STRUCTURE OF THE SYLLABUS FOR 4 YEAR UG PROGRAMME

ROYAL SCHOOL OF APPLIED AND PURE SCIENCES

B.Sc. Mathematics ((Honours/Honours with Research)

	1ST SEMESTER		
COMPONENT	**COURSE CODE**	**COURSE TITLE**	**CREDIT**
Major (Core)	MAT012M101	Calculus	3
	MAT012M102	Classical Algebra and Trigonometry	3
Minor	MAT012N101	Fundamental Mathematics-I	3
Interdisciplinary (IDC)	IKS992I101	Introduction to Indian Knowledge System – I	3
Ability Enhancement course (AEC)	CEN982A101	Communicative English-I	1
	BHS982A102	Behavioural Science-I	1
Skill Enhancement Course (SEC)	MAT012S111	Mathematical programming tools-I	3
Value Added Course (VAC)	VAC-1	VAC- (Basket Course)	3
SWAYAM 1	SWAYAM CODE 1	Swayam 1	3/4/5
TOTAL CREDIT FOR 1ST SEMESTER			**20+3/4/5**
	2ND SEMESTER		
COMPONENT	**COURSE CODE**	**COURSE TITLE**	**CREDIT**
Major (Core)	MAT012M201	Vector analysis and Linear Algebra	3
	MAT012M202	Analytical Geometry (2D & 3D)	3
Minor	MAT012N201	Fundamental Mathematics-II	3
IDC	IKS992I201	Introduction to Indian Knowledge System – II	3
AEC	CEN982A201	Communicative English-II	1
	BHS982A202	Behavioural Science-II	1
SEC	MAT012S211	Mathematical programming tools-II	3
VAC	VAC-2	VAC- (Basket Course)	3
SWAYAM 2	SWAYAM CODE 2	Swayam 2	3/4/5
(TOTAL CREDIT FOR 2ND SEMESTER			**20**+3/4/5
	3RD SEMESTER		
COMPONENT	**COURSE CODE**	**COURSE TITLE**	**CREDIT**
Major (Core)	MAT012M301	Ordinary Differential Equations	4
	MAT012M302	Real Analysis	4
Minor	MAT012N301	Matrix algebra and Vector calculus	4
IDC	IDC-3	Basket Course	3
AEC	CEN982A301	Communicative English-III	1
	BHS982A302	Behavioural Science-III	1
SEC	MAT012S341	Introduction to data science	3

SWAYAM 3	SWAYAM CODE 3	Swayam 3	3/4/5
TOTAL CREDIT FOR 3RD SEMESTER			**20**+3/4/5
4TH SEMESTER			
COMPONENT	**COURSE CODE**	**COURSE TITLE**	**CREDIT**
Major (Core)	MAT012M401	Complex Analysis	4
	MAT012M402	Abstract Algebra	4
	MAT012M403	Partial Differential Equations	4
Minor	MAT012N401	Coordinate Geometry	3
	MAT012N402	Differential Equations	3
AEC	CEN982A401	Communicative English-IV	1
	BHS982A402	Behavioural Science-IV	1
Swayam 4	SWAYAM CODE 4	Swayam 4	3/4/5
TOTAL CREDIT FOR 4TH SEMESTER			**20**+3/4/5
5TH SEMESTER			
COMPONENT	**COURSE CODE**	**COURSE TITLE**	**CREDIT**
Major (Core)	MAT012M501	Numerical Methods	4
	MAT012M502	Number Theory and Graph Theory	4
	MAT012M503	Mechanics-I	4
Minor	MAT012N501	Real Analysis	4
Internship	MAT012M521	Internship	4
TOTAL CREDIT FOR 5TH SEMESTER			**20**
6TH SEMESTER			
COMPONENT	**COURSE CODE**	**COURSE TITLE**	**CREDIT**
Major (Core)	MAT012M601	Transform Calculus (Laplace & Fourier)	4
	MAT012M602	Metric Space and Topology	4
	MAT012M603	Linear Programming	4
	MAT012M604	Mechanics-II	4
Minor	MAT012N601	Modern Algebra	4
TOTAL CREDIT FOR 6TH SEMESTER			**20**
7TH SEMESTER			
COMPONENT	**COURSE CODE**	**COURSE TITLE**	**CREDIT**
Major (Core)	MAT012M701	Advanced Calculus	4
	MAT012M702	Spherical Trigonometry and Tensor Calculus	4
	MAT012M703	Mathematical Logic & Combinatorics	4
	MAT012M744	Python Programming	4
Minor	MAT012N701	Numerical Methods	4
TOTAL CREDIT FOR 7TH SEMESTER			**20**
8TH SEMESTER			
COMPONENT	**COURSE CODE**	**COURSE TITLE**	**CREDIT**
Major (Core)	MAT012M801	Finite Element Methods	4
	MAT012M802	Linear Algebra and Functional Analysis	4

	MAT012M803	Number Theory	4
	MAT012M804	Fluid Dynamics	4
	MAT012M805	Topology	4
	MAT012M806	Mathematical Modeling of Epidemiology	4
	MAT012M807	Complex Analysis	4
Minor	MAT012N801	Research Methodology	4
Major (Core)	MAT012M821	Dissertation/Research Project	12
Or 400 level advanced course Core (in lieu of Project / Dissertation)	MAT012M808	Advanced Real Analysis	4
	MAT012M809	Fuzzy set theory	4
	MAT012M8010	Mathematical Modelling	4
TOTAL CREDIT FOR 8TH SEMESTER			**24**

STRUCTURE OF THE SYLLABUS FOR 2 YEAR PG PROGRAMME

ROYAL SCHOOL OF APPLIED AND PURE SCIENCES

M.Sc. Mathematics

1ST SEMESTER		
COURSE CODE	**COURSE TITLE**	**CREDIT**
MAT014C101	Mathematical Methods	4
MAT014C102	Linear Algebra	4
MAT014C103	Real Analysis and Lebesgue Measure	4
MAT014C104	Ordinary Differential Equations	4
MAT014C105	Classical Mechanics and Tensor	4
SWAYAM CODE 1	Swayam 1	3/4/5
	TOTAL CREDIT FOR 1ST SEMESTER	**20+3/4/5**
2ND SEMESTER		
COURSE CODE	**COURSE TITLE**	**CREDIT**
MAT014C201	Partial Differential Equations	4
MAT014C242	Numerical Analysis and Computational Programming	4
MAT014C203	Algebra	4
MAT014C204	Topology	4
MAT014C205	Complex Analysis	4
SWAYAM CODE 2	Swayam 2	3/4/5
TOTAL CREDIT FOR 2ND SEMESTER		**20**+3/4/5
TOTAL CREDIT FOR 1st YEAR=40+6/8/10		
3RD SEMESTER		

COURSE CODE	COURSE TITLE	CREDIT
MAT014C301/ MAT014C302	Graph Theory / Mathematical Logic	4
MAT014C303/ MAT014C304	Functional Analysis / Algebraic Topology	4
MAT014C305/ MAT014C306/ MAT014C307	Continuum Mechanics / Relativity / Differential Geometry	4
MAT014C308/ MAT014C309/ MAT014C3010	Number Theory and Cryptography / Financial Mathematics / Advanced Ring Theory	4
MAT014C321	Research Project-I	8
SWAYAM CODE 3	Swayam 3	3/4/5
TOTAL CREDIT FOR 3RD SEMESTER		**24**+3/4/5
OR 3rd SEMESTER (For students with 3rd and 4th Semester Research)		
MAT014C322	**RESEARCH PROJECT – PHASE I**	**24 +3/4/5**
4TH SEMESTER		
COURSE CODE	**COURSE TITLE**	**CREDIT**
MAT014C401	Measure Theory and Fuzzy Set Theory	4
MAT014C402	Operation Research and Machine Learning	4
MAT014C403/ MAT014C404	Operator Theory / Dynamical System and Fractional Calculus	4
MAT014C405/ MAT014C406/ MAT014C407	Fluid Dynamics / Probability and Statistics / Bio-Mathematics	4
MAT014C421	Research Project-II	12
SWAYAM CODE 4	Swayam 4	3/4/5
TOTAL CREDIT FOR 4TH SEMESTER		**28**+3/4/5
OR 4th SEMESTER (For students with 3rd and 4th Semester Research)		
MAT014C422	**RESEARCH PROJECT – PHASE 2**	**28**+3/4/5
TOTAL CREDITS FOR 2nd YEAR = 52+6/8/10		