



Evaluation Scheme of Undergraduate & Post Graduate Program as per NEP-2020 Guidelines

B.Sc. (Hons) Mathematics Four Year program with Double Majors, Second Major (Statistics/Computers/Physics/Chemistry)

w.e.f. Session 2024-25

Cumulative minimum credits (Required for the award of Certificates/ Diploma/Degree)			Subject I: Mathematics		Choose Anyone	Subject II: Statistics/Computers/Physics/Chemistry		Subject III		Vocational		Co-curricular		Audit Course*		Research Project**		Total credits (Year)
			Major			Major		Minor Elective		Minor		Minor		Compulsory		Major		
			4/5/6 Credits			4/5/6 Credits		4/5/6 Credits		3 Credits		2		Non-credits		4 Credits		
			Own Faculty			Own Faculty (Choose Anyone)		Any Faculty		Vocational/ Skill Development Course		Co-curricular (Qualifying)		Audit Course (Qualifying)		Inter/Intra Faculty related to main subject		
Certificate in Science (Mathematics& Statistics OR Mathematics & Computers OR Mathematics & Physics OR Mathematics & Chemistry)	Y	Sem.	B030101T/MT136: Differential Calculus & Integral Calculus (T4) B030102P/MT137: Practical using Mathematica /MATLAB (P2)	Statistics	B060101T/ MT139 Descriptive Statistics (Univariate) & Theory of Probability (T-4) B060102P/ MT140 Descriptive Data Analysis Lab (Univariate) (P-2)			I030103V/ MT143 Introduction to LaTeX (V-3) OR • MOOCs/SWAYAM etc. (T+P=3)	Z010101T/BE105 Food,NutritionandHygiene (T-2)	A050101T/HM101 RashtraGaurav								
		Computers		B070101T/ CS127 Problem Solving using Computer (T-4) B070102P/ CS128 Software Lab using Python (P-2)														
		PHYSICS		B010101T/ PY113 Mathematical Physics & Newtonian Mechanics (T-4) B010202P/ PY116 Thermal Properties of Matter & Electronic Circuits (P-2)														
		Chemistry		B020101T/ CH151: Fundamentals of Chemistry-I (T4) B020102P/ CH134: Quantitative Analysis (P2)														
40			B030201T/MT138: Matrices and Differential Equations & Geometry (T6)	STATISTICS	B060201T/ MT141 Descriptive Statistics (Bivariate) & Probability Distributions (T-4) B060202P/ MT142 Descriptive Data Analysis Lab (Bivariate) (P-2)		• ES115/BM186 Fundamentals of Environmental Science OR	I030202V/ MT144 LaTeX -Scientific Writing (V-3)	Z020201T/NS110 FirstAidand Health (T-2)	B060203T/MT153 Advanced Application of Artificial Intelligence in Mathematical Sciences								
		H				• A040209T/LN109 Basics of Communication OR	• BS (4+2=6)	• MOOCs/SWAYAM etc. (T+P=3)										
				Computers	B070201T/ CS129 Database Management Systems (T-4) B070202P/ CS130 Database Management Systems Lab(P-2)													

				PHYSICS	B010201T/ PY115 Thermal Physics & Semiconductor Devices (T-4) B010202P/ PY116 Thermal Properties of Matter & Electronic Circuits (P-2)						
				Chemistry	B020201T/CH139: Bioorganic and Materials Chemistry (T4) B020202P/CH141: Biochemical Analysis (P2)						
				STATISTICS	B060301T/ MT230 Theory of Estimation & Sampling Survey (T-4) B060302P/ MT231 Sampling Survey Lab (P-2)						
DIPLOMA in Science (Mathematics & Statistics OR Mathematics & Computers OR Mathematics & Physics OR Mathematics & Chemistry) 40+40=80	2	III	B030301T/MT228: Algebra & Mathematical Methods (T6)	COMPUTERS	B070301T/ CS273 Operating Systems (T-4) & B070302P/ CS274 Operating Systems Lab (P-2)		I030302V/ MT234 Introduction to R (V-3) OR • MOOCs/SWAYAM etc. (T+P=3)	Reginal Languages*** (T2)			
				PHYSICS	B010301T/ PY207 Electromagnetic Theory & Modern Optics (T-4) B010302P/ PY208 Demonstrative Aspects of Electricity & Magnetism (P-2)						
				CHEMISTRY	B020301T/CH232: Chemical Dynamics & Coordination Chemistry (T4) B020302P/CH234: Physical Analysis (P2)						
			B030401T/MT229: Differential Equation & Mechanics (T6)	STATISTICS	B060401T/ MT232 Testing of Hypothesis & Applied Statistics (T-4) B060402P/ MT233 Test of Significance & Applied Statistics Lab (P-2)	• A040405T/LN234 Effective					
		IV				Professional Communication Skills OR EVS/BS (4+2=6)		Z040401T/PH201 Physical Education and Yoga (T-2)		B030505R/MT 333 Mathematics Project-1 (R-3)	
				COMPUTERS	B070401T/ CS275 Computer System Architecture (T-4) & B070402P/ CS276 Computer System Architecture Lab (P-2)						

			B030802T/ MT439 Geometry of Manifold-I (T-4)							
			(B030803T/ MT440) Numerical Analysis with Application (T-4)							
			(B030804T/ MT441) Advanced Linear Algebra (T-4)							
			(B030805P/ MT442) Advanced Numerical Analysis Lab (P-4)							
	4-Year UG Degree with Honours & Research (≥75% Marks) Choose Anyone Specialization									
4-Year B.Sc. in MATHEMATICS with Honours& Research 130+40=170 (160)	4	VII	B030701T/ MT434 Real & Complex Analysis (T-5)						B030604R/ MT334 Mathematics Project-2 (R-3) OR B060705R/ MT445 Statistics Research Project-1 (R-6)	40
			B030702T/ MT435 Advanced Modern Algebra (T-5)							
			B030703T/ MT436 Ordinary & Partial Differential Equations (T-5)							
			B030704T/ MT437 Discrete Structures (T-5)							
		B030701T/ MT434 Real & Complex Analysis (T-5)								
		VIII	B030801T/ MT438 Advanced Differential Geometry (T-4)							
			B030802T/ MT439 Optimization & Statistical Techniques (T-4)							
			(B030803T/ MT440) Numerical Analysis with Application (T-4)							
(B030804T/ MT441) Advanced Linear Algebra (T-4)										
B030805P/ MT442) Advanced Numerical Analysis Lab (P-4)										
M.Sc. in MATHEMATICS 170+40=210	5	IX	B030901T/ MT538 Geometry of Manifolds (T-5)						B030905R/ MT546 Mathematics Research Project-	40
			B030902T/ MT539 Integral Equations with boundary value							

(200)			problem (T-5)				3(R-6)	
			B030903T/ MT540 Fluid Dynamics with Application (T-5)				OR	
			B030904T/ MT541 Special Function (T-5)				B060906R/ MT550 Statistics Research Project-3(R-6)	
		X	B031001T/ MT542 Mechanics with Application (T-5)				B031005R/ MT547 Mathematics Research Project-4 (R-6)	
			B031002T/ MT543 Functional Analysis and variational inequality (T-5)				OR	
			B031003T/ MT544 Calculus of Variations with Application (T-5)				B061005R/ MT551 Statistics Research Project 4 (R-6)	
			B031004T/ MT545 Advanced Topology (T-5)					

- ✓ T-4 = Theory with 4 credits; P-2 = Practical with 2 credits; R = Research Project with 4 credits; Q: Qualifying; NC = Non-Credit; MOOCs = Massive Online Open Courses
- ✓ Co-curricular courses offered by UP higher education.
- ✓ Vocational courses offered by respective Department/University
- ✓ *Audit Courses: The respective Department/University offers Rashtra Gaurav and X+AI (Advanced Application of Artificial Intelligence in Mathematical Sciences) as compulsory **Non-Credit** courses. All students will have to pass these curses for obtaining a Certificate, Diploma, Undergraduate Degree, or Undergraduate Honors Degree with Research only once.
- ✓ 01, 02, and 03 combinations are elective papers, out of which students must choose any one with a minimum of ten students' strengths.
- ✓ For entry into the 4-Year UG Degree with Honours and Research program, students must secure $\geq 75\%$ marks in the 3-Year UG Degree program.
- ✓ Students with a 3-Year Single Subject with Honours UG Degree below 75% marks in the 3-Year UG Degree program go for a two-year PG program.
- ✓ **Research Project/Dissertation/Internship/Field or Survey Work etc.
- ✓ ***Regional Language is a co-curricular course offered by the respective Department or University in the third semester, such as Hindi, Urdu, Awadhi, Sanskrit, etc.

		Subject I	Subject II	Subject III	**Vocational	Co-curricular	Research project	Minimum Credits (Year)	Cumulative minimum credits (Required for the award of certificates/ diploma/degree)
		Major	Minor	Audit Course	Minor	Minor	Major		
		4/5/6 Credits	4/5/6 Credits	Non - Credit	3 Credits	2 Credits	12		
Y.	Sem.	Own Faculty	Own/ Other Faculty	Audit/ Non-Credit Course	Vocational/ Skill development course	Co-curricular	Inter/Intra Faculty related to main subject		
1	I	B030101T/ MT136 Differential Calculus & Integral Calculus (T-4)		(A050101T/H M101) Rashtra Gaurav (T-0)	I030103V/ MT143 Introduction to LaTeX (V-3) OR MOOCs/SWAYAM etc. (T+P=3)	(Z010101T/ BE105) Food, Nutrition and Hygiene (T-2)	-----	40 (30 + 6 + 4) (First Year)	40 (Certificate in Mathematics)
		B030102P/ MT137 Practical using Mathematica /MATLAB (P-2)							
		B030103T/MT158 Trigonometry and Set Theory (T-6)							
	II	B030201T/ MT138 Matrices and Differential Equations & Geometry (T-6)	Choose any ONE from the Followings: (a) (B070201T/CS129) Database Management Systems (T-4) + (B070202P/CS130) Database Management Systems Lab (P-2) (b) B060201T/ MT141 Descriptive Statistics (Bivariate) (T-4) & Probability Distributions B060202P/ MT142 Descriptive Data Analysis Lab (Bivariate) (P-2) (c) (B010201T/ PY115)	B060203T/MT153 Application of Artificial Intelligence in Mathematical Sciences (T-0)	I030202V/ MT144 LaTeX -Scientific Writing (V-3) OR MOOCs/SWAYAM etc. (T+P=3)	(Z020201T/ NS110) First Aid and Health (T-2)			
B030202T/MT159 Vector Analysis and Vector Calculus (T-6)									

Program Structure of B.Sc. Honours in Mathematics/B.Sc. Honours with Research in Mathematics+ 1 OR 2 Year PG

(With Effect From: 2024 – 25)

			Thermal Physics and Semiconductor Device (T-4) + (B010202P/PY116) Thermal Properties of Matter and Electronic Circuits (P-2)						
		Subject I	Subject II	Subject III	**Vocational	Co-curricular	Research project	Minimum Credits (Year)	Cumulative minimum credits (Required for the award of certificates/ diploma/degree)
		Major	Minor	Audit Course	Minor	Minor	Major		
		4/5/6 Credits	4/5/6 Credits	Non - Credit	3 Credits	2 Credits	12		
Y.	Sem.	Own Faculty	Own/ Other Faculty	Audit/ Non-Credit Course	Vocational/ Skill development course	Co-curricular	Inter/Intra Faculty related to main subject		
2	III	B030301T/MT228 Algebra & Mathematical Methods (T-6)	-----	-----	I030302V/MT234 Introduction to R (V-3 OR MOOCs/SWAYAM etc. (T+P=3)	Indian / Regional Language (T-2)	-----	40 (30 + 3 + 4 + 3) (Second Year)	80 (Diploma in Mathematics)
		B030302T/MT242 Theory of real function (T-6)							
	IV	B030401T/ MT229 Differential Equation & Mechanics (T-6)	Choose any ONE from the Followings: (a) Testing of Hypothesis & Applied	-----	-----	(Z040401T) Physical Education and Yoga (T-2)	B030505R/MT333 Mathematics Project-1(R-3)		

Program Structure of B.Sc. Honours in Mathematics/B.Sc. Honours with Research in Mathematics+ 1 OR 2 Year PG

(With Effect From: 2024 – 25)

		<p style="text-align: center;">B030402T/MT243 Reimann Integration and series of function (T-6)</p>	<p>Statistics(T4) (B060401T/MT232)+ Testing of Hypothesis and Applied Statistical Lab (P2) (B060404P/MT241)</p> <p>(b) (B020401T/CH239) Quantum Mechanics and Analytical Techniques (T-4) + (B020402P/CH241) Instrumental Analysis (P-2)</p> <p>(c) (B070401T/CS275) Computer System Architecture (T-4) + (B070402P/CS276) Computer System Architecture Lab (P-2)</p>						
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		Subject I	Subject II	Subject III	**Vocational	Co-curricular	Research project	Minimum Credits (Year)	Cumulative minimum credits (Required for the award of certificates/ diploma/degree)
		Major	Minor	Audit Course	Minor	Minor	Major		
		4/5/6 Credits	4/5/6 Credits	Non - Credit	3 Credits	2 Credits	12		
Y.	Sem.	Own Faculty	Own/ Other Faculty	Audit/ Non-Credit Course	Vocational/ Skill development course	Co-curricular	Inter/Intra Faculty related to main subject		
3	V	B030501T/MT320 Group and Ring Theory & Linear Algebra (T-5)	-----	-----	-----	-----	B030505R/M T333	40 + 10 (50) (Third Year)	130 (Degree in B.Sc. Honours in Mathematics)
		B030502T/ MT321 Number Theory & Game Theory (T-5)	-----	-----	-----	-----	Mathematics Project-1		
		B030503T/ MT322 Graph Theory & Discrete Mathematics(T-5)	-----	-----	-----	-----			
		B030504T/ MT323 Differential Geometry & Tensor Analysis (T-5)	-----	-----	-----	-----	(P-5)		
	VI	B030604T/MT342 Differential Geometry I: Curves and Spaces	-----	-----	-----	-----	(B030605R/		

Program Structure of B.Sc. Honours in Mathematics/B.Sc. Honours with Research in Mathematics+ 1 OR 2 Year PG

(With Effect From: 2024 – 25)

	(T-4)							
	B030606T/MT343 Theory of Equations (T-4)	----	----	----	----			
	B030601T/ MT324 Metric Space & Complex Analysis (T-4)	----	----	----	----			
	B030602T/ MT325 Numerical Analysis & Operations Research (T-4)	----	----	----	----			
	B030603P/ MT326 Practical on Numerical Analysis using Mathematica /MATLAB (P-4)	----	----	----	----			
						MT334 Mathematics Project-II (P-5)		

Award of Degree

After the completion of the 3 year UG degree, one has to pursue 4th/5th year UG/PG programmes in similar manner as double major UG/PG Programme

Case 1: If any candidate having plain B.Sc. Degree takes admission in 4th Year in Integral University in any one of those subjects which they had in their 3rd Year and then make exit after 4th Year then he/she will be awarded with

- (a) B.Sc. (H) degree in 4th Year (Applicable to all candidates) in that subject
- (b) B.Sc. (H) with Research degree in 4th Year in that subject (Applicable to those whose CGPA of first 3 years i.e. B.Sc. degree is > 7.5)

Case 2: If any candidate having Three Years B.Sc. (H) Degree takes admission in 4th Year in Integral University in that subject and make exit after 4th Year then he/she will be awarded with

- (a) B.Sc. (H) with Research Degree after 4th Year (Applicable to those whose CGPA > 7.5).
- (b) They will not get any degree if they make exit after 4th Year (Applicable to those whose CGPA < 7.5). Rather, they will get Master's Degree if they complete 5th Year.