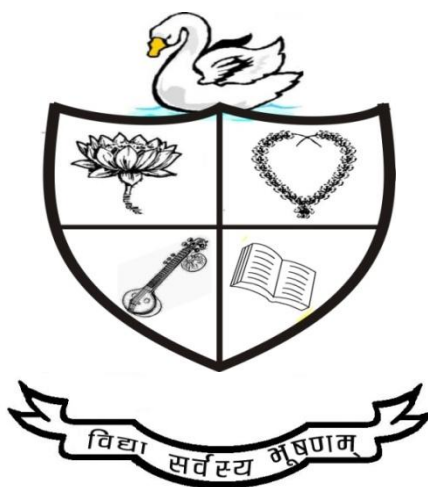


SYLLABUS FOR THE FOUR-YEAR UNDERGRADUATE PROGRAMME (FYUGP)

As per provisions of NEP_2020 to be implemented from
academic year 2022 onwards.

Semester: VI	Session: 2026-27
Course Type: DSC	Title: Immunology



Department of Biotechnology
**GOVT. DIGVIJAY AUTONOMOUS POST GRADUATE
COLLEGE, RAJNANDGAON (C.G.)**



GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE, RAJNANDGAON (C.G.)

FYUGP (NEP 2020 Course)

Department: Biotechnology

Part A: Introduction			
Program: Bachelor in Life Sciences (Degree/Honors)		Semester: VI Sem	Session: 2026-2027
1	Course Code	BTSC-06-T	
2	Course Title	Immunology	
3	Course Type	Core Course	
4	Pre-requisite (if any)	As per program	
5	Course Learning Outcomes (CLO)	After completing this course, the students will be able to - • Understand the immunological organizations. • To explore antigens, antibodies, and cytokines. • To explore the regulation of immunological factors. • To compete with pathogenic factors related to immunology.	
6	Credit Value	03 Credits (Credit = 15 Hours - learning & observation)	
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
Part B: Content of Course (Theory)			
Total No. of Teaching-learning Periods (01 Hr. per period)- 45 Periods (45 Hours)			
Unit	Topic (Course content)	No. of Period	
I	Concept of immunology 1. Immunology – General concept, history, and development. 2. Immune system and immunity. 3. Organization of the immune system. 4. Cells are involved in the immune system.	12 (12 Hrs)	
II	Antigen & antibodies 1. Types of Antigens. 2. Types and structure of antibodies. 3. Antigen-antibody interaction. 4. Basic structure and function of cytokines.	11 (11 Hrs)	
III	Immunological expression 1. Major histocompatibility agents. 2. Cell-mediated immunity. 3. Interferons and hypersensitivity. 4. Immunohematology.	11 (11 Hrs)	
IV	Pathogenicity and immunology 1. Monoclonal antibodies.	11 (11 Hrs)	

	2. Autoimmune diseases: Hemolytic anemia, Rheumatoid arthritis, insulin-dependent diabetes, Myasthenia gravis. 3. Immunology of organ transplantation. 4. Immunodeficient disease -Cancer and AIDS.	
Keywords	Antigen, Antibody, MHC, Autoimmune Diseases.	

Part C - Learning Resource	
Text Books, Reference Books, Other Resources -	
Text book- Essentials of immunology- S K Gupta A textbook of immunology- Latha P Madhavee	
- Immunology – Kuby - Textbook of microbiology – Anantnarayan&Panikar - Immunology – Roitt; Immunology – NandiniSethi - Fundamentals of Immunology – William Paul - Immunology – A short course 5thEdn – Eli Benjamin , Richard Coico	
Online resources- https://archive.nptel.ac.in/courses/102/105/102105083/ https://archive.nptel.ac.in/courses/102/103/102103038/	

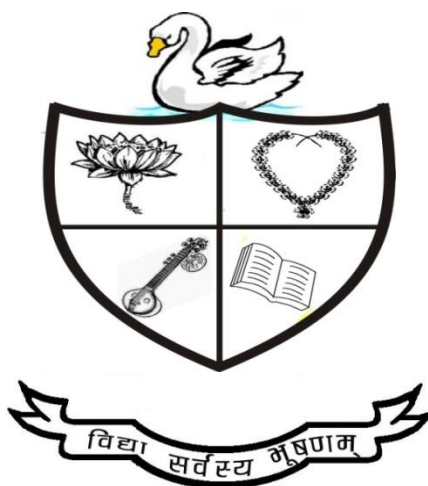
Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: 100 Marks		
Continuous Internal Assessment (CIA): 30 Marks		
End Semester Exam (ESE): 70 Marks		
Continuous Internal Assessment (CIA) (By course teacher):	Internal Test / Quiz-(2): 20 +20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
End Semester Exam (ESE):	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit- 4x10=40 Marks	

Approval of the Board of Studies						
Date: 20-06-2026						
Name	Prof. S. K. Jadhav	Sabiha Naz	Dr. Shubha Diwan	Shri Sanjay Bhagwat	Ku. Varsha Meshram	Dr. Pramod Kumar Mahish
Designation	VC Nominee	Subject Expert	Subject Expert	Employment/ Industrial Member	Merit Alumni	Chairman/ HOD
Signature	Joined by Google Meet on 20-06-2026 https://meet.google.com/nzg-cntq-zbc					

SYLLABUS FOR THE FOUR-YEAR UNDERGRADUATE PROGRAMME (FYUGP)

As per provisions of NEP_2020 to be implemented from
academic year 2022 onwards.

Semester: VI	Session: 2026-27
Course Type: DSC Practical	Title: Immunology



Department of Biotechnology
**GOVT. DIGVIJAY AUTONOMOUS POST GRADUATE
COLLEGE, RAJNANDGAON (C.G.)**

GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE, RAJNANDGAON (C.G.)

FYUGP (NEP 2020 Course)

Department: Biotechnology

Four Year Undergraduate Program (2024-28)

Department of Biotechnology

Course Curriculum

Part A: Introduction		
Program: Bachelor in Life Sciences (Degree/Honors)		Semester: VI Sem Session:2026-2027
1	Course Code	BTSC-06-P
2	Course Title	Immunology
3	Course Type	Core Course
4	Pre-requisite (if any)	As per program.
5	Course Learning Outcomes (CLO)	After completing this course, the students will be able to - • Identify immunological cells and tissues. • Perform antigen antibody interaction. • Estimate antigen antibody reactions. • Estimate immunological specificity.
6	Credit Value	01 Credits Credit =30 Hours Laboratory or Field learning/Training
7	Total Marks	Max. Marks: 50 Min Passing Marks: 20
Part B: Content of Course		
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)		
Module	Topic (Course content)	No. of Period
Lab./Field Training/ Experiment Contents of Course	1. Blood film preparation and identification of cells. 2. Lymphoid organs and their microscopic organization. 3. Immunization, collection of serum. 4. Blood grouping concerning antigen-antibody interaction. 5. Rh factor determination. 6. Widal test. 7. VDRL test. 8. Ouchterlony Double diffusion for antigen-antibody pattern. 9. Rocket Immuno-electrophoresis. 10. Radial Immunodiffusion. 11. DOT ELISA.	30
Keywords	Antigen, Antibody, MHC, Autoimmune Diseases.	

• Part C - Learning Resource	
Text Books, Reference Books, Other Resources -	
Text book- Essentials of immunology- S K Gupta A textbook of immunology- Latha P Madhavee	
- Immunology – Kuby - Textbook of microbiology – Anantnarayan&Panikar - Immunology – Roitt - Immunology – NandiniSethi - Fundamentals of Immunology – William Paul - Immunology – A short course 5thEdn – Eli Benjamin , Richard Coico	
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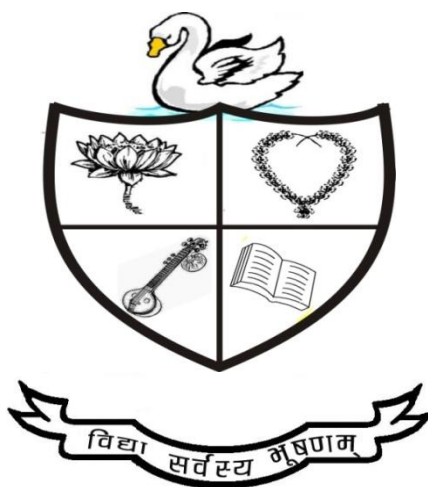
Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 50 Marks Continuous Internal Assessment (CIA): 15 Marks End Semester Exam (ESE): 35 Marks		
Continuous Internal Assessment (CIA) (By course teacher):	Internal Test / Quiz-(2): 10 +10 Assignment / Seminar + Attendance- 05 Total Marks - 15	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE):	Laboratory / Field Skill Performance: A. On spot Assessment - 20 Marks B. Spotting based on tools & technology (written) – 10 Marks C. Viva-voce (based on principle/technology) - 05 Marks	Managed by course teacher as per lab status

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Signature	Joined by Google Meet on 20-06-2026 https://meet.google.com/nzg-cntq-zbc					

SYLLABUS FOR THE FOUR-YEAR UNDERGRADUATE PROGRAMME (FYUGP)

As per provisions of NEP_2020 to be implemented from
academic year 2022 onwards.

Semester: VI	Session: 2026-27
Course Type: DSE	Title: Medical Biotechnology



Department of Biotechnology
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GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE, RAJNANDGAON (C.G.)

FYUGP (NEP 2020 Course)

Department: Biotechnology

Course Curriculum

Part A: Introduction		
Program: Bachelor in Life Sciences gree/Honors)		Semester: VI Sem Session:2026-2027
1	Course Code	BTSE-04-T
2	Course Title	Medical Biotechnology
3	Course Type	Elective course
4	Pre-requisite (if any)	As per program
5	Course Learning. Outcomes (CLO)	After completing this course, the students will be able to - • Understand about rDNA technology and its outcome. • Understand about diagnostics methods. • Understand about tissue engineering and its therapeutics. • Understand about immunodeficiency and biomarkers.
6	Credit Value	03 Credits (Credit = 15 Hours - learning & observation)
7	Total Marks	Max. Marks: 100 Min Passing Marks: 40
Part B: Content of Course (Theory)		
Total No. of Teaching-learning Periods (01 Hr. per period)- 45 Periods (45 Hours)		
Unit	Topic (Course content)	No. of riod
I	Immunization and therapy 1. Immunization- Immunization, live, killed, attenuated, subunit vaccine. 2. Recombinant DNA and protein-based vaccines. 3. Transfusion of immuno-competent cells. 4. Stem cell therapy.	12 (12 hrs)
II	Diagnostics 1. Antibody-based diagnosis 2. Monoclonal antibodies as diagnostic reagents. 3. Diagnosis of bacterial, viral, and parasitic diseases by using ELISA. 4. Diagnosis of bacterial, viral, and parasitic diseases by using western blot.	11 (11 hrs)
III	Tissue engineering and therapy 1. Concept of tissue engineering. 2. Cellular therapy. 3. Role of scaffolds and growth factors. 4.Ethical issues.	11 (11 hrs)
IV	Immunological imbalance and pathogenicity 1. Primary immunodeficiency (SCID, X-linked agammaglobulinemia, Defects in complement system). 2. Secondary immunodeficiency (AIDS). 3. Biomarkers for organ dysfunctions. 4. Therapeutic intervention of uncontrolled cell growth.	11 (11 hrs)
Keywords	Immunization, Diagnostics, Cellular Therapy, Ethical Issues.	

• Part C - Learning Resource

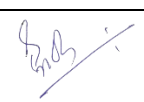
Text Books, Reference Books, Other Resources -

Text book-

Essentials of immunology- S K Gupta

A textbook of immunology- Latha P Madhavee
• Immunology – Kuby • Textbook of microbiology – Anantnarayan&Panikar • Immunology – Roitt • Immunology – NandiniSethi • Fundamentals of Immunology – William Paul • Immunology – A short course 5thEdn – Eli Benjamin , Richard Coico
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SYLLABUS FOR THE FOUR-YEAR UNDERGRADUATE PROGRAMME (FYUGP)

As per provisions of NEP_2020 to be implemented from
academic year 2022 onwards.

Semester: VI	Session: 2026-27
Course Type: DSE Practical	Title: Medical Biotechnology



Department of Biotechnology
**GOVT. DIGVIJAY AUTONOMOUS POST GRADUATE
COLLEGE, RAJNANDGAON (C.G.)**

FYUGP (NEP 2020 Course)**Department: Biotechnology****Four Year Undergraduate Program (2024-28)****Department of Biotechnology****Course Curriculum**

Part A: Introduction			
Program: Bachelor in Life Sciences (Certificate/Diploma/Degree/Honors)		Semester: VI Sem	Session: 2026-2027
1	Course Code	BTSE-04-P	
2	Course Title	Medical Biotechnology	
3	Course Type	Elective course (Practical)	
4	Pre-requisite (if any)	As per program.	
5	Course Learning Outcomes (CLO)	After completing this practical course, the students will be able to - • Interpret the immunological reactions. • Estimate immunological molecules. • Analyze biomarkers. • Evaluate molecules related to organ physiology.	
6	Credit Value	01 Credits Credit = 30 Hours Laboratory or Field learning/Training	
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
Part B: Content of Course (Theory)			
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)			
Module	Topic (Course content)	No. of Period	
Lab./Field Training/ Experiment Contents of Course	1. Study of Ag-Ab reaction. 2. Widal test. 3. VDRL test. 4. Haemogram preparation. 5. TLC, DLC counting. 6. Hb estimation. 7. Total protein, albumin, and globulin estimation. 8. Lipid profiling. 9. Sugar testing. 10. SGPT/SGOT estimation.	30	
Keywords	Immunization, Diagnostics, Cellular Therapy, Ethical Issues.		

• Part C - Learning Resource
Text Books, Reference Books, Other Resources -
Text book-

Essentials of immunology- S K Gupta A textbook of immunology- Latha P Madhavee
- Immunology – Kuby - Textbook of microbiology – Anantnarayan&Panikar - Immunology – Roitt - Immunology – NandiniSethi - Fundamentals of Immunology – William Paul - Immunology – A short course 5thEdn – Eli Benjamin , Richard Coico
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