



Indian Association for the Cultivation of Science

(A Deemed to be University under *de novo* Category)

Course Structure for the 5-Yr. Integrated BS-MS Programme

The courses in the first three semesters are common for all streams of basic sciences & mathematics

SEMESTER-I

Courses	Description of the Course	Course Type	Credit
Math & Computer-1	Calculus & Programming with Python	Core-Theory	6
Physics-1	Introductory Classical & Quantum Mechanics	Core-Theory	4
Chemistry-1	Chemical Bonding & Energetics	Core-Theory	4
Biology-1	Molecules of Life & Cells	Core-Theory	4
Language	Communicative English for Scientists	AECC	2
Physics Practical-1	General Physics Experiments	Core-Lab	2
Chemistry Practical-1	General Properties of Liquids & pH-metry	Core-Lab	2
Biology Practical -1	Cell Enumeration, Identification, Culture & Microscopy	Core-Lab	2
Physical Education- 1			0
TOTAL CREDIT			26

SEMESTER-II

Courses	Course Description	Course Type	Credit
Math & Computer-2	Linear Algebra & Multivariable Calculus Object-Oriented Programming with Java	Core-Theory	6
Physics-2	Electricity, Magnetism & Optics	Core-Theory	4
Chemistry-2	Structure & Spectroscopy	Core-Theory	4
Biology-2	Biochemistry, Genetics & Evolution	Core-Theory	4
Environmental Studies	Know Your Environment (atmosphere & biosphere etc.)	AECC	2
Physics Practical-2	Optics & Electricity	Core-Lab	2
Chemistry Practical-2	Spectroscopy of Atoms & Molecules	Core-Lab	2
Biology Practical -2	Extraction, Purification & Identification of Bio-Macromolecules	Core-Lab	2
Physical Education- 2			0
TOTAL CREDIT			26

SEMESTER-III

Courses	Course Description	Course Type	Credit
Math & Computer-3	Probability & Statistics Data Structures & Algorithms	Core-Theory	6
Physics-3	Thermal Physics & Elementary Statistical Mechanics	Core-Theory	4
Chemistry-3	Reactions Mechanisms	Core-Theory	4
Biology-3	Photon & Life	Core-Theory	4
Oral Communication Skill	Debate & Public Speaking	SECC	2
Physics Practical-3	Thermal Physics & Electronics	Core-Lab	2
Chemistry Practical-3	Redox Titration & Organic Preparation	Core-Lab	2
Biology Practical -3	Light Harvesting Molecules & Photobiology	Core-Lab	2
Music			0
TOTAL CREDIT			26

SEMESTER-IV (BRIDGE SEMESTER)

Major in PHYSICS

Courses	Course Description	Course Type	Credit
Physics-4	Classical Mechanics & Special Relativity	Core-Theory	4
Physics-5	Electrodynamic Theory & Electronics	Core-Theory	4
Physics-6	Quantum Mechanics	Core-Theory	4
Physics-7	Intermediate Statistical Mechanics with Applications	Core-Theory	4
Physics Lab	Digital Electronics & Nuclear Physics	Core-Lab	6
UG Research	UG Research/ Field Work	SECC	2
Sports/hobby			0
TOTAL CREDIT			24

Major in CHEMISTRY

Courses	Course Description	Course Type	Credit
Chemistry-4	Organic Synthesis	Core-Theory	4
Chemistry-5	Coordination & Transition Metal Chemistry	Core-Theory	4
Chemistry-6	Thermodynamics, Kinetics and Catalysis	Core-Theory	4
Chemistry-7	Learning Chemistry with Computers	Core-Theory	4
Chemistry Lab	Organic, Inorganic & Physical Chemistry Laboratory	Core Lab	6
UG Research	UG Research/ Field Work	SECC	2
Sports/hobby			0
TOTAL CREDIT			24

Major in BIOLOGY

Courses	Course Description	Course Type	Credit
Biology-4	Proteins & Enzymes	Core-Theory	4
Biology-5	Molecular Genetics	Core-Theory	4
Biology-6	Ecology	Core-Theory	4
Biology-7	Birth, Growth & Death Cycle	Core-Theory	4
Biology-Lab	Molecular & Cell Biology in Project Mode	Core-Lab	6
UG Research	Recombinant DNA Technology	SECC	2
Sports/hobby			0
TOTAL CREDIT			24

Major in MATHEMATICS & COMPUTERS

Courses	Course Description	Course Type	Credit
Mathematics-4	Algebra I	Core-Theory	4
Computer-4	Digital Logic & Computer Organization		4
Mathematics-5	Vector Calculus	Core-Theory	4
Computer-5	Information Storage & Retrieval		4
Mathematics-6	Number Theory	Core-Theory	2
Computer-6	Data Structures & Algorithms	Core-Lab	4
UG Research	UG Research/ Field Work	SECC	2
Sports/hobby			0
TOTAL CREDIT			24