

Department of Biological Sciences

S.No.	Course No.	Course Title	Credits
1	BIO601	Cell Biology	4
2	BIO602	Biochemistry II	4
3	BIO602	Biomolecular Metabolism	4
4	BIO603	Biochemistry	4
5	BIO603	Biochemistry I	4
6	BIO604	Molecular Biology	4
7	BIO605	Plant Physiology	4
8	BIO605	Plant Biology I	4
9	BIO606	Immunology	4
10	BIO606	Immunology I	4
11	BIO609	Microbiology	4
12	BIO610	Animal Physiology	4
13	BIO611	Cell Signaling and Stress Biology	4
14	BIO612	Recombinant DNA Technology	4
15	BIO613	Virology	4
16	BIO614	Plant Biology II	4
17	BIO614	Plant Development and Biotechnology	4
18	BIO615	Medical Microbiology	4
19	BIO616	Integrative Zoology	4
20	BIO621	Infectious Disease Biology	4
21	BIO621	Immunology II	4
22	BIO622	Bioinformatics	4
23	BIO624	Neurobiology	4
24	BIO625	Developmental Biology	4
25	BIO626	Evolutionary Ecology	4
26	BIO627	Biostatistics	4
27	BIO628	Bioinstrumentation	4
28	BIO629	Biophysics	4
29	BIO630	Epigenetics	4
30	BIO631	Advances in Microbiology	4
31	BIO632	Cancer Biology	4
32	BIO633	Stem Cell Biology	4
33	BIO634	Behavioral Biology	4
34	BIO635	Advances in Genetics	4
35	BIO636	Protein Folding and Function	4
36	BIO637	Advances in Omics	4
37	BIO638	Biophysics and Structural Biology	4
38	BIO639	Bioentrepreneurship	2
39	BIO640	Molecular Therapy	4
40	BIO643	Evolution	4
41	BIO644	Drug Development and Mechanism of Drug Action	4

Department of Chemistry

S.No.	Course No.	Course Title	Credits
1	CHM601	Non-transition Metal Chemistry	4
2	CHM601	Main Group Chemistry	4
3	CHM602	Applications of Modern Physical Methods	4
4	CHM603	Advanced Inorganic Chemistry I	4
5	CHM603	Advanced Inorganic Chemistry	4
6	CHM603	Advances in Transition-Metal Chemistry	4
7	CHM604	Advanced Inorganic Chemistry II	4
8	CHM604	Advances in Main-Group Chemistry	4
9	CHM605	Bioinorganic Chemistry	4
10	CHM607	X-ray Diffraction: Principles and Applications	4
11	CHM609	Organometallics	4
12	CHM610	Principles and Applications of X-Ray Crystallography	4
13	CHM611	Physical Organic Chemistry	4
14	CHM612	Advanced Organic Chemistry II: Synthesis	4
15	CHM612	Advanced Organic Synthesis	4
16	CHM613	Advanced Organic Chemistry I(Organometallics and Asymmetric Synthesis)	4
17	CHM613	Asymmetric Synthesis	4
18	CHM613	Principles and Applications of Asymmetric Synthesis	4
19	CHM614	Advanced Organic Chemistry III: Organometallics	4
20	CHM614	Organometallics in Organic Synthesis	4
21	CHM614	Organotransition Metal Chemistry: Principles and Applications in Synthesis	4
22	CHM615	Frontiers in Organic Chemistry	4
23	CHM616	Spectroscopy and its Application in Organic Molecules	4
24	CHM617	Chemical Biology	4
25	CHM618	Thermal and Photochemical Organic Transformations	4
26	CHM619	Modern Heterocyclic Chemistry	4
27	CHM621	Statistical Mechanics	4
28	CHM622	Molecular Spectroscopy	4
29	CHM624	Molecular Simulations	4
30	CHM625	Biophysical Chemistry	4
31	CHM627	Fundamentals of Solution-State NMR Spectroscopy: Principles and Applications	4
32	CHM628	Electrochemistry: Fundamentals and Applications	4
33	CHM629	Advanced Molecular Spectroscopy	4
34	CHM630	Advanced Statistical Mechanics	4
35	CHM631	Electronic Structure	4
36	CHM632	Physical Chemistry of Polymers	4
37	CHM633	Quantum Chemistry	4
38	CHM635	Mathematical Methods for Chemists	4
39	CHM637	Chemistry and Physics of Materials	4
40	CHM638	Quantum Mechanics and Spectroscopy	4
41	CHM641	Symmetry and Group Theory	4

Department of Chemistry

S.No.	Course No.	Course Title	Credits
42	CHM642	Principles of Quantum Chemistry	4
43	CHM645	Systems Biology	4
44	CHM651	Chemical Dynamics and Non-adiabatic Interactions	4
45	CHM652	Electronic Structure of Materials	4

Department of Earth and Environmental Sciences

S.No.	Course No.	Course Title	Credits
1	EES601	Isotope Geochemistry	4
2	EES602	Marine Biogeochemical Cycles	4
3	EES603	Mineral Thermodynamics	4
4	EES604	Aerosol Science	4
5	EES605	Indian Monsoon and its Variability	4
6	EES607	Advanced Remote Sensing and GIS	4
7	EES615	Reconstructing Quaternary Continental Environments and Climates of South Asia	4
8	EES620	Introduction to Paleontology	4
9	EES622	Economic Geology	4
10	EES624	Geology of Fules	4
11	EES627	Geo-analytical Techniques	4
12	EES628	Introduction to Climate and Climate Change	4
13	EES629	Advanced Mineralogy	4
14	EES630	Climate Change - Extreme Events	4
15	EES631	Greenhouse Gas Budgets and Climate Change	4
16	EES632	Geodynamics	4
17	EES641	Earth Surface Processes	4
18	EES643	Structural Geology	4
19	EES645	Global Climate Change	4
20	EES647	Data Analyses and Statistics for Geosciences	4
21	EES649	Advanced Structural Geology	4
22	EES650	Instrumental Techniques and Recent Developments in Earth and Environmental Sciences	4
23	EES651	Surface Water Hydrology	4
24	EES652	Geochemical Modelling in Aqueous Geochemistry	4
25	EES653	Receptor Modeling for Air Quality Management	4
26	EES654	Geoinformatics	4

Department of Mathematics

S.No.	Course No.	Course Title	Credits
1	MTH601	Algebra I	4
2	MTH602	Algebra II	4
3	MTH603	Real Analysis	4
4	MTH604	Complex Analysis II	4
5	MTH605	Topology I	4
6	MTH607	Complex Analysis I	4
7	MTH608	Introduction to Differentiable Manifolds and Lie Groups	4
8	MTH609	Sturm-Liouville Theory	4
9	MTH610	Fourier Analysis on Real Line	4
10	MTH611	An Introduction to Inverse Problems	4
11	MTH612	Non-Commutative Algebra	4
12	MTH613	Introduction to Riemannian Geometry	4
13	MTH614	Functional Analysis	4
14	MTH615	Operator Theory and Operator Algebras	4
15	MTH616	Topology II	4
16	MTH617	Introduction to Algebraic Geometry	4
17	MTH618	Commutative Algebra	4
18	MTH619	Introduction to Modular Forms	4
19	MTH620	Representation Theory	4
20	MTH621	Introduction to Wavelets	4
21	MTH622	Introduction to Hyperbolic Geometry	4
22	MTH623	Introduction to Ergodic Theory	4
23	MTH624	Advanced PDE	4
24	MTH625	Schemes and Cohomology	4
25	MTH626	An Introduction to Algebraic Number Theory	4
26	MTH627	An Introduction to Linear Algebraic Groups	4
27	MTH628	Probability Theory	4
28	MTH629	Introduction to Lie Groups and Lie Algebras	4
29	MTH630	Introduction to Analytic Number Theory	4
30	MTH633	Semisimple Lie Algebras	4
31	MTH635	Scientific Computing and Differential Equations I	4
32	MTH637	Introduction to Algebraic Topology	4

Department of Physics

S.No.	Course No.	Course Title	Credits
1	PHY601	Advanced Mathematical Methods for Physics	4
2	PHY602	Advanced Classical Mechanics	4
3	PHY603	Advanced Quantum Mechanics	4
4	PHY604	Statistical Mechanics	4
5	PHY605	Electrodynamics and Special Theory of Relativity	4
6	PHY606	Atomic and Molecular Physics	4
7	PHY607	Condensed Matter Physics	4
8	PHY610	Nuclear and Particle Physics	4
9	PHY612	Computational Physics	4
10	PHY613	Ultrafast Optics and Spectroscopy	4
11	PHY614	Advanced Condensed Matter Physics	4
12	PHY615	Quantum Field Theory I	4
13	PHY616	General Theory of Relativity	4
14	PHY617	Soft Condensed Matter	4
15	PHY618	Numerical Methods and Programming	4
16	PHY619	Experimental Techniques	4
17	PHY620	Magnetism and Superconductivity	4
18	PHY621	Quantum Field Theory II	4
19	PHY622	Advanced Topics in Theoretical Condensed Matter Physics	4
20	PHY623	Non-Linear Dynamics and Chaos	4
21	PHY624	Quantum Many-body Theory	4
22	PHY625	Quantum Information Theory	4
23	PHY626	Electronic Structure of Materials	4
24	PHY627	Quantum Engineering	4
25	PHY628	Advanced Topics in Condensed Matter Physics	4
26	PHY629	Introduction to High Energy Physics	4
27	PHY630	Cosmology	4
28	PHY631	Cosmology II	4
29	PHY633	Introduction to Astronomy and Astrophysics	4
30	PHY634	Advanced Statistical Mechanics	4
31	PHY635	Many-body Quantum Mechanics of Degenerate Gases	4
32	PHY637	Decoherence and Open Quantum Systems	4
33	PHY638	Semiconductor Optics	4
34	PHY639	Standard Model of Particle Physics	4
35	PHY640	Classical and Quantum Optics	4

Department of Chemical Engineering

S.No.	Course No.	Course Title	Credits
1	CHE601	Chemical Reaction Engineering	4
2	CHE604	Mass Transfer and Separation Process	4
3	CHE605	Heat Transfer Operations	4
4	CHE606	Advanced Transport Phenomena	4
5	CHE607	Microfluidic Engineering	4
6	CHE609	Numerical Methods in Chemical Engineering	4
7	CHE610	Petroleum Downstream Processing	4
8	CHE611	Polymer Processing	4
9	CHE612	Fluid Mechanics and Unit Operations	4
10	CHE613	Advanced Separation Processes	4
11	CHE614	Multiphase Flows	4
12	CHE615	Electro Chemical Engineering	4
13	CHE616	Nanomaterials: Fundamentals and their Characterization	4
14	CHE618	Fuel Cells: Fundamentals and Applications	4

Department of Data Science and Engineering

S.No.	Course No.	Course Title	Credits
1	DSE601	Artificial Intelligence and its Scientific Applications	4
2	DSE614	Reinforcement Learning	4
3	DSE615	Data Science in Practice	4
4	DSE616	Deep Learning	4
5	DSE617	Machine Learning	4
6	DSE633	Internet of Things	4
7	DSE606	Spatial Data Science and Applications	4
8	DSE607	Natural Language Processing	4
9	DSE608	Speech Processing and Its Applications	4
10	DSE609	Digital Image Processing and Applications in Bioimage Analysis	4
11	DSE610	Transfer Learning in Computer Vision	4
12	DSE612	Machine Learning for BioPharma	4
13	DSE618	Advanced Natural Language Processing	4
14	DSE620	Biomedical Text Mining	4
15	DSE622	Biometrics: An Introduction to Research	4
16	DSE603	Applied Accelerated Artificial Intelligence	4
17	DSE605	Cloud Computing	4

Department of Electrical Engineering and Computer Sc.

S.No.	Course No.	Course Title	Credits
1	ECS601	Mathematical Methods I	4
2	ECS602	Concurrency Theory	4
3	ECS605	Evolutionary Intelligence	4
4	ECS606	Digital Signal Processing	4
5	ECS607	Approximation Algorithms	4
6	ECS608	Operating Systems	4
7	ECS609	Computer Organisation	4
8	ECS610	Modern Cryptography	4
9	ECS611	Introduction to MEMS	4
10	ECS613	Smart Sensing Technologies	4
11	ECS614	Network Science: Theory and Applications	4
12	ECS615	Probabilistic Model Checking	4
13	ECS616	Analog CMOS Circuit Design	4
14	ECS617	Introduction to Quantum Computer Science	4
15	ECS618	Intelligent Robotics	4
16	ECS621	Nonlinear Systems	4
17	ECS622	Plasma and Plasmonics	4
18	ECS623	Solid State Devices	4
19	ECS624	Optoelectronics	4
20	ECS625	Nanoscale Transistors	4
21	ECS626	Information Theory and Coding	4
22	ECS628	Nanoelectronics: Fundamentals and Applications	4
23	ECS630	MOS Device Modeling and Characterization	4
24	ECS632	Consensus in Multi-agent	4
25	ECS633	Internet of Things	4
26	ECS641	Spintronics and Nanomagnetism	4
27	ECS652	Introduction to Software Modeling and Verification	4
28	ECS657	Theory of Computation	4
29	ECS658	Data Science and Machine Learning	4
30	ECS672	Electromagnetic Theory	4
31	ECS675	Analog Circuits	4
32	ECS676	Digital Circuits and Systems	4
33	ECS678	Communication Systems	4
34	ECS679	Combinatorial Optimization	4
35	ECS681	Computational Geometry	4
36	ECS682	Microelectronic Circuits and Devices	4
37	ECS684	Linear Control Systems	4
38	ECS685	Introduction to Process Mining	4

Department of Economic Sciences

S.No.	Course No.	Course Title	Credits
1	ECO601	India in the World Economy	4
2	ECO602	Macroeconomics II	4
3	ECO603	Microeconomics II	4
4	ECO604	International Economics	4
5	ECO605	Econometrics II	4
6	ECO606	Development Economics	4
7	ECO607	Game Theory	4
8	ECO608	Behavioral Economics	4
9	ECO609	Industrial Organization	4
10	ECO610	Introduction to Quantitative Finance	4
11	ECO611	Economic Theory: Mechanism Design	4
12	ECO612	Environmental Economics	4
13	ECO613	Mathematics for Economists	4
14	ECO614	Advanced Microeconomic Theory	4
15	ECO615	Applied Production Analysis	4
16	ECO616	Political Economy: Formal Theory and Analysis	4
17	ECO617	Public Finance	4
18	ECO618	Money, Banking and Financial Markets	4
19	ECO619	Time Series Analysis and Forecasting	4
20	ECO620	Social Choice Theory	4
21	ECO622	Topics in Advanced Microeconomic Theory	4
22	ECO624	General Equilibrium and Welfare Economics	4

Department of Humanities and Social Sciences

S.No.	Course No.	Course Title	Credits
1	HSS604	Disaster and Cultural Representation in Modern South Asia	4
2	HSS605	Computational Approaches to Psycholinguistics	4
3	HSS606	Memory and the City-space	4
4	HSS607	Indian Writing in English	4
5	HSS609	Logic	4
6	HSS610	Women in India: Concepts and Postulations	4
7	HSS611	An Introduction to the Study of Language	4
8	HSS612	An Introduction to Indian Literary Criticism	4
9	HSS614	Conflict and the Nation: Post-Independence India in Literature and Cinema	4
10	HSS615	Memory, Movement and Migration in Modern South Asian Literature	4
11	HSS616	Philosophical Beginnings: Matter, Motion, and the Cosmos	4
12	HSS617	Blue Humanities	4
13	HSS618	Literature of the Indian Diaspora	4
14	HSS620	Early Modern Philosophy: The Rationalists	4
15	HSS621	Psycholinguistics	4
16	HSS622	Computational Linguistics	4
17	HSS623	Conceptualising Marginality in/of Literature	4
18	HSS624	Critiques of Power: Frankfurt School & French Antihumanism	4
19	HSS625	Reading Childrens Literature: Adventures, Ghosts and the Cultural Imagination	4
20	HSS626	Structure/Subject: Structuralism, Post-Structuralism, and Psychoanalysis	4
21	HSS627	Environmental Humanities	4
22	HSS628	The Tradition of Critique: The Intellectual Background of Contemporary Critical Theory	4
23	HSS629	Research Methods in Humanities and Social Sciences	4
24	HSS630	Introduction to Modern Drama	4
25	HSS631	Self and Subjectivity in Literary Productions	4
26	HSS632	Introduction to Experimental Methods and Data Analysis in Language Sciences	4
27	HSS633	Making History Marking History	4
28	HSS634	Nation and Narration	4
29	HSS635	Philosophy for Science	4
30	HSS636	Greek Tragedy	4
31	HSS637	Cities: Memories, Perceptions and Stories	4
32	HSS638	Anthropology of Magic Science and Religion	4
33	HSS639	Indian Science Fiction	4
34	HSS640	Classical Greek II	4
35	HSS641	Ethics for Research	4
36	HSS642	An Invitation to Science and Technology Studies	4
37	HSS643	Classical Greek I	4

Department of Humanities and Social Sciences

S.No.	Course No.	Course Title	Credits
38	HSS644	The Social History of Everyday	4
39	HSS645	Introduction to Cultural Studies	4