEN ELECTIVES	
1	<b>OEC-I</b>
	a. Human Values
	b. Cyber Security
	c. Indian Knowledge Tradition
	d. Environment & Ecology
	e. One Course Offered by each degree awarding departments
	f. One Course Offered by School of Basic & Applied Sciences
	g. One Course Offered by School of Humanities & Social Sciences
2	<b>OEC-II</b>
	a. Soft Computing
	b. Artificial Intelligence
	c. 3-D Printing
	d. Logistics & Supply Chain Management
	e. One Course Offered by each degree awarding departments
	f. One Course Offered by School of Basic & Applied Sciences
	g. One Course Offered by School of Humanities & Social Sciences
3	<b>OEC-III</b>
	a. Robotics
	b. Data Sciences
	c. Machine Learning
	d. Sustainable Development
	e. One Course Offered by each degree awarding departments
	f. One Course Offered by School of Basic & Applied Sciences
	g. One Course Offered by School of Humanities & Social Sciences

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