

Jaypee University of Information Technology

B.Tech Bioinformatics

FOUR YEAR B.TECH COURSE CURRICULUM FOR BIOINFORMATICS



SEMESTER I (B1)

S.No	Course Code	Course Name	Contact Hours	Credits
1	10B11PD111	Presentation and Communication Skill	3	3
2	10B11MA112	*Basic Math-I OR	4	4
3	13B11BT111	*Fundamental Biology	3	3
4	10B11PH111	Physics-I	4	4
5	13B11B1112	Cell and Molecular Biology	4	4
6	10B11C1111	Introduction to Computers and Programming	4	4
7	10B17PH171	Physics Lab-I	2	1
8	13B17B1173	Introduction to Biocomputing Lab	2	1
9	10B17C1171	Introduction to Computers and Programming Lab	4	2
10	13B17B1174	Biological Databases Lab	2	1
11	13B17B1172	Cell and Molecular Biology Lab	2	1
12	13B17BT171	*Fundamanetal Biology Lab	2	1
Total			31/32	25

* Basic Math-I OR Fundamental Biology (Theory) and Fundamental Biology Lab (Practical)

SEMESTER II (B2)

S.No	Course Code	Course Name	Contact Hours	Credits
1	10B11PD211	Group and Cooperative Processes	3	3
2	10B11MA212	Basic Math-II	4	4
3	10B11B1411	Molecular Genetics	4	4
4	10B11B1211	Structural Biology	4	4
5	10B11C1211	Data Structures	4	4
6	10B17B1472	Molecular Modeling Lab	4	2
7	10B17B1271	Structural Biology Lab	2	1
8	10B17C1271	Data Structures and Computer Programming Lab	4	2
9	10B17B1471	Molecular Genetics Lab	2	1
Total			31	25

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SEMESTER III (B3)

S.No	Course Code	Course Name	Contact Hours	Credits
1	10B11PD311	Managerial Economics	3	3
2	10B11MA311	Probability and Statistics	4	4
3	10B11C1312	Database Systems	4	4
4	10B11B1311	Biological Computation	4	4
5	14B11B1311	Microbiology and Immune System	4	4
6	10B17C1372	Database System Lab	2	1
7	10B17B1371	Biological Computation Lab	4	2
8	14B17B1371	Microbiology and Immune System Lab	2	1
9	14B17B1372	Linux Lab	4	2
		Total	31	25

SEMESTER IV (B4)

S.No	Course Code	Course Name	Contact Hours	Credits
1	10B11PD411	Financial Management	3	3
2	10B12MA421	Biostatistics	4	4
3	15B11B1411	Genetic Engineering and Genomics	4	4
4	10B11C1311	Object Oriented Programming	4	4
5	15B11B1421	Programming Languages for Bioinformatics	4	4
6	10B11GE411	Environmental Studies	3	3
7	15B11B1471	Genetic Engineering and Genomics Lab	2	1
8	10B17C1371	Object Oriented Programming Lab	2	1
9	15B12MA481	Biostatistics	2	1
10	15B11B1472	Programming Languages for Bioinformatics Lab	2	1
		Total	30	25

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SEMESTER V (B5)

S.No	Course Code	Course Name	Contact Hours	Credits
1	10B11PD511	Introduction to Psychology	3	3
2	10B11C1412	Fundamentals of Algorithms	4	4
3	15B11B1511	Structural Bioinformatics	4	4
4	15B11B1512	Computational Genomics	4	4
5	10B11B1512	Scripting Languages for Bioinformatics	4	4
6	10B17C1472	Fundamentals of Algorithms Lab	2	1
7	15B17B1571	Structural Bioinformatics Lab	2	1
8	15B17B1671	Computational Genomics Lab	2	1
9	15B17B1572	Advanced Database System Lab	2	1
10	10B17B1572	Scripting Languages for Bioinformatics Lab	2	1
11	15B17B1574	Biomedical Informatics Lab	2	1
		Total	31	25

SEMESTER VI (B6)

S.No	Course Code	Course Name	Contact Hours	Credits
1	10B11PD611	Project Management	3	3
2	10B11B1612	Machine Learning for Bioinformatics	4	4
3	16B11B1611	Computer Aided Drug Design	4	4
4	16B11B1612	Data Warehousing and Mining for Bioinformatics	4	4
5	10B11B1614	Advanced Algorithms for Bioinformatics	4	4
6	10B17B1672	Machine Learning for Bioinformatics lab	2	1
7	16B17B1671	Computer Aided Drug Design Lab	4	2
8	16B17B1672	Data Warehousing and Mining for Bioinformatics Lab	2	1
9	10B17B1674	Advanced Algorithms for Bioinformatics Lab	2	1
10	16B17B1673	R Language Lab	2	1
		Total	31	25

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SEMESTER VII (B7)

S.No	Course Code	Course Name	Contact Hours	Credits
1		Professional Dev - VII	3	3
2		DE-I	3	3
3		DE-II	3	3
4		DE-III	3	3
5	10B19B1791	Project Part-I	20	10
		Total	32	22

SEMESTER VIII (B8)

S.No	Course Code	Course Name	Contact Hours	Credits
1		Professional Dev - VIII	3	3
2		DE-V	3	3
3		DE-VI	3	3
4		DE-VII	3	3
5	10B19B1891	Project Part-II	20	10
		Total	32	22

FOUR YEAR B.TECH COURSE CURRICULUM FOR BIOINFORMATICS

LIST OF ELECTIVES

BIOINFORMATICS

S.No	Course code	Course Name
1	14BIWBI732	Computational Systems Biology
2	15BIWBI832	NGS Data Analysis and Applications
3	14BIWBI733	Clinical Data Management Systems
4	10BI3BI732	Microbial Genomics
5	10BI3BI736	High Throughput Screening Techniques
6	11BIWBT831	Protein Modelling
7	15BIWBT834	Cancer Biomarkers
8	15BIWBT838	Synthetic Biology
9	11BIWBT837	Clinical Trials and Database Management
10	14BIWBT734	Traditional Foods
11	11BIWBT838	Genetic Counselling
12	10BI3BI737	Human Genome & Therapeutics
13	15BIWBT839	Infectious Diseases
14	10BI3BI839	Pathogen Genomes
15	10BI3BT834	Pharmacogenomics
16	14BIWBT737	Population Genomics
17	10BI3BI831	Tool Design in Bioinformatics
18	11BIWBT832	Biosafety, Bioethics, IPR & Patents
19	15BIWPH832	Biophysics of Single Molecules
20	11BIWMA832	Linear programming and Applications
21	15BIWBT832	Chemical Biology
22	10BIWMA731	Optimization Techniques
23	11B2WBT853	Immunoinformatics
24	11BIWPY736	Natural products in Drug Leads

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LIST OF ELECTIVES

MEDICAL

S.No	Course code	Course Name
1	10BIWBT733	Bioterrorism
2	14MIWBT332	Clinical Diagnostics
3	10IIWBT433	Gene Therapy
4	14BIWBT736	Antibody Engineering Technologies
5	14BIWBT733	Human Pathogens
6	10B13B1839	Pathogen Genomes
7	14BIWBT739	Stem Cells & Regenerative Medicine
8	10BIWBT731	Stem Cells and Healthcare
9	15M1BT432	Translational Genomics
10	11IIWBT531	Vaccines
11	10BIWBT419	Cancer Biology
12	08B71BT432	Molecular Aspects of Life Style Diseases
13	14MIWBT333	Vaccine Production

FOOD AND AGRICULTURE

S.No	Course code	Course Name
1	11BIWBT834	Fermented Food Products Technology
2	14MIWBT331	Food Processing & Engineering
3	10BIWBT738	Functional Food Technology
4	15B1WBT841	Industrial Crops & Products
5	10BIWBT735	Industrial Plant Tissue Culture
6	15B1WBT837	Nutritional Security
7	11IIWBT433	Plant Biotechnology
8	15B1WBT831	Plant-Microbe Interactions
9	15M1BT431	Traditional Bioprocesses

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LIST OF ELECTIVES

INDUSTRIAL

S.No	Course code	Course Name
1	14BIWBT731	Bioenergy and Biofuels
2	11BIWBT841	Bioprocess Modelling and Simulation
3	15BIWBT836	Bioprocess Optimization & Upscaling
4	14BIWBT741	Bio-resources & Industrial Products
5	10BIWBT737	Environmental Biotechnology
6	11BIWBT833	Industrial Enzymes
7	11BIWBT836	Manufacturing Processes & QC
8	11BIWBT840	Nano Biotechnology
9	15BIWBT835	Product Manufacturing & Production
10	10BIWBT736	Protein Engineering and Applications
11	14MIWBT334	QC Analysis & Management
12	10IIWBT432	Antibody Engineering and Manufacturing Techniques
13	08B71BT435	Bio-energy Technology

OTHERS

S.No	Course code	Course Name
1	11BIWPH834	Biosensors
2	10BIWPH731	Nanoscience & Nanotechnology
3	11BIWBT832	IPR and Bioethics