

Centre for Life Sciences
Central University of Jharkhand

जीवन विज्ञान केंद्र

झारखण्ड केंद्रीय विश्वविद्यालय

(Established by an Act of Parliament of India, 2009)

Course Structure

5 Year Integrated M.Sc. In Life Science

Semester: I

Sl. No.	Paper Name	Credit (L+T+P)	Code
1.	Basic Maths	3+1+0	MAT 111010
2.	Introductory Physics-I	3+0+0	PHY 110020
3.	Principles of Chemistry-I	3+0+0	CHM 110030
4.	Basic Biology	3+0+0	BIO 110041
5.	Fundamentals of Computer and C Programming	2+0+2	COM 110050
6.	Environmental Studies	3+0+0	EVS 110060
7.	Principles of Chemistry-I lab	0+0+2	CHM 112090
8.	Introductory Physics-I Lab	0+0+2	PHY 112080
9.	Basic Biology lab	0+0+2	BIO 112070
Total Credit		26	

Semester: II

1.	Statistics	3+1+0	STA 121010
2.	Introductory Physics -II	3+1+0	PHY 120020
3.	Principles of Chemistry -II	3+1+0	CHM 120030
4.	English for communication	3+0+1	ENG 120040
5.	Cell Biology	3+1+0	BIO 121051
6.	Cell Biology Lab	0+0+2	BIO 122100
7.	Introductory Physics –II Lab	0+0+2	PHY 122110
8.	Principle of Chemistry –II Lab	0+0+2	CHM 122120
Total Credit		26	

Semester: III

1.	Biodiversity of Microbes and Microbiology	3+0+0	BIO 211011
2.	Biochemistry I	3+0+0	BIO 211021
3.	Basic Genetics- I	3+0+0	BIO 211031
4.	Organic Chemistry	3+0+0	CHM 210041
5.	Bio Techniques	3+0+0	BIO 211090
6.	Disaster Management	3+0+0	
6.	Microbiology lab	0+0+2	BIO 212060

7.	Biochemistry and Genetics lab	0+0+2	BIO 212070
Total Credit		22	

Semester: IV

1.	Systematics and Biodiversity of Plants	3+0+0	BIO 221011
2.	Plant Physiology	3+0+0	BIO 221021
3.	Biochemistry-2 (Enzymes/Metabolism/Bioenergetics)	3+0+0	BIO 221031
4.	Environmental Biology/Ecology	3+0+0	BIO 221041
5.	Molecular Biology	3+0+0	BIO 221051
6.	Plant Systematics, Physiology and Ecology Lab	0+0+2.5	BIO 222060
7.	Biochemistry and Molecular Biology Lab	0+0+2.5	BIO 222070
Total Credit		20	

Semester: V (CBCS Electives)*

1.	Neuroscience	3+1+0	BIO 315011
2.	Drug Discovery and Delivery	3+1+0	BIO 315021
3.	Animal Cell and Tissue Engineering	3+1+0	BIO 315031
4.	Introduction to Biophysics	3+1+0	BIO 315040
5.	Photobiology	3+1+0	BIO 315050
6.	Functional Proteins and Enzymology	3+1+0	BIO 315060
7.	Cancer biology	3+1+0	BIO 315071

***Total credit to be selected from parent department: Not less than 16**

Semester: VI

1.	Systematics & Biodiversity of Animals	3+0+0	BIO 321011
2.	Animal Physiology	3+0+0	BIO 321021
3.	Plant Developmental Biology	3+0+0	BIO 321030
4.	Molecular Genetics	3+0+0	BIO 321041
5.	Basic Immunology	3+0+0	BIO 321051
6.	Humanities and Social Sciences	3+0+0	HSS 320060
7.	Animal Physiology, Immunology Lab	0+0+2	BIO 322070
8.	Molecular Genetics Lab	0+0+2	BIO 322080
9.	Animal Biodiversity Lab	0+0+2	BIO 322090

Total Credit	24
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Semester: VII

1.	Animal Development Biology and Endocrinology	3+0+0	BIO 411011
2.	Biotechnology and Bioethics	3+0+0	BIO 411021
3.	Bioinformatics	3+0+0	BIO 411031
4.	Virology	3+0+0	BIO 411041
5.	Biophysical Chemistry	3+0+0	BIO 411051
6.	Developmental Biology Lab	0+0+2	BIO 412060
7.	Virology Lab	0+0+2	BIO 412070
8.	Bioinformatics Lab	0+0+2	BIO 412080
Total Credit		21	

Semester: VIII

1.	Advanced Cell Biology	3+0+0	BIO 421011
2.	Advanced Molecular Biology	3+0+0	BIO 421021
3.	Genomics/Proteomics/Metabolomics	3+0+0	BIO 421031
4.	Immunobiology/Immunogenetics	3+0+0	BIO 421041
5.	Nanobiotechnology	3+0+0	BIO 421051
6.	Cell and Molecular Biology Lab	0+0+2	BIO 422060
7.	Immunobiology lab	0+0+2	BIO 422070
8.	Nanobiotechnology Lab	0+0+2	BIO 422080
Total Credit		21	

Semester: IX

1.	Biophysics and Structure Biology	3+0+0	BIO 511011
2.	Biomembrane and Bioenergetics	3+0+0	BIO 511021
3.	Evolutionary Biology	3+0+0	BIO 511031
4.	Pathogen and diseases (Plants and Animal)	3+0+0	BIO 511041
5.	Applied Microbiology	3+0+0	BIO 511051
6.	Pathology Lab	0+0+2	BIO 512060
7.	Evolutionary Biology lab	0+0+2	BIO 512070
8.	Industrial Microbiology lab	0+0+2	BIO 512080
Total Credit		21	

Semester: X (Student should select 3 theory courses and one project work)

1.	Plant Biotechnology	3+0+0	BIO 526011
2.	Animal Biotechnology	3+0+0	BIO 526021
3.	Microbial Biotechnology	3+0+0	BIO 526031
4.	Cancer Biology and Therapeutics	3+0+0	BIO 526041
5.	Neurobiology	3+0+0	BIO 526051
6.	Ecology / Adaptationl Ecosystems	3+0+0	BIO 526061
7.	Systems biology	3+0+0	BIO 526071
8.	Project work(Dissertation)	0+0+9	BIO 524080
9.	Seminar	0+0+2	BIO 524090
Total Credit		20	

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Course Structure

2 Year M.Sc. In Life Science 2017

Semester: I

1.	Advanced Cell Biology	3+0+0	LS 111010
2.	Biochemistry	3+0+0	LS 111020
3.	Advances in plant Physiology and Developmental Biology	3+0+0	LS 111030
4.	Animal Development Biology and Endocrinology	3+0+0	LS 111040
5.	Virology	3+0+0	LS 111050
6.	Evolutionary Biology	2+0+0	LS 111060
7.	Developmental & Evolutionary Biology	0+0+2	LS 112070

	Lab		
8.	Virology Lab	0+0+2	LS 112080
9.	Biochemistry and cell Biology Lab	0+0+2	LS 112090
Total Credit		23	

Semester: II

1	Biophysical Chemistry	3+0+0	LS 121010
2	Advanced Molecular Biology	3+0+0	LS 121020
3	Biotechnology and Bioethics , Biostatistics and Computer Applications	3+0+0	LS 121030
4	Genomics/Proteomics/Metabolomics	3+0+0	LS 121040
5	Immunobiology/Immunogenetics	3+0+0	LS 121050
6	Nanobiotechnology	3+0+0	LS 121060
7.	Molecular Biology Lab	0+0+2	LS 122070
8.	Immunobiology lab	0+0+2	LS 122080
9.	Nanobiotechnology Lab	0+0+2	LS 122090
Total Credit		21	

Semester: III

1.	Biomembrane and Bioenergetics	3+0+0	LS 131010
2.	Bioinformatics	3+0+0	LS 131020
3.	Pathogen and diseases (Plants and Animal)	3+0+0	LS 131030
4.	Applied Microbiology	3+0+0	LS 131040

5.	Structure Biology	2+0+0	LS 131050
6.	Pathology Lab	0+0+2	LS 132060
7.	Bioinformatics and Structure Biology Lab	0+0+2	LS132070
8.	Industrial Microbiology lab	0+0+2	LS132080
9	Project work I (Review of Literature, Survey)	0+2+0	LS132090
Total Credit		22	

Semester: IV (3 theory papers should be opted with project work)

1.	Plant Biotechnology	3+0+0	LS 141010
2.	Animal Biotechnology	3+0+0	LS 141020
3.	Microbial Biotechnology	3+0+0	LS 141030
4.	Cancer Biology and Therapeutics	3+0+0	LS 141040
5.	Neurobiology	3+0+0	LS 141050
6.	Ecology / Adaptationl Ecosystems	3+0+0	LS 141060
7.	Systems biology	3+0+0	LS 141070
8.	Proiect work II (Dissertation)	0+0+9	LS 142080
9.	Seminar	0+0+2	LS 142090
Total Credit		20	

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Course Structure
Ph.D. Course Work

Sl. No.	Paper Name	Code
1.	Research Methodologies (Core)	BIO 911010
2.	Science Communication (Core)	BIO 911020
3.	Life Sciences I (Core)	BIO 911030
4.	Life Sciences II (Core)	BIO 911040
5.	Bioinformatics (Core)	BIO 911050
6.	Introduction to cancer (Elective)	BIO 918060
7.	Molecular Neurobiology (Elective)	BIO 918070
8.	Molecular Plant Physiology (Elective)	BIO 918080
9.	Developmental Biology (Elective)	BIO 918090
10.	Microbiology and Biotechnology (Elective)	BIO 918100

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Course Structure
M.Sc. Life Sciences
Placed in BOS March 2018
Approved by School Board in Nov. 2018

Semester: I

Sl. No.	Paper Name	Credit (L+T+P)	Code
1.	Cell Biology	3+0+0	
2.	Biochemistry	3+0+0	
3.	Plant System Biology	3+0+0	
4.	Animal Physiology and Developmental Biology	3+0+0	
5.	Biostatistics and Bioinformatics	2+1+0	
6.	General Microbiology	3+0+0	
7.	Microbiology Lab	0+0+2	
8.	Biochemistry and cell biology lab	0+0+2	
Total Credit		22	

Semester: II

1.	Molecular Biology	3+0+0	
2.	Analytical Biotechnology	3+0+0	
3.	Applied Microbiology	3+0+0	
4.	Immunology	3+0+0	
5.	Recombinant DNA Technology	3+0+0	
6.	Molecular Biology & r-DNA Technology Lab	0+0+2	
7.	Immunology Lab	0+0+2	
8.	Applied Microbiology Lab	0+0+2	

Total Credit	21
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Semester: III

1.	Animal System Biology	3+0+0	
2.	Evolutionary Biology	3+0+0	
3.	Advances in Plant physiology and Developmental Biology	3+0+0	
4.	Environmental Biology	2+0+0	
5.	Elective 1	3+0+0	
6.	Elective 2	3+0+0	
7.	Plant Physiology & Developmental Biology Lab	0+0+2	
8.	Animal System and Evolutionary Biology Lab	0+0+2	
9.	Project work 1-Review and Literature Survey	NC	
Total Credit		21	

- EL 1: 1. Bioprocess Technology
 2. Agricultural Biotechnology
 3. Stem cell Technology
 4. Drug Discovery and delivery

- EL 2: 1. Neurobiology
 2. Cancer Biology
 3. Enzymology
 4. Plant Tissue Culture

Semester: IV

1.	Project Work II	15	
2.	Dissertation and Seminar	02	
Total Credit		17	

Semester 1: 22

Semester 2: 21

Semester 3: 21

Semester 4: 17

Total Credits: 81 Credits