

**PITHAPUR RAJAH'S GOVERNMENT
COLLEGE (AUTONOMOUS)**

KAKINADA - 533001, AP.

Affiliated to Adikavi Nannaya University

NAAC Accredited with "A" Grade (3.17 CGPA)

BOARD OF STUDIES OF BIOCHEMISTRY

B.Sc. BIOCHEMISTRY under CBCS

Meeting Minutes/Resolutions



Convened on 30 APRIL 2024

AY 2024-25

DEPARTMENT OF BIOCHEMISTRY

**PITHAPUR RAJAH'S GOVERNMENT
COLLEGE (AUTONOMOUS)**

**Opp. Mc Laurin High School, Raja Ram Mohan Roy
Road,
Kakinada**

www.prgc.edu.in; e-mail: chemistry@prgc.edu.in

VISION AND MISSION OF THE COLLEGE:

Vision

To provide the right academic environment paving way for intellectual excellence, humane feelings and social commitment. The college believes in providing quality education for the socially disadvantaged, economically weaker sections of the society and thereby help them move up the ladder of success and social order.

Mission

- To impart holistic education with special emphasis on character, culture, updated knowledge and skill oriented learning.
- To make the students enjoy the fruits of globalization without prejudice to their local and cultural environment.
- To impart necessary life skills so as to make them face any challenge in the bigger world – Social, ethical, psychological or professional

P.R. GOVT. COLLEGE (AUTONOMOUS)KAKINADADEPARTMENT OF BIOCHEMISTRY

BOARD OF STUDIES MEETING IN BIOCHEMISTRY2022-2023

LIST OF EXAMINERS

S. No	Name of the Examiner	Subject	Name of the College
1	D. KALYANI	ASSISTANT PROFESSOR IN BIOSCIENCES	ADIKAVI NANNAYA UNIVERSITY RAJAHMAHENDRAVARM.
2	DR. P. JYOTHI KUMARI	LECTURER IN BIOSCIENCES	ST. THERESA DEGREE COLLEGE, ELURU.
3	D.VIJAYA SREE	LECTURER IN BIOCHEMISTRY	GCW (A), GUNTUR
4	G. V. SOWMYA	LECTURER IN BIOSCIENCES	DR.V.S.KRISHNA DEGREE COLLEGE, VISAKHAPATNAM.
5	DR. SANDEEP	ASSISTANT PROFESSOR IN BIOSCIENCES	GITAM UNIVERSITY, VISAKHAPATNAM.
6	DR.B.SREENU	LECTURER IN BIOCHEMISTRY	ADITYA DEGREE COLLEGE, KAKINADA

Department of Chemistry Bio- Chemistry

Minutes of board of studies (BOS) meeting 2024-25 conducted on 30-04- 2023

Meeting of Board of Studies in **Bio-Chemistry** is convened on **30-04- 2023** through offline at P.R. Govt. College (A), Kakinada.

Venue: Conference Hall, Dt: **30-04- 2023**

The Principal: **Dr. B.V. Tirupanyam,**

Chairman: **Sri. V. Sanjeeva Kumar,** Chairman and lecturer in charge.

University Nominee: **Smt. M. Suvarchala** Lecturer in Home Science, ASD Govt. Degree College(Autonomous), Kakinada.

Industrialist: **Dr.P.KARUNA RAMAN,** IDEAL ORGANICS . HYDERABAD.

Subject Expert 1 : **Dr. B. Sreenu,** HOD in Life Sciences

Lecturer in BioChemistry, Aditya Degree College, Kakinada

Subject Expert 2 : **D. VIJAYA SREE,** lecturer in biochemistry, GDC , guntur

All the faculty members of Chemistry Department and student alumni attended the meeting.

AGENDA:

To discuss the Semester System and revised Choice Based Credit System (CBCS) being implemented for the past 01 years, i.e., w.e.f. 2024-25

To discuss and approve the Continuation/Modifications of the syllabus for the Odd Semesters of V Years for 2024-25.

Grant of Extra credits for Online SWAYAM MOOCs etc.

Syllabus, Model Question Papers and Model Blue Prints for, V Semester.

Teaching learning methodology for the present III-Year Students and 50:50 (External: Internal) ratio I Year Students w.e.f 2024-25

Panel of paper setters and examiners.

Proposals for Community Service Projects/Extension activities for the benefit of the society.

To make it mandate to possess 75% of attendance to allow the students for each mid Examination and Semester examinations.

To make it flexible the semester academic schedule in VI semesters keeping in view of availability of Embedded Industrial Apprenticeship.

Department action plan for 2024-25.

Any other items with the permission of the chair.

• **RESOLUTIONS:**

The Meeting Of Board Of Studies In Bio-Chemistry is convened on 30-04-2023 at LCD Hall-1 in P.R. Govt. College (A), Kakinada. The Principal Dr. B. V. Tirupanyam, M. Suvarchala, University Nominee, Subject expert 1Dr. B. Sreenu, Aditya Degree college, Kakinada, Expert2 Smt. D.Vijya sree GDC, Guntur, Subject Expert1 all members of the faculty of Chemistry and student representatives attended the meeting. Agenda items are discussed and the following resolutions were made.

Following resolutions were made.

1. It is resolved to follow the revised Choice Based Credit System for Biochemistry Courses scrupulously as per the directions of Andhra Pradesh State Council of Higher Education (APSCHE), Vijayawada and also as per a. the directions of Adikavi Nannaya University, Rajamahendravaram with effect from the academic year 2023-24.
2. It is resolved to follow the revised curricular framework for Biochemistry courses scrupulously as per the directions of Andhra Pradesh State Council of Higher Education (APSCHE), Vijayawada and also as per the directions of Adikavi Nannaya University, Rajamahendravaram with effect from the academic year 2024-25
3. It is resolved to choose Life Skill courses and Skill Development Courses in concurrence with the vocational course.
4. It is resolved to conduct industrial visits for Biochemistry students to make them acquainted with the industrial environment.
5. It is resolved to organize Guest lectures by eminent professors and Industrial Experts.
6. It is resolved to implement a pass minimum for internal assessment for CBSE pattern students as the pattern is learner oriented.
7. It is resolved to submit proposals to conduct a faculty development programme in instrumentation techniques/advanced topics with the assistance of industry representatives and university representatives.
8. It is resolved to conduct Industrial Internship for a period of two months during the summer after completion of semester end examinations.
9. It is resolved to make it mandatory for the students in the entire V semester to undergo industrial internship for a period of 6 months in a Medicinal Industry.
10. It is resolved to follow strictly the guidelines of UGC under NSQF scheme for the recruitment and engagement of faculty and non-teaching staff.
11. It is resolved to follow the same syllabi for English, Second Language, Life Skill Courses and Skill Development Courses as those prescribed for UG Courses by APSCHE, Vijayawada.
12. It is resolved to follow the same syllabi for main subjects namely Food Science, Biochemistry and Chemistry as it is, as they prescribed for UG Courses by APSCHE, Vijayawada, and as they are implementing in our College for other courses.
13. It is resolved to implement 50% external & 50% internal marks for theory & 100% external marks in practical's from the academic year 2024-25 for third year students only.
14. It is resolved that the students should possess (maintain) 75% attendance for both theory and practical in order to attend the mid and semester examination.
15. Resolved to reduce 50 marks of theory internal to 25 marks

16. for mid exams and 25 marks for co-curricular activities (Seminar / Assignment / Quiz / Group Discussion).
17. Resolve to conduct practical examinations semester wise with external examiners in even semesters only
18. Resolved to conduct evaluation on project submitted Embedded Industrial apprenticeship in V/VI semester with internal examiners only.
19. Resolved to send the students to Embedded Industrial apprenticeship in semester V or in semester VI or even in middle of semester V/VI whenever opportunities available and that may be in continuation with Internship to be done at the end of 2 semester.
20. Resolved to follow the Action plan of Dept. chemistry as the Biochemistry course is anchoring by Dept. of chemistry.
21. Resolved to recommend the following faculty as paper setters.
 - a. D. Kalyani, Adikavi Nannaya University, Rajamahendravaram ii) Dr. P. Jyothi Kumari, St. Theresa Degree College, Eluru iii) D. vijaya sree ,gdc(w),guntur iv) Smt. G. V. Sowmya, Dr.V.S.Krishna Degree College, Visakhapatnam about Biochemistry.

OBJECTIVES OF DEPARTMENT OF BIOCHEMISTRY

- To acquaint students with various fields of Biochemistry and their applications.
- To acquaint students with concept of Cell Biology and Cytogenetics.
- To acquaint students with basic techniques in Staining and Sterilization.
- To understand the structure and biological functions of Carbohydrates, Amino Acids, Lipids and Nucleotides.
- To familiarize students with the various cells and organs of the immune system, Immune Effector Mechanisms and various Immuno techniques.
- To acquaint students with DNA Replication, Repair, gene expression and regulation. To gain awareness about different Types of Environmental Pollution and Related Issues

Course Objectives:

1. To make student Understand the basic concepts of Biochemistry
2. Understand different types of Metabolic reactions
3. Acquire knowledge on each and every organ functional analysis
4. Develop skills in the usage and application of laboratory instruments
5. Understand the mechanisms of various amino acid reactions
6. Understand various forms of proteins and amino acids.
7. Acquire knowledge on different types of instrumentation techniques in biochemistry analysis.
8. Acquire knowledge on the basic concepts of medical information.
9. Develop communication and soft skills.
10. Visit the hospitals and laboratories and to know the every health situation and importance of biochemistry.

Course Outcomes:

At the end of the course, the student will be able to

1. Acquire competence and skills in various techniques in biochemistry analysis.
2. Choose for an academic progression under vertical mobility for higher studies.
3. Eligible for various competitive examinations in various posts recruited by State and Central Governments.

DEPARTMENT OF CHEMISTRY**ACTION PLAN****ACADEMIC YEAR 2024-2025**

S.No	Month	Activity planned
1	July 2024	Enrollment of 3 months MOOCS/SWAYAM/NPTL/Edex etc by staff
2	July 2024	Placement Drive through JKC
3	August 2024	Invited talk
4	August 2024	Study tour
5	August 2024	Certificate/ Diploma course
6	September 2024	National seminar/ online/offline
7	September 2024	Sep 16 Ozone Day
8	October 2024	Certificate course/Diploma course
9	November 2024	Invited talk
10	December 2024	Enrollment of 3 months MOOCS/SWAYAM/NPTL/Edex etc by students
11	December 2024	International webinar
12	December 2024	10 December National Chemistry Day
13	January 2025	Invited talk
14	January 2025	Career Guidance
15	February 2025	Community outreach program (In connection with the National Science Day)
16	March 2025	Review of Research Publications for 24-25

PITHAPUR RAJAH'S GOVERNMENT COLLEGE(A)

KAKINADA

IMPORTANT DAYS OF OBSERVATION FOR AY 2024-25

MONTH	DATE	NAME OF DAY	DEPARTMENT/STUDENT SUPPORTING WING
JANUARY	26th	Republic Day	All Departments and student supporting wings
FEBRUARY	28th	National Science Day	All Science departments
MARCH	22nd	World Water Day	Chemistry
JUNE	5th	World Environment Day	All Science departments
JULY	11th	World Population Day	All Arts depts.
	28th	World Nature Conservation Day	Life sciences
AUGUST	15th	Independence Day	All Departments and student supporting wings
SEPTEMBER	16th	World Ozone Day	Chemistry
	21st	International Day of Peace	History
	23rd	Mole Day	Chemistry
NOVEMBER	11th	National Education Day	

Members who invited for the Board of studies meeting in Bio-Chemistry to be held On 31st August 2023

Mode of Conduct of meeting: **Offline & online**

S. No	Name of the Nominee	Designation
1	V.SANJEEVA KUMAR	Chairman & lecturer in chemistry
2	SMT.M.SUVARCHAIA LECTURER IN HOME SCIENCE, A S DGOVT. DEGREE COLLEGE AUTONOMOUS ,KAKINADA.	University Nominee
3	DR. B. SREENU LECTURER IN BIO-CHEMISTRY, ADITYA DEGREE COLLEGE, KAKINADA.	Subject Expert
4	SMT.D.VIJAYA SREE. LECTURER IN BIOCHEMISTRY. GDC .GUNTUR	Subject Expert
5	DR.P.KARUNA RAMAN, IDEAL ORGANICS . HYDERABAD .	Representative From Industry
6	T.V.V.SATYA NARAYANA	Member
7	P.VIJAYKUMAR	Member
8	V. RAMBABU	Member
9	G. PAVANI	Member
10	DR.N.BUJJI BABU	Member
11	DR.CH.PRAVEEN	Member
12	V. VENKATESWARA RAO	Member
13	SRI. USN PRASAD	Member
14	B..PRAMEELA	Member
15	SANDEEP KUMAR II FBC	Student Member
16	ANUSHA II FBC	Student Member
17	RAMADEVI II FBC	Student Member
18	VARUN II FBC	Student Member

Signatures of the members who attended the Board of studies in Bio-Chemistry On 30 April 2024 Mode of

Conduct of meeting: Offline & online

Members who invited for the Board of studies meeting in Bio-Chemistry to be held On 30 april 2024
 Mode of Conduct of meeting: Offline & online

S. No	NAME OF THE NOMINEE	CONTACT NUMBER	SIGNATURE
1	V.SANJEEVA KUMAR	9849324988	V. S
2	SMT.M.SUVARCHAIA LECTURER IN HOME SCIENCE, A S DGOVT. DEGREE COLLEGE AUTONOMOUS, KAKINADA.		M. Suvarchela
3	DR. B. SREENU LECTURER IN BIO-CHEMISTRY, ADITYA DEGREE COLLEGE, KAKINADA.		B. Sreenu
4	SMT.D.VIJAYA SREE. LECTURER IN BIOCHEMISTRY. GDC .GUNTUR		D.Vijaya Sree
5	DR.P.KARUNA RAMAN, IDEAL ORGANICS . HYDERABAD .	9398249493	Dr.P.Karuna Raman
6	T.V.V.SATYA NARAYANA	94 90876913	T.V.V. Satya Narayana
7	P.VIJAYKUMAR	9652023082	P. Vijay Kumar
8	V. RAMBABU	9948485537	V. Rambabu
9	G. PAVANI	9912526493	G. Pavani
10	DR.N.BUJJI BABU	9441394792	Dr. N. Bujji Babu
11	DR.CH.PRAVEEN	9491185518	Dr. Ch. Praveen
12	V. VENKATESWARA RAO	9885165388	V. Venkateswara Rao
13	SRI. USN PRASAD	6300882584	Sri. Usn Prasad
14	B..PRAMEELA	904135968	B. Prameela
15	SANDEEP KUMAR II FBC	9492667213	Sandeep Kumar
16	ANUSHA II FBC	7882468889	Anusha
17	RAMADEVI II FBC	9866179994	K. Rama Devi
18	VARUN II FBC	8639595508	Varun


Signatures of the members who attended the Board of studies in Bio-Chemistry On 30 April 2024 Mode of
 Conduct of meeting: Offline & online

DEPARTMENT OF BIOCHEMISTRY BOARD OF STUDY MEETING 2023-24

CHOICE BASED CREDIT SYSTEM

III YEAR FBC SEMESTER-V

YEAR	SEMESTER	PAPER	TITLE	No. of Hrs./ Week	No of credits	Evaluation		
						Internal	External	TOTAL
III	V	VI	Molecular biology and Recombinant DNA Technology	3	4	50	50	100
			Practical- V	2	1		50	50
		VII	Biochemical correlations in Disorders	3	4	50	50	100
			Practical-VI	2	1		50	50

	P.R.GOVERNMENTCOLLEGE(A),KAK INADA	Program &Semester III BSC (FBC) BIOCHEMISTRY (VSemester) PAPER-VI			
	Course Code 5224A	TITLEOFTHECOURSE MOLECULAR BIOLOGY AND RECOMBINANTDNA TECHNOLOGY			
Teaching	Hours Allocated:60(Theory)	L	T	P	C
Prerequisites	TO KNOW ABOUT REPLICATION TRANSCRIPITON TRANSLATION AND MOLECULAR BIOLOGY AND RECOMBINANT DNA TECHNOLOGY	-	4	-	3

Course Objectives:

- 1.After the successful completion of this course, the student will be able to
- 2.This Is to provide knowledge about protein synthesis & their events, regulation of geneexpression
- 3.This is to provide knowledge to the students to learn about recombinant DNATECHNOLOGY
- 4.This also imparts knowledge about molecular biology blotting techniques.
- 5.This is to provide knowledge to the students to learn about Bioinformatics.

COURSEOUTCOMES

On Completion of the course, the students will be able to	
CO1	Understand the concept of replication &process of transcription
CO2	To understand the concept genetic code ,process of translation and inhibitors .
CO3	Illustrate about routes in recombinant DNA technology
CO4	To know the various blotting techniques in molecular biology &bioinformatics

Skill Develop ment		Employa bility		Entreprene urship	
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Syllabus:

Unit-I: DNA Replication and Transcription

22 hours

Nature and structure of the gene. DNA as genetic material DNA (**Harshey and chase experiment, avery method**)

Replication– models of replication, Meselson-Stahl’s experiment proof for semi–conservative model.

DNA. Mechanism DNA Replication in E.Coli. Transcription – RNA polymerases of prokaryotes. Mechanism of Transcription .Initiation, Elongation, Termination

Unit-II: Protein Synthesis and Regulation of Gene Expression

12 hours

Genetic code: features of genetic code, wobble hypothesis. Protein synthesis – Ribosome structure t-RNA, activation of amino acids (amino acyl t-RNA synthetases).

Initiation, elongation and termination of protein synthesis. Post –translational modifications. Inhibitors of protein synthesis.

Unit-III: Recombinant DNA technology

12 hours

Basic steps in r-DNA technology. Tools of r-DNA technology :Enzymes – Restriction Endonucleases, ligase, phosphatases, reverse transcriptase, polynucleotide kinases, terminal transferase nucleases -S1 and RNAaseH. Cloning vectors - Plasmids, Cosmids, **OUT LINE OF YAC&BAC**, λphages vectors. Applications of gene cloning – production of insulin and human growth hormone, production of Bt cotton and edible vaccines.

Unit-IV: Molecular biology Techniques and Bioinformatics

14 hours

Construction of c-DNA and genomic libraries ,

DNA sequencing–Maxam Gilbertand Sanger’s methods. Polymerase chain reaction principle ,procedure and applications.

Outlines of blotting techniques -Southern, Northern and Western.

Introductionto Bioinformatics & its applications . definitions of proteomics and genomics .

Gene bank, NCBI,DDBJ, Swissprot, PDB. Sequence alignments –BLAST and FASTA.

Multiple sequence alignment-CLUSTAL-W

Unit No	Additions	Deletions	Expected levels of learning as per Blooms taxonomy for assessment of CO	Percentage added/deleted
1	sigma factors and their recognition sites, Promoters, helicase, topoisomerases, primase, ligase.	K3 & K4	5% deleted
2	degeneracy of genetic code,	K2 & K5	5% deleted
3	OUT LINE OF YAC&BAC		K2 & K4	5% added
4	Adding of CLUSTAL-W		K3	5% added

K₁ = Remembering, K₂= Understanding, K₃= Applying, K₄ = Analyzing, K₅= Evaluating, K₆= Create

Textbooks:

S.NO	AUTHOR	TITLE	PUBLISHER
1	Alexander Jonson	Molecular biology	Garland science
2	Keya Chaudhuri	Recombinant DNA Technology	TERI

REFERENCE BOOKS

S.NO	AUTHOR	TITLE	PUBLISHER
1	Hervé Seligann	The study of DNA advanced human knowledge	DOI
2	Gary H. Perdew	REGULATION OF GENE EXPRESSION	Humana
3	Keya Chaudhuri	Recombinant DNA Technology	The Energy and Resources Institute

WEB LINKS

1. https://www.youtube.com/live/_uzZSwHc0rQ?si=SDliXol-MwZQV33I
2. <https://youtu.be/6PjVyXGqJSQ?si=lz3v7uOJG5ssc8nC>
3. https://www.youtube.com/live/xgd4LK_C7_8?si=uKFXIyUkE_CpNym2
4. <https://youtu.be/plk6lxLC3dY?si=xs2F0BGY82EEw20S>

Course outcome & Program outcome mapping

On Completion of the course, the students will be able to	
CO1	Understand the concept of replication & process of transcription
CO2	To understand the concept genetic code, process of translation and inhibitors.
CO3	Illustrate about routes in recombinant DNA technology
CO4	To know the various blotting techniques in molecular biology & bioinformatics

CO-PO Mapping:

(1:Slight [Low]; 2:Moderate [Medium]; 3:Substantial [High], '-' :No Correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	2	3	2	3	3	3	1	2	2	3	2	3	3
CO2	3	2	3	4	2	3	3	1	3	3	2	3	2
CO3	3	3	3	3	2	2	2	2	2	3	3	3	2
CO4	3	2	2	2	2	2	3	3	1	1	3	3	3

PROGRAMME OUTCOMES

At the completion of the B.Sc. Bio-Chemistry program, the students of our Department will be able to:

(P01) Knowledge and understanding of:

Students will be able design, conduct experiments, analyze and interpret data for investigating problems in Biotechnology and allied fields.

(P02) Intellectual skills-be able to:

Think logically and organize tasks into a structured form. Assimilate knowledge and ideas based on wide reading and through the internet. Transfer of appropriate knowledge and methods from one topic to another within the subject.

(P03). Practical skills:

Understand the importance of laboratory security as it applies to working with hazardous chemicals, biohazards, recombinant material, and general biotechnology security precautions.

(P04). Environment and sustainability:

Understanding of the causes, types and control methods for Environmental Pollution. Application of different life forms in Environmental Remediation.

(P05). Problem analysis

Identify the taxonomic position of animals. Design solutions from medicinal animals for health problems, disorders and disease of human beings. Animals which meet the specified needs

(P06). Ethics:

Apply ethical principles and commit to environmental ethics and responsibilities and norms the environment

P.R.GOVERNMENT COLLEGE(A),KAKINADA
B.SC (FBC) BIOCHEMISTRY THIRD YEAR SEMESTER-V COURSE-6A MOLECULARBIOLOGY AND
RECOMBINANT DNA TECHNOLOGY
WEIGHTAGE TO CONTENT

UNIT NO.	ESSAY QUESTION S10MARKS	SHORT ANSWER QUESTION S5MARKS	MARKS ALLOTD TO THEUN IT	AS PER BLOOMS TAXONOMY
UNIT -1	02	02	30	Analyzing applying
UNIT-II	02	02	30	Understanding evaluting
UNIT-III	01	01	15	Creating analyzing
UNIT-IV	01	02	20	Creating applying
Total no .of Questions	06	07	95	

P.R. GOVERNMENT COLLEGE (A), KAKINADA
III YEAR B.Sc (Bio-chemistry) Paper-6A MODEL PAPER

Duration: 2hrs.

Max.Marks:50

SECTION-I

Answer any **THREE** of the following questions. And attempt one question from Each section part Each question carries **TEN** marks 3X10=30Marks

PART-A

1. Write the experiments to prove DNA as genetic material.
2. Explain the process of replication in prokaryotes.
3. What is genetic code ? Explain the properties of genetic code.

PART- B

4. Describe the process of protein synthesis in prokaryote
5. Describe the Restriction endonucleases and with examples
6. Write an account on clustal-w

SECTION-II

Answer any **FOUR** of the following questions. Each question carries **FIVE** marks **4 X 5=20Marks**

7. Messelson's sandstahl's experiment
8. Nature and structure of gene.
9. Inhibitors of protein synthesis
10. fasta
11. Human Growth Hormone.
12. PCR applications
13. Applications of bioinformatics

LABORATORY COURSE

Practical Paper –6A :: MOLECULAR BIOLOGY AND RECOMBINANT DNA TECHNOLOGY (at the end of the semester V) (2h/W) 30hrs

Learning Out comes:

On successful completion of this practical course, student shall be able to:

- 1.1.They learn about plasmids, vectors and gain knowledge on the construction of cDNA Libraries
- 2.2. Student of this course have knowledge on gene and central dogma theory .
- 3.3.develop skills using bioinformatics tools and databases

Practical (Laboratory) Syllabus

- 1.1.Isolation of DNA from onion/liver coconut endosperm
- 2.2.Estimation of DNA by diphenylamine method.
- 3.3.Estimation of RNA by orcinol method.
- 4.Isolation of plasmids from E.coli by using agarose gel electrophoresis.
- 5.Problems related to genetic code. And PCR
- 6.4.Sequence alignments of insulin / BSA with other proteins using BLAST and FASTA.
- 7.5.multiple sequence alignment- CLUSTAL W

REFERENNCE

S.NO	AUTHOR	TITLE	PUBLISHER
1	<u>P V G K Sarma</u>	Molecular biology	MJP Publisher
2	<u>Dr. BHASKAR SARMA</u>	Molecular biology	Mahaveer Publications
3	<u>Ashok Kumar</u>	Recombinant DNA technology	Narendra Publishing House
4	Ghosh z.and bibekananda .m 2008.	Principles & applications of bioinformatics	Oxford university press.

Co-Curricular Activities:


Mandatory:(Lab/field training of students by teacher:(lab:10+field:05):

For Teacher: Training of students by teacher in laboratory and field for not less than 15 hours on the field techniques/skills of preparation of isolation of DNA from coconut techniques in bio-chemistry.

For Student: Student shall visit a related industry/chemistry laboratory in universities/research organizations/private sector facility and observe enzymology and bio-physical techniques in bio-chemistry. Write their observations and submit a hand written fieldwork/project work report not exceeding 10 pages in the given format to the teacher.

SCHEME OF VALUATION

Principle and Procedure Conduct of experiment	10 marks 25marks
Report	05marks
Record	05 mark
Viva voce	05marks
TOTAL	50 mars

	P.R.GOVERNMENTCOLLEGE(A),KAKINAD A			Program &Semester III B.SC BIOCHEMISTRY PAPER-VII (V Semester)			
	Course Code	TITLEOFTHECOURSE BIOCHEMICAL CORRELATIONIN DISORDERS					
Teaching	Hours Allocated:60(Theory)			L	T	P	C
Pre- requisites	TO PROVIDE KNOWLEDGE ABOUT DISORDERSOF ENDOCRINE GLANDS AND PROTEIN MAL NUTRITIONS			-	4	-	3

Course Objectives:

After the successful completion of this course, the student will be able to understand

- 1.This is to provide knowledge about disorders of endocrine glands -pituitary & thyroid gland.
- 2.This also imparts knowledge about protein malnutrition, disorders of vitamins &digestive system.

COURSEOUTCOMES

On Completion of the course, the students will be able to	
CO1	This is to provide knowledge about disorders of endocrine glands
CO2	This also imparts knowledge about protein malnutrition
CO3	To learn about disorders of vitamins
CO4	This is also imparts knowledge about disorders of Organic specific disorders and its treatment.

Syllabus:UNIT-I:
HOURS

15

Outline of hormone reaction and imbalances leading to disease—precocious puberty, hyperAnd hypo pituitarism.

Hyper and hypothyroidism. Hyper and hypo disorders of adrenal gland.

Unit-II:

15 hours

Protein calorie malnutrition -Kwashiorkor, Marasmus

DISORDERS OF VITAMINS WATER SOLUBLE: Beriberi, Scurvy, Pellagra, Pernicious anemia,

DISORDERS OF VITAMINS FAT SOLUBLE: Night blindness, Rickets.

Obesity, cardio vascular diseases,

Unit-III:

15 hours

Alzheimer's, Huntington's disease, Creutzfeldt- Jakob disease, Haemoglobinopathies: Sickle cell anemia, Thalassemia.

Wilson's disease, Menken's disease,

Unit-IV: Organ Specific disorders

15

hours

Digestive system: Gastritis, peptic ulcers, pancreatitis, appendicitis

Liver disorders :-cirrhosis of liver, gallstones, **hepatitis**

Renal Disorders: Acute and chronic renal failure, kidney stones [Renal calculi] Acute and Chronic Glomerular nephritis.

K₁ = Remembering, K₂ = Understanding, K₃ = Applying, K₄ = Analyzing, K₅ = Evaluating, K₆ = Create
(placed below) of table

UNIT NO.	Additions	Deletions	Expected levels of learning as per Blooms taxonomy for assessment of CO.	Percentage added/deleted
1.			K2	
2.		Osteomalacia, & Osteoporosis	K3	5% deleted
3.		Goiter	K1	5% deleted
4.	hepatitis	steatorrhea,	K1 & K2	5% added/5% deleted

Textbooks:

S.NO	AUTHOR	TITLE	PUBLISHER
1	Simmi Kharab's	Clinical Correlations	Paperback/softback
2	Thomas m Devlin	BIOCHEMISTRY WITH CLINICAL CORRELATION	CBS Publishers

Reference books

SNO	AUTHOR	TITLE	PUBLISHER
1	Delvin	Biochemistry with clinical correlation	T.M. John Wiley&sons
2	Coico, R and Sunshine	Immunology	T.M.John Wiley& son`s
3	J.M.Berg	Biochemistry	W.H. Freemanand Co.
4	M.J. Simmons	GENETICS	T.M. John Wiley& son`s

WebLinks: <https://youtu.be/X3TARootFfM?si=H9FtI6VMDM2tyHPy>

<https://youtu.be/dtCvYfhzPQ0?si=r5Ic0Jp0PQQ72Oge>

<https://youtu.be/OOXLyIm4XD0?si=wzDPmM4j1-9fe8qM>

Course outcome & Program outcome mapping

On Completion of the course, the students will be able to	
CO1	This is to provide knowledge about disorders of endocrine glands
CO2	This also imparts knowledge about protein malnutrition
CO3	To learn about disorders of vitamins
CO4	This is also imparts knowledge about disorders of vitamins.
On Completion of the course, the students will be able to	

CO-PO Mapping:

(1: Slight [Low] ;	2 Moderate [Medium]; 3: Substantial [High], 0=:No Correlation)
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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	2	3	2	3	3	3	1	2	2	3	2	3	3
CO2	3	2	3	3	2	3	3	1	3	3	2	3	2
CO3	3	3	3	3	2	2	2	2	2	3	3	3	2
CO4	3	2	2	2	2	2	3	3	1	1	3	3	3

PROGRAMME OUTCOMES

At the completion of the B.Sc. Bio-Chemistry program, the students of our Department will be able to:

(P01) Knowledge and understanding of:

Students will be able design, conduct experiments, analyze and interpret data for investigating problems in Biotechnology and allied fields.

(P02).Intellectual skills-be able to:

Think logically and organize tasks into a structured form. Assimilate knowledge and ideas based on wide reading and through the internet. Transfer of appropriate knowledge and methods from one topic to another within the subject.

(PO3).Practical skills:

Understand the importance of laboratory security as it applies to working with hazardous chemicals, biohazards, recombinant material, and general biotechnology security precautions.

(PO4).Environment and sustainability:

Understanding of the causes, types and control methods for Environmental Pollution.

Application of different life forms in Environmental Remediation.

(PO5).Problem analysis Identify the taxonomic position of animals.

Design solutions from medicinal animals for health problems, disorders and disease of human beings.

Animals which meet the specified needs

(PO6).Ethics:

Apply ethical principles and commit to environmental ethics and responsibilities and norms the environment

P.R .GOVERNMENT COLLEGE(A),KAKINADA
B.SC (FBC) BIOCHEMISTRY THIRD YEAR SEMESTER-VII COURSE-7A –
BIOCHEMICAL CORRELATION IN DISORDERS
WEIGHTAGE TO CONTENT

Time:2.30hours

Maxmarks:50 marks

UNIT	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIOS 5 MARKS	MARKS ALLOTED TO THE UNIT	AS PER BLOOMS TAXNOMY
UNIT-I	01	02	20	Understanding
UNIT-II	02	01	25	Analyzing
UNIT-III	01	02	20	remembering
UNIT-IV	02	02	30	Understanding &remembering
Total no. of Questions	06	07	95	

P.R. GOVERNMENT COLLEGE (A), KAKINADA III YEAR B.Sc (Bio-chemistry)
Paper-6A MODEL PAPER

Duration: 2hrs.

Max.Marks:50

SECTION-I

Answer any THREE of the following questions. And attempt one question from Each section part Each question carries TEN marks

3X10=30Marks

PART-A

1. Discuss the various disorders of Adrenal gland?
2. Write an essay on disorders of Water soluble vitamins?
3. Write about the diseases of Alzheimer's and Wilson's disease?

PART- B

4. Write about the any two disorders of digestive systems?
5. Describe the any two Renal disorders?
6. Write an essay on disorders of Fat soluble vitamin .D?

SECTION-II

Answer any FOUR of the following questions. Each question carries FIVE marks 4 X 5=20Marks

7. Hyperpituitarism
8. Kwashiorkor.
9. Goiter
10. Sickle cell anemia
11. Chronic Glomerular nephritis
12. Appendicitis
13. Hyperthyroidism

LABORATORY COURSE

Practical Paper – 7A :: BIOCHEMICAL CORRELATION IN DISORDERS

(at the end of semester V) 30hrs (2h/W) 50Marks

Learning Out comes:

The ability to utilize carbohydrates can be determined by Glucose tolerance test. Initially fasting blood glucose is estimated

A loading dose of glucose is given. The blood glucose levels are estimated at regular intervals after the glucose load

In conditions of insulin deficiency, blood glucose levels get elevated due to impaired utilization of glucose.

Practical (Laboratory) Syllabus

1.Glucose tolerance test.

2.Lipid profile: triglycerides and total cholesterol.

3.Obesity parameters.

4.RBC counting and hemoglobin estimation.

5.Blood pressure measurements.

Lab References:

S.NO	AUTHOR	TITLE	PUBLISHER
1	SAHI NITA	Clinical correlation	JAYPEE BROTHERS MEDICAL PUBLISHERS
2	Poonam Agrawal	Practical biochemistry	CBS Publishers
3	Thomas M.Devlin	biochemistry	Drexel UniversitySchool of Medicine.

Co-Curricular Activities:

Mandatory:(Lab/field training of students by teacher:(lab:10+field:05): **For Teacher:** Training of students by teacher in laboratory and field for not less than 15 hours on the field techniques/skills of preparation of counting of WBC techniques in bio-chemistry.

For Student: Student shall visit a related industry/chemistry laboratory in universities/research organizations/private sector facility and observe techniques in bio-chemistry. Write their observations and submit a hand written fieldwork/project work report not exceeding 10 pages in the given format to the teacher.

SCHEME OF VALUATION

Principle and Procedure	10 marks
Conduct of experiment	15 marks
Report	10 marks
Record	10 marks
Viva voce	05 marks
TOTAL	50 marks

