



**SCHOOL OF ENGINEERING AND SCIENCES**

**B.Sc. (Hons) Mathematics**

**2023-27 Batch**

Category Wise Credit Distribution

Course Sub-category	Subcategory Credits	Category Credits	Learning hours
<b>Ability Enhancement Courses (AEC)</b>		8	240
University AEC	4		
School AEC	4		
<b>Value Added Courses (VAC)</b>		8	240
University VAC	4		
School VAC	4		
<b>Skill Enhancement Courses (SEC)</b>		15	450
School SEC	7		
Department SEC	8		
SEC Elective	0		
<b>Multidisciplinary/Interdisciplinary /Foundation (MIC)</b>		17	510
School MIC	17		
Department MIC			
<b>Core + Core Elective including Specialization (CC)</b>		80	2400
Core	52		
<b>Core Elective (Inc Specialization)</b>	28		
<b>Minor (MC) + Open Elective (OE)</b>		15	450
<b>Research / Design / Internship/ Project (RDIP)</b>		17	510
Internship / Design Project / Startup / NGO	5		
Internship / Research / Thesis	12		
<b>Total</b>		<b>160</b>	<b>4800</b>

Semester Wise Course Credit Distribution Under Various Categories

Semester										
Category	S1	S2	S3	S4	S5	S6	S7	S8	Total	%age
Ability Enhancement Courses (AEC)	1(2)	1(2)	1(2)	1(2)					8	5%
Value Added Courses (UG Common) (VAC)	2(2)	1(2)	4*	4*	4*	4			8	5%
Skill Enhancement Courses (SEC)	1(3)	1(2)	1(2)	1(2)	1(3)	1(3)			15	9.4%
Foundation & Interdisciplinary Courses (FIC)	11	2(3)							17	10.6%
Major Core + Specialization (CC)		2(4)	3(4)	3(4)	4(4)	4(4)	3(4)		80	50%
Minor (MC) + Open Elective (OE)			1(3)	1(3)	1(3)	1(3)	1(3)		15	9.4%
Research / Design / Industrial Practice / Project (RDIP)							5	12	17	10%
<b>Grand Total</b>	<b>18</b>	<b>20</b>	<b>19</b>	<b>23</b>	<b>22</b>	<b>26</b>	<b>20</b>	<b>12</b>	<b>160</b>	<b>100%</b>

## B. Sc. - Mathematics

Semester-1							
Category	Sub-Category	Course Title	L	T/D	P/P r	Credits	Learning Hours
AEC	University AEC	Art of Listening, Speaking and Reading Skills	1	0	1	2	60
VAC	University VAC	Environmental Science	2	0	0	2	60
SEC	School SEC	Analytical Reasoning and Aptitude Skills	1	1	1	3	90
FIC	School FIC	Chemical basis of life	3	0	0	3	90
FIC	School FIC	Mathematics for the Physical World	2	1	0	3	90
FIC	School FIC	Fundamentals of Computing	2	0	1	3	90
FIC	School FIC	Emerging Technologies	2	0	0	2	60
<b>Semester Total</b>						<b>18</b>	<b>540</b>

Semester-2							
Category	Sub-Category	Course Title	L	T/D	P/P r	Credits	Learning Hours
AEC	University AEC	Effective Writing and Presentation Skills	1	0	1	2	60
VAC	University VAC	Universal Human Values and Ethics	2	0	0	2	60
SEC	School SEC	Entrepreneurial Mindset	0	0	2	2	60
FIC	School FIC	Principles of Management	3	0	0	3	90
FIC	School FIC	Psychology for Everyday Living	3	0	0	3	90
CC	Core	Real Analysis-1	3	1	0	4	120
CC	Core	Linear Algebra	3	1	0	4	120
<b>Semester Total</b>						<b>20</b>	<b>600</b>

Semester-3							
Category	Sub-Category	Course Title	L	T/D	P/P r	Credits	Learning Hours
AEC	School AEC	Problem Solving Skills	1	0	1	2	60
VAC	School VAC	Co-Curricular Activities	0	0	2	2*	0
VAC	School VAC	Community Service and Social Responsibility	2	0	0	2*	0
SEC	Department/	Digital literacy	2	0	0	2	60
	School SEC						
CC	Core	Discrete Mathematics and Combinatorics	3	1	0	4	120

CC	Core	Real Analysis -2	3	1	0	4	120
CC	Core	Ordinary Differential Equation -1	3	1	0	4	120
CC	Core	Algebra - 1 (Group Theory)	3	1	0	4	120
OE/ Minor	OE/Minor		3			3	90
<b>Semester Total</b>						<b>23</b>	<b>630</b>

<b>Semester-4</b>							
<b>Category</b>	<b>Sub-Category</b>	<b>Course Title</b>	<b>L</b>	<b>T/D</b>	<b>P/P r</b>	<b>Cre dits</b>	<b>Learnin g Hours</b>
AEC	School AEC	Creativity and Critical thinking Skills	1	0	1	2	60
VAC	School VAC	Co-Curricular Activities	0	0	2	2*	0
VAC	School VAC	Community Service and Social Responsibility	2	0	0	2*	0
SEC	Department/ School SEC	Mathematical Modelling of Physical Data				2	60
CC	Core	Complex Analysis	3	1	0	4	120
CC	Core	Probability and Statistics	3	1	0	4	120
CC	Core	General Topology	3	1	0	4	120
OE/ Minor	OE/Minor		3			3	<b>90</b>
<b>Semester Total</b>						<b>19</b>	<b>570</b>

<b>Semester-5</b>							
<b>Category</b>	<b>Sub-Category</b>	<b>Course Title</b>	<b>L</b>	<b>T/D</b>	<b>P/P r</b>	<b>Cre dits</b>	<b>Learnin g Hours</b>
VAC	School VAC	Co-Curricular Activities	0	0	2	2*	
VAC	School VAC	Community Service and Social Responsibility	2	0	0	2*	
SEC	SEC Elective	Linear Programming Problem	3	0	0	<b>3</b>	90
CC	Core	Real Analysis - 3	3	1	0	4	120
CC	Core	Partial Differential Equations-1	3	1	0	4	120
CC	Core	Numerical Analysis	3	1	0	4	120
CC	Core	Number Theory and Introduction to Cryptography	3	1	0	4	120
OE/ Minor	OE/Minor		3			3	90
<b>Semester Total</b>						<b>22</b>	<b>660</b>

<b>Semester-6</b>							
<b>Category</b>	<b>Sub-Category</b>	<b>Course Title</b>	<b>L</b>	<b>T/D</b>	<b>P/P r</b>	<b>Cre dits</b>	<b>Learnin g Hours</b>
VAC	School VAC	Co-Curricular Activities	0	0	2	2	60
VAC	School VAC	Community Service and Social Responsibility	2	0	0	2	60
SEC	SEC Elective	Matlab, Sage and Mathematica	2	0	1	<b>3</b>	90

CE/SE	Department	Measure Theory (For Pure and Applied Math)/ Data Structures and Algorithms (For Data Science and Industrial Mathematics)	3	1	0	4	120
CE/SE	Department	Algebra - 2 (For Pure Math)/ Mechanics and Tensor Calculus (For Applied Math)/ Applied Statistics (For Data Science and Industrial Mathematics)	3	1	0	4	120
CE/SE	Department	Functional Analysis (For Pure and Applied Math)/ Applied linear algebra (For Data Science and Industrial Mathematics)	3	1	0	4	120
CE/SE	Department	Algebraic Topology (For Pure Math)/ ODE - 2 (For Applied Math)/ Financial Mathematics (For Data Science and Industrial Mathematics)	3	1	0	4	120
OE/ Minor	OE/Minor		3			3	90
<b>Semester Total</b>						<b>26</b>	<b>570</b>
<b>Semester-7</b>							
<b>Category</b>	<b>Sub-Category</b>	<b>Course Title</b>	<b>L</b>	<b>T/D</b>	<b>P/P r</b>	<b>Cre dits</b>	<b>Learnin g Hours</b>
CE/SE	Department	Algebra -3 (Galois Theory) (For Pure Math)/ PDE - 2 (For Applied Math)/ Regression analysis (For Data Science and Industrial Mathematics)	3	1	0	4	120
CE/SE	Department	Operator Theory (For Pure Math)/ Dynamical Systems (For Applied Math)/ Stochastic process and Stochastic Differential Equations (For Data Science and Industrial Mathematics)	3	1	0	4	120
CE/SE	Department	Core Elective - 1	3	1	0	4	120
RDIP	Internship / Research / Thesis	Internship	0	0	5	5	120
OE/ Minor	OE/Minor		3			3	90
<b>Semester Total</b>						<b>20</b>	<b>570</b>
<b>Semester-8</b>							
<b>Category</b>	<b>Sub-Category</b>	<b>Course Title</b>	<b>L</b>	<b>T/D</b>	<b>P/P r</b>	<b>Cre dits</b>	<b>Learnin g Hours</b>
RDIP	Department/ Company	Research Project	0	0	12	12	360
<b>Semester Total</b>						<b>12</b>	<b>360</b>

## Core Electives

### Specialization: Pure Mathematics

1. Measure Theory
2. Algebra - 2
3. Functional Analysis
4. Algebraic Topology
5. Algebra -3 (Galois Theory)
6. Operator Theory

### Specialization: Applied Mathematics

1. Measure Theory
2. Mechanics and Tensor Calculus
3. Functional Analysis
4. ODE - 2
5. PDE - 2
6. Dynamical Systems

### Specialization: Data Science and Industrial Mathematics

1. Data Structures and Algorithms
2. Applied Statistics
3. Applied linear algebra.
4. Financial Mathematics
5. Regression analysis
6. Stochastic process and Stochastic Differential Equations

### List of Minor Courses: Mathematics

1. Statistical Inference
2. Introduction to Partial Differential Equation: Theory and Computation
3. Cryptography
4. Numerical Analysis
5. Advanced Linear Algebra
6. Optimization Techniques
7. Elementary Number Theory
8. Complex Analysis
9. Mathematical Modelling
10. Advance Graph Theory
11. Calculus of Variations
12. Algebra-I
13. Discrete Mathematics (For Non-CSE)
14. Probability and Statistics (For BSc)
15. Ordinary Differential Equations (For BSc)