PITHAPUR RAJAH'S GOVERNMENT COLLEGE
(AUTONOMOUS)
KAKINADA

(Affiliated to Adikavi Nannaya University)

DEPARTMENT OF FOOD SCIENCE

(2023-24)

(CHOICE BASED CREDIT SYSTEM)

BOARD OF STUDIES

PEDAGOGY

Commissionerate of Collegiate Education, AP, Vijayawada Development of

Unit-wise Pedagogy for Conventional Subjects under CBCS

Broad Guidelines and Models

Pedagogy is a set of diverse teaching or instructional strategies and methods used by the teacher in an educational institution to facilitate effective learning by students. Diverse methods are used because learning is dependent on multiple ways but not on any one method such as lecturing. There is no single, universal approach that suits all situations

Pedagogy is the art and science of teaching. Different strategies used in different combinations with different groupings of students will ensure learning outcomes. Some strategies for teaching certain skills and fields of knowledge are more appropriate than the others. Some approaches are better suited to certain student backgrounds, learning styles and abilities. Effective pedagogical practice promotes the wellbeing of students, teachers and the community - it improves students' and teachers' confidence and contributes to their sense of purpose for being at college.

Although it is the privilege of the teacher to choose or design his/her own pedagogical methods it is also his/her responsibility to ensure proper learning by all students in the class. A few pedagogical methods designed and implemented in the last several decades remain time-tested and popular across the world. The effectiveness of ICT and other educational technologies as a support to pedagogy in the recent years was found to be immense.

The following are some of the pedagogical methods commonly practiced. They are given Pedagogical Strategy or method (PS) Numbers for common use in academic and teaching plans.

I. **Common Strategies**: Common pedagogical strategies suggested to be used for preparing teaching plan (preferably in circles and matrices) for each unit of subject syllabus.

Table-1:

Sno	*PS*	*Pedagogic Strategy/Method*	*Practice*	*Advantages*
1	P_1	Lecture	Continuous teaching by a teacher to a large number of students for about one hour	Useful in transmitting organized knowledge in a systematic way
2	P_2	Demonstration	Showing a process with the help of real, dummy or simulated material	Applied for learning a practical aspect along with skills
3	P_3	Question & Answer	Teacher asks questions before, during or after lecture or demo	Feedback on student level of understanding. Useful in assessing teacher's own progress.
4	P_4	Discussion, Debate or Collaboration	Student activity after the lecture, video or other teacher activity. Small groups (Pair-learning: with two students) to large groups.	Spreads knowledge and ideas in students under group learning and consolidates basic learning. . Communication skills are inculcated.

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

AGENDA:

- To discuss the Semester System and revised Choice Based Credit System (CBCS) being implemented for the past 03 years, i.e., w.e.f. 2020-21.
- To discuss and approve the Continuation/Modifications of the syllabus for the Odd & Even Semesters of III, IV & V Years for 2023-24.
- Grant of Extra credits for Online SWAYAM MOOCs etc.
- Syllabus, Model Question Papers and Model Blue Prints for III, IV, V and VI Semesters.
- Teaching learning methodology for the present II- and III-Year Students and 50:50 (External: Internal) ratio I Year Students w.e.f. 2023-24.
- 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 V & VI semesters keeping in view of availability of Embedded Industrial Apprenticeship.
- Department action plan for 2023-24.
- Any other items with the permission of the chair.

- **RESOLUTIONS:**

The Meeting Of Board Of Studies In FOOD SCIENCE is convened on 31-08-2023 at Conferance Hall-1 in P.R. Govt.College (A), Kakinada. The HOD CAPT .Dr. M. KRISHNA RAO, M. Suvarchala, University Nominee, Subject Expert1 Sri. V. Mallikarjuna sharma, GDC, Jaggampeta, Subject Expert2,Sri, D. Vinod kumar, ideal Degree college, Kakinada,
all members of the faculty of Food science and student representatives attendedthe 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 FOOD SCIENCE Courses scrupulously as per the directions of Andhra Pradesh State Council of Higher Education(APSCHE), Vijayawada and also asper 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 FOOD SCIENCE 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 2023-24.
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 FOOD SCIENCE students to make them acquainted with theindustrial 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, FOOD SCIENCE andChemistry 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 2020-21 for first second and third year students only.
14. It is resolved that the students should posses (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 for mid exams and 25 marks for co-curricular activities (Seminar / Assignment / Quiz / Group Discussion.
16. Resolve to conduct practical examinations semester wise with external examiners in even semesters only
17. Resolved to conduct evaluation on project submitted Embedded Industrial apprenticeship in V/VI semester with internal examiners only.
18. 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.
19. Resolved to follow the Action plan of Dept. chemistry as the FOOD SCIENCE course is anchoring by Dept. ofchemistry.
20. Resolved to recommend the following faculty as paper setters.
    i) D. Kalyani, Adikavi Nannaya University, Rajamahendravaram
    ii) Dr. P. Jyothi Kumari, St. Theresa Degree College, Eluru
    iii) Dr. Srirangam, Layola College, Vijayawada
    iv) Smt. G. V. Sowmya , Dr.V.S.Krishna Degree College, Visakhapatnam about FOOD SCIENCE.

Objectives of Department of Food science

- To acquaint students with various fields of Food science and their applications.
- To acquaint students with concept of Cell Human physiology and Clinical nutrition.
- To acquaint students with basic techniques in Staining and Sterilization.
- To understand the structure and biological functions of Carbohydrates, Amino Acids, Lipids and Vitamins Minerals.
- To familiarize students with the various cells and organs of the immune system, Immune Effector Mechanisms and various Immune techniques.
- To acquaint students with Basic food groups, Composition and Nutritive values.

To gain awareness about different Types of diets plans, preparations and calculations

Course Objectives:

To make student

1. Understand the basic concepts of Food science
2. Understand different types of Biological structures and functions of FOOD SCIENCE.
3. Acquire knowledge on each and every organ functions and structures.
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. Acquire knowledge on different types of instrumentation techniques in Food science analysis.
7. Acquire knowledge on the basic concepts of medical information.
8. Develop communication and soft skills.
9. Visit the hospitals and laboratories and to know the every health situation and importance of food science.

Course Outcomes:

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

1. Acquire competence and skills in various techniques in Food science 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.

P.R.GOVT. COLLEGE (AUTONOMOUS) KAKINADA
DEPARTMENT OF FOOD SCIENCE
BOARDOF STUDIES MEETING 2023-24 OF EXAMINARS

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.Theressa Degree College, Eluru
3	Dr.Srirangam	Lecturer in Food Technology	Layola College, Vijayawada
4	G.V.Sowmya	Lecturer in Biosciences	Dr.V.S.Krishna Degree college , Visakhapatnam
5	Dr.Sandeep	Assistant Professor in Biosciences	Gitam University, Visakhapatnam

Members who invited for the Board of studies meeting in Food Science to be held On 31st August 2023

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

S. No	Name of the Nominee	Designation
1	Capt.M.Krishna rao	Chairman & lecturer in Botany
2	Smt.M.SuvarchaIa Lecturer in Home Science,A S D Govt. Degree College Autonomous ,Kakinada.	University Nominee
3	Smt. V. Mallikarjuna sharma Lecturer in Chemistry Govt Degree College, Jaggampeta.	Subject Expert
4	D. Vinod Kumar Lecturer in Food and nutrition, Ideal Degree College, Kakinada.	Subject Expert
5	Dr. B. Ramesh Babu Managing Director, BogaR Laboratories Peddapuram	Representative From Industry
6	N.Swathi	Member
7	P.H.S.D. Venkatesh	Member
8	V. Ganesh	Student Member
9	K.Abhinaya Tulasi	Student Member
10	B. Durga varun Teja	Student Member

Signatures of the members who attended the Board of studies in Food Science On 31st August 2023

Mode of Conduct of meeting: Offline & online

P.R. GOVT. COLLEGE(AUTONOMOUS)KAKINADA

DEPARTMENT OF FOOD SCIENCE

BOARD OF STUDY MEETING 2023-24

CHOICE BASED CREDIT SYSTEM

II YEAR FOOD SCIENCE

YEAR	SEMESTER	PAPER	TITLE	No. of Hrs./ Week	No of credits	Evaluation		
						Internal	External	TOTAL
	III	III	Human physiology	4	4	50	50	100
II			Practical–III	2	1		50	50
	IV	IV A	Food microb iology	4	4	50	50	100
			Practical–IV	2	1		50	50
		IV B	Human nutrition	4	4	50	50	100
			Practical– V	2	1		50	50

YEAR	SEMESTER	PAPER	TITLE	No. of Hrs./ Week	No of credits	Evaluation		
						Internal	External	TOTAL
II	IV		Internship	4	2	50	50	100

P.R. GOVT. COLLEGE(AUTONOMOUS)KAKINADA

DEPARTMENT OF FOOD SCIENCE

BOARD OF STUDY MEETING 2023-24

CHOICE BASED CREDIT SYSTEM

III YEAR FOOD SCIENCE SEMESTER-V

YEAR	SEMESTER	PAPER	TITLE	No. of Hrs./ Week	No of credits	Evaluation		
						Internal	External	TOTAL
III	V	V A	Food processing Preservation.	4	4	50	50	100
			Practical– V	2	1		50	50
		V B	Clinical & Therapeutic nutrition	4	4	50	50	100
			Practical–VI	2	1		50	50

P.R. GOVT. COLLEGE(AUTONOMOUS)KAKINADA

DEPARTMENT OF FOOD SCIENCE

BOARD OF STUDY MEETING 2022-23

CHOICE BASED CREDIT SYSTEM

III YEAR FOOD SCIENCE SEMESTER-V

YEAR	SEMESTER	PAPER	TITLE	No. of Hrs./ Week	No of credits	Evaluation		
						Internal	External	TOTAL
III	VI		Aprentiship	6	4	100	100	200

	P.R .GOVERNMENT COLLEGE(A),KAKINADA.	Program &Semester			
		II B.SC., FOOD SCIENCE (III Semester)			
Course CodeFS1333	**TITLE OF THE COURSE HUMAN PHYSIOLOGY**				
Teaching	HoursAllocated:60(**Theory**)	L	T	P	C
Pre-requisites	. To enable the students to Understand the necessity of energy and its production in the body.	-	4	-	3

Course Objectives:

To make the student

1. . To enable the students to understand the necessity of energy and its production in the body.
2. . To understand the relationship between nutrition and human well being
3. TO Understand the students, study the human body organ structure and composition
4. TO enable to study the acid base balance of human body organ

Course Outcomes:

On Completion of the course, the students will be able to	
CO1	To enable the students to understand the necessity of energy and its production in the body.
CO2	To understand the relationship between nutrition and human well being
CO3	TO Understand the students, study the human body organ structure and composition
CO4	TO enable to study the acid base balance of human body organ

With focus on employability /entrepreneurship /Skill Development modules

Skill Development		**Employability**		**Entrepreneurship**	

P.R. GOVERNMENT COLLEGE(A) KAKINADA
CHOICEBASED CREDIT SYSTEM

II B.Sc. FOOD SCIENCE SYLLABUS

III SEMESTER PAPER-III

HUMAN PHYSIOLOGY

ADMITTED BATCH 2023-2024

OBJECTIVES:

To enable the students to understand the necessity of energy and its production in the body. To understandthe relationship between nutrition and human wellbeing.

Module – I

INTRODUCTION OF HUMAY BODY: Definition of Anatomy and physiology, Types of cells and tissuebody. Skeletal system - Functions, types of bones , classification of bones and growth of long bones

Module – II

BLOOD: Composition and functions of blood, plasma proteins, Haemoglobin, haematopoiesis, coagulationof blood, blood groups,

HEART: Structure and function of heart and blood vessels – Regulation of cardiac output and blood pressure,heart failure, hypertension.

Module-III

DIGESTIVE SYSTEM: Structure of digestive track, digestion and absorption or carbohydrates, fats and protein.Role of liver, pancreas and gall bladder. Regulation of food intake – role of hunger and satiety centres, effect of nutrients.

NERVOUS SYSTEM: Review of structure and function of neuron – conduction of nerve impulse, synapses, rolein various body functions-obesity, sleep, memory.

Module – IV

EXCRETORY SYSTEM: structure and function of kidney, nephron – Urine formation – Role of kidney in maintaining pHof blood – water, electrolyte and acid base balance – diuretics, renal function tests – propertiesand composition of normal urine, renal function tests – by examination of urine

Module-V

ORGANS OF SPECIAL SENSES: Tongue, ear, nose, eyes, and skin structure and their physiological functions

Unit No	Additions	Deletions	Expected levels of learning as per Blooms taxonomy for assessment of CO	Percentage added/deleted
1	…….	……..	K4 & K2	-
2	………..	-----	K3	-
3	………..	……..	K1	-
4	……	---	K2	-

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

Textbooks:

S.NO	AUTHOR	TITLE	PUBLISHER
1	RANGANATH	HUMAN PHYSIOLOGY	RAVIKUMAR
2	ROSS AND WILSON	ANATOMY AND PHYSIOLOGY	UMAN

CO-POMapping:

(1:Slig ht[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	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

I .Learning outcomes:

On Completion of the course, the students will be able to	
CO1	To enable the students to understand the necessity of energy and its production in the body
CO2	To understand the relationship between nutrition and human well being

SECOND YEAR SEMESTER-III
COURSE-3 : HUMAN PHYSIOLOGY
WEIGHTAGE TO CONTENT

Time:2hours **Maxmarks:50**

MODULE NO.	ESSAY QUESTIONS 10MARKS	SHORT ANSWER QUESTIONS5 MARKS	MARKS AL LOTED TO THE UNIT	AS PER BOOLMS TAXONOMY
UNIT– I	03	02	40	Analysing a understanding
UNIT–II	01	02	20	Creating applying
UNIT–III	01	01	15	Remembering
UNIT–IV	01	02	20	Understanding
Total no. of Questions	**06**	**07**	95	

P.R. GOVERNMENT COLLEGE (A), KAKINADA
B.SC (FOOD SCIENCE)
SECOND YEAR III
SEMESTER
Course–: HUMAN PHYSIOLOGY
Model Question Paper

Time: 2hrs. **Marks:50M**

SECTION-I

Answer any THREE questions choosing at least one from each part.
Each question carries ten marks **3X10=30Marks**

PART-A

1. Elaborate on structure and growth of long bones.
2. Describe in details the structure and functions of heart.
3. Explain the composition of blood.

PART- B

4. Write the mechanism of neuron.
5. Elaborate on structure and physiology functions of skin.
6. Write the structure and functions of Excretory system.

SECTION-II

Answer any FOUR of the following questions. Each question carrie the five marks
4 x 5 = 20

1.Explain about hormones of digestive system.2.Write about types of bones.
3.Explain the composition of blood
4.Write about the structure and functions of stomach5.Write about the functions of neuron
6.Explain the structure and functions of nose7.Descibe the layers of GI tract
8.Brief about functions of eye.

LABORATORY COURSE

Practical Paper –III ::HUMAN PHYSIOLOGY

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

Learning Out comes:

- On successful completion of this practical course, student shall be able to Students understandthe various tissues.
- Students do the experiment better in the real lab having gone through the animation and simulation.

Practical (Laboratory) Syllabus

1.A, B, AB ,O Blood grouping.
2.Estimation of Haemoglobin
3.Sensory evaluation
4. Amalyse enzyme activity
5. Urine Test

V. RECOMMENDED READINGS:

1. Human physiology and Health, David Write (2004)
2. Fundamentals of Human Physiology, Ira Fox (2008)
3. Human Anatomy and Physiology, A.V,Yadav (2005)
4. Hand Book of General Anatomy, B.D.Charusha, the Edition of 1996

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 lessthan15 hours on the field techniques/skills of preparation of assay of amylase, urease, catalase and phosphatase and determination optimum temperature of amylase are assays of enzymology and biophysical techniques in Food scienceistry. **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 Food scienceistry. Write their observations and submit a hand written fieldwork/project work report not exceeding10 pages in the given format to the teacher.

SCHEME OF VALUATION

a.	Principle and Procedure	10 marks
b.	Conduct of experiment	15 marks
c.	Report	10 marks
d.	Record	10 mark
e.	Viva voce	05 marks
TOTAL		**50 marks**

	P.R .GOVERNMENT COLLEGE(A),KAKINADA.	Program &Semester II B.SC., FOOD SCIENCE (III Semester)			
Course CodeFS1333	**TITLE OF THE COURSE FOOD MICROBIOLOGY**				
Teaching	HoursAllocated:60(**Theory**)	L	T	P	C
Pre-requisites	To develop an understanding of industry and in maintenance of health	-	4	-	3

Course Objectives:

After the successful completion of this course, the student shall be able to:

1. To help the students to acquire an elementary knowledge about microorganisms, develop an understanding of industry and in maintenance of health
2. To acquire knowledge about the adulterants of food, food born diseases and health hazards
3. To develop an understanding of industry and in maintenance of health

Course Outcomes:

On Completion of the course, the students will be able to	
CO1	1. To help the students to acquire an elementary knowledge about microorganisms, develop an understanding of industry and in maintenance of health
CO2	To acquire knowledge about the adulterants of food, food born diseases and health hazards
CO3	1. To develop an understanding of industry and in maintenance of health

Skill Development		**Employability**		**Entrepreneurship**	

P.R. GOVERNMENT COLLEGE(A) KAKINADA
CHOICEBASED CREDIT SYSTEM

II B.Sc. FOOD SCIENCE SYLLABUS

III SEMESTER PAPER-IV

FOOD MICROBIOLOGY

ADMITTED BATCH 2023-2024

Module –I

Introduction of microbiology: Classification of microorganisms. Characteristics and morphology of bacteria, fungi, virus, protozoa. Factors effecting on growth of microorganisms. Importance of microorganisms in daily life.

Module – II

Basic concepts in microbiology: Sources, method of detection, growth and survival of microorganisms, mode of transmission of microorganisms (bacteria, mold, virus, protozoa.). Prevention and control measures of microorganisms.

Module – III Cultures & Media preparation: Types of media. Preparation of media, isolation of cultures and cultivation of microorganisms. Importance of sterilization techniques in preparation media or culture.

Module – IV

Role of microorganisms in spoilage of food products: Contamination and spoilage of different foods, spoilage of different groups of foods: Cereal, cereal products, and fruits, meat and meat products, eggs and poultry, fish and other sea foods, milk and milk products, canned food. Food poisoning, food infection

Module-V

Staining technique principals and types of strains- simple stain, differential stain, negative stain, structural stain, - spore capsule flagella hanging drop method

Unit No	Additions	Deletions	Expected levels of learning as per Blooms taxonomy for assessment of CO	Percentage added/deleted
1	……..	Nil	K5	……
2	…… .	……..	K4	…….
3	……	Nil	K4 & K5	NIL
4	…….	…….	K1 & K2	NIL

K_1 = Remembering, K_2= Understanding, K_3= Applying,
K_4 = Analyzing, K_5 = Evaluating, K_6 = Create

Textbooks:

S.NO	AUTHOR	TITLE	PUBLISHER
1	William c Frazier	Food microbiology	R.V.S. Publications
2	Dennis c westoff	Fundamental microbiology	Vinita publications

Reference books

S.NO	AUTHOR	TITLE	PUBLISHER
1	M.R.ADMASS	Modern food microbiology	New age international publishers
2	K.R. Aneja	Food microbiology an introduction	A Divisions of scientific publishers
3	Kalmia E. KNIEL	Food microbiology 2nd edition	Meripustak publishers

Web Links:

1.https://youtu.be/VzAjOPzUIP4?si=Xm4Sj_ggiXIStSd7
2. https://youtu.be/0M-B2dOfcUo?si=WSkohJfpzkNSYXVZ
3. https://youtu.be/4GFKdLy2fOE?si=duwVQ5twWx0AH
r4R4.

Course outcome & Program outcome mapping

On Completion of the course, the students will be able to	
CO1	This course help the students to acquire an elementary knowledge about microorganisms
CO2	To help the students to acquire an elementary knowledge about microorganisms, develop an understanding of industry and in maintenanceof health
CO3	To acquire knowledge about the adulterants of food, food born diseases and health hazards.

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	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. Food science program, the students of our Department will be able to:

(P01) Knowledge and understanding of:

Students will be able design, conduct experiments, analyze an 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

(PO7). Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams, and in multi- disciplinary settings.

B.SC FOOD SCIENCE
SECOND YEAR SEMESTER-III
COURSE- 4 : FOOD MICROBIOLOGY
WEIGHTAGE TO CONTENT

MODULENO.	ESSAY QUESTIONS 10MARKS	SHORT ANSWER QUESTIONS5 MARKS	MARKS ALLOTEDTO THEUNIT	AS PER BLOOMS TAXONOY
UNIT-I	02	01	25	Evaluating
UNIT–II	01	02	20	analyzing
UNIT–III	02	02	30	Evaluating analyzing
UNIT–IV	01	02	20	Understanding and remembering
Total no. of Questions	**06**	**07**	95	

P.R. GOVERNMENT COLLEGE(A), KAKINADA

B.SC (FOOD SCIENCE)

SECOND YEAR IV SEMESTER

COURSE–FOOD MICROBIOLOGY

MODEL QUESTION PAPER

Time:2hrs **Max.Marks-50M**

SECTION-I

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

PART-A

1. Write about growth curve and explain the phases of growth curve?
2. What are the Intrinsic and extrinsic parameters of microbial growth?
3. What are the different types of culture media?
4. Write the contamination and microbial spoilage of vegetables?
5. Write the nutritional media preparation types?
6. contamination and microbial spoilage of milk and milk products?

PART – B

Answer any FOUR questions. (Short answer questions) **Marks : 4x5=20M**

7. Write the staining techniques?
8. Briefly describe the structure of bacterial cell?
9. Write the effect of ph. and temperature on growth?
10. Write about fecal streptococci?
11. Write about culture techniques?
12. Write the methods of isolation of micro organisms?
13. Write the contamination and spoilage of fish?

LABORATORY COURSE

Practical Paper – IV :: FOOD MICRO BIOLOGY

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

Learning Out comes:

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

1. The learning outcomes of using to culture media different samples.
2. Students will develop practical laboratory skills such as pipetting, preparing standard solutions,
3. setting up spectrophotometers, and following precise protocols to conduct the biuret assay.
4. Learning outcomes of this method might include understanding how to prepare the AGAR reagent

Practicals(Laboratory)

1.) Study of compound microscope

2.) Working and handling of common microbiological laboratory equipment and materials; preparation of microscopic examination.

3.) gram stainings (Negative and positive staining of bacteria

4.) Composition, preparation and sterilization of media nutrient agar, potato dextrose agar, Mc Conkey agar, EMB agar.

5.) Isolation, enumeration and characteristics of microorganisms

Lab References:

6. DR.ARUMANGAM–Nelson.D.L.andCox.M.M.,Freeman&Co.
7. Bi–Berg.J.M.,Tymoczko.J.L.andStryer.L.,Freeman&Co.
8. Microbiology–Voet.DandVoet.,J.G.,JohnWiley&Sons
   -Lippincott'sIllustratedReviews.Champe,P.C.andHarvey,R.A.Lippincott
9. Fundamental microbiology–Jain,J.L.,Jain,S.,Jain,N.S.Chand&Co.
10. microbiology–Satyanarayana.UandChakrapani.U,Books&AlliedPvt.Ltd.
11. microbiologyy–Rama Rao. A and Ratna Kumari. D, Kalyani Publishers. Harpers

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 lessthan15 hours on the field techniques/skills of preparation of various solutions and how theyare react with other compounds.

For Student: Student shall visit a related industry/ laboratory in universities/research organizations/private sector facility and observe the techniques used for the separation of glucose percentage ,amino acid concentration in the samples. Write their observations and submit a hand written fieldwork/project work report not exceeding10 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 mark
Viva voce	05 marks
TOTAL marks	50

	P.R.GOVERNMENT COLLEGE(A),KAKINADA	Program & Semester II B. SC FOOD SCIENCE (IV B Semester)			
Course Code 13334	TITLE OF THE COURSE HUMAN NUTRITION				
Teaching	Hours Allocated: 60 (**Theory**)	L	T	P	C
Pre-requisites	Basic food groups accrued the nutritional requirement and diet plans	-	4	-	3

Course Objectives:

After the successful completion of this course, the student will be able To
help the students to acquire an elementary knowledge about Food processing of foods.

1. Basic food groups accrued the nutritional requirement and diet plans
2. To acquire knowledge about the nutrition of foods and different supplementary foods of different age groups.

COURSE OUTCOMES

On Completion of the course, the students will be able to	
CO1	Basic food groups accured the nutritional requirement and diet plans
CO2	To acquire knowledge about the nutrition of foods and different supplimentary foods of different age groups.

Skill Development		Employability		Entrepreneurship	

Course with focus on Skill Development/Employability/Entrepreneurship module Syllabus:

P.R GOVERNMENT COLLEGE(A),KAKINADA

CHOICE BASED CREDIT SYSTEM PAPER-V

HUMAN NUTRITION

Module – I

Fundamentals of human nutrition: Definition and classification of food. Basic five food groups classification, balanced diet, food guide pyramid, My plate, dietary guidelines for Indians. Points to be consider while planning a menu.

Module – II

RDA for all age groups according to (ICMR NIN)- Infants, preschool, school going,adolescents, adults, pregnant woman and lactating mother.

Module – III

Nutrition through life cycle:

Nutrition in infancy: Growth and development, nutritional requirements, breast feeding, weaningandsupplementary foods.

Nutrition in preschool age: Physiology development and food intake, development of food habits,diet plan.

Nutrition in adolescence: Growth and development, nutritional requirement, factors influencingdietary pattern of the adolescence.

Module – III

Nutrition in pregnancy: Physiological changes during pregnancy, importance of nutrition in pregnancy, diet for the pregnant mother, complications in pregnancy – gestational diabetes, toxemia, infections and effect of maternal malnutrition on fetus.

Module – V

Nutrition in lactations: Nutrition requirements, human milk composition and importance, lactogogues, diet planning. Nutrition in old age: Changes during old age, nutritional requirements, diet

Unit No	Additions	Deletions	Expected levels of learning as per Blooms taxonomy for assessment of CO	Percentage added/deleted
1	……	……..	K1 & K2	-
2	……	-----	K4 &K2	-
3	……	……..	K2 &5	-
4	…….	---	K3&K4	-

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

Textbooks:

S.NO	AUTHOR	TITLE	PUBLISHER
1	Siva kumar	Human nutrition	r.j publishers
2	R.Nayak	Propertities of human nutrition	J.D scientificpublications

Reference books

S.NO	AUTHOR	TITLE	PUBLISHER
1	B.V.V.SUBBA LAKSHMI	HUMAN NUTRITION	LANGE
2	S. RAJRESWARI	THERAPUTIC NUTRITION	SREEJA

WEB LINKS:

1. https://youtu.be/tJtFVHMR_hs?si=sUft8SG193VKE_RN
2. https://youtu.be/EuJebIu4TAU?si=-8inPD0vd0VUDNdY
3. https://youtu.be/VWw75Icud2s?si=xWC2la9dT8fdzfGe

On Completion of the course, the students will be able to	
CO1	an insight into the digestion, absorption of carbohydrates, protein and lipid. .
CO2	Gain knowledge about the organigation of endocrine system
CO3	to learn about human nutrition concepts and disordersassociated and vitamins and minerals.
CO4	Understand the energy and dietary requirements for pregnant and lactating women
CO5	TO know the concept of blood coagulation
CO6	To provide basic knowledge about organization of immune system
CO7	To learn about the antibodies function and activity.

CO-POMapping:

(1:Slig ht[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	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. Food science program, the students of our Department will be able to:

(P01)Knowledge and understanding of:

Students will be able design, conduct experiments, analyze an 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

(PO7).Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams, and in multi- disciplinary settings.

P.R. GOVERNMENT COLLEGE (A), KAKINADA

B.SC (FOOD SCIENCE)

SECOND YEAR IV B SEMESTER

COURSE-5 : HUMAN NUTRITION

WEIGHTAGE TO CONTENT

Time:2 hours
Maxmarks:50

UNIT NO.	ESSAY QUESTIONS 10 MARKS	SHORT ANSWER QUESTIONS 5MARKS	MARKS ALLOTE TO THE UNIT	AS PER BOOLMS TAXONOMY
UNIT– I	02	02	30	Analyzing a understanding
UNIT– II	02	02	30	Creating applying
UNIT– III	01	01	15	remembering
UNIT–IV	01	02	20	understanding
Total no. of Questions	**06**	**07**	95	

P.R.GOVERNMENT COLLEGE (A), KAKINADA

B.SC (FOOD SCIENCE)

SECOND YEAR IV B SEMESTER

Course – HUMAN NUTRITION

Model Question Paper

Time 2hrs. **Max. Marks-50**

PART-I

Note:-Answer any **THREE** questions choosing at least **ONE** question from each section **10X3=30**

Section–A

1. Explain the nutrition in infancy of growth development and nutritional requirements
2. Explain the development of food habits, diet plan in preschool age
3. Write about factors influencing dietary pattern of the adolescences.

Section–B

1. Write about importance of nutrition in pregnancy
2. Explain the human milk composition and importance lactogogues.
3. Write the nutritional requirements of old age

PART–II

Answer any **FOUR** questions **4x5=20**

4. Write about dietary guidelines for Indians
5. Explain the food guide pyramid
6. Explain the physiological development and food intake of preschool age
7. Nutritional requirement of adolescence
8. Physiological changes in pregnancy
9. Plan and prepare a diet for old age.

LABORATORY COURSE

Practical Paper-VI B: HUMAN NUTRITION

(at the end of semester-VI B) 30hrs (2h/W) 50Marks

Learning Out comes:

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

1. Explain the purpose of performing total RBC and platelet counts
2. State the important properties of diluting fluid for counting RBC and platelets.
3. Perform manual cell counts for RBC and platelets Calculate the results using the general formula for calculating cell counts.
4. Describe the different methods and analyzers used to measure Hb in clinical laboratories and field settings
5. Describe the preanalytical factors including blood source of collection, postural effect, and environmental factors.
6. Describe analytical and postanalytical factors and training requirements, which can potentially influence Hb concentrations.
7. Compare the performance of different methods and analyzers of Hb

Practical (Laboratory) Syllabus

List of Experiments :(3periods/week) **credits-1**

1. Infants.
2. preschool age.
3. school going age.
4. Adolescence.
5. Adult\laborer

6.pregnancy

7. lactation

8.old age

Lab References:

S.NO	AUTHOR	TITLE	PUBLISHER
1	NAADHIL	PRACTICAL BOOK OF FOOD SCIENCE	AYUSH
2	ASHVIN	PRACTICAL BOOK OF FOOD SCIENCE	AYUSH
3	DONY VAT	PRACTICAL BOOK OF FOOD SCIENCE	RARION

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 than15 hours on the field techniques/skills of estimation of vitamins ,hemoglobin in bloodand total count of RBC&WBC and urine analysis in Food science.

For Student: Student shall visit a related industry/chemistry laboratory in universities/research organizations/private sector facility and observe clinical labs and bio-physical techniques in Food science. Write their observations and submit a hand written fieldwork/project work report not exceeding10 pages in the given format to the teacher.

SCHEME OF VALUATION

a. Principle and Procedure	10 marks
b. Conduct of experiment	15 marks
c. Report	10 marks
d. Record	10 mark
e. Viva voce	05 marks
TOTAL	50 marks

	P.R.GOVERNMENTCOLLEGE(A),KAKINADA	Program &Semester III BSC FOOD SCIENCE (Semester PAPER-VA)			
Course Code 13336	**TITLEOFTHECOURSE** FOOD PROCESSING AND PRESERVATIONS				
Teaching	Hours Allocated:60(**Theory**)	L	T	P	C
+- Prerequisites	TO KNOW ABOUT PROCESING AND PRESERVATION OF VARAITION OF NUTS AND OIL SEEDS DAIRY PRODUCTS	-	4	-	3

Course Objectives:

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

1. To help the student's elementary knowledge about food processing of different foods.
2. To accrue knowledge about food different technics of reservations.
3. To accrue knowledge about technics of processing of foods.

COURSEOUTCOMES

On Completion of the course, the students will be able to	
CO1	To help the students elementary knowledge about food processing of different foods
CO2	To accrue knowledge about food different technics of reservations
CO3	To accrue knowledge about technics of processing of foods
CO4	Basic principles of preservation methods of food steps involved
CO5	Explain about temperature refrigeration technics
CO6	Principals and types of concentrated foods fermentation

Skill Development			**Employability**			**Entrepreneurship**	

P.R. GOVERNME COLLEGE(A),KAKINADA

FOOD SCIENCE SYIIABUS

SEMESTER-V A

FOOD PROCESSING AND PRESERVATION

COURSECODE –13336

Module I

Food Processing: Processing technology Cereals, Pulses and oilseeds: structure and milling properties of rice and wheat. Definition, advantages and disadvantages of parboiling. processing technology of pulses and oilseeds

Module II

Processing technology of fruits and vegetables (preparation of jam, jelly, marmalade, ketchups, purees, pickles, squash). Importance of blanching and syraping in fruits and vegetables.

Module III

Processing technology of Milk & Milk products: Types of milk (standardized, toned, double toned milk, skim milk). Types and importance of pasteurization in processing of milk and milk products. Manufacturing of whole milk powder and skim milk powder.

Module IV

Meat and Fish Processing – general steps involved meat and fish processing. Poultry Processing – general steps involved. Egg processing – general steps in processing, evaluation of egg quality by using of different methods.

Unit No	Additions	Deletions	Expected levels of learning as per Blooms taxonomy for assessment of CO	Percentage added/deleted
1	……..	–rho dependent and rho independent. Inhibitors of Transcription.	K3 & K4	5%
2	…….	……..	K2 & K5	…….
3	……	Nil	K2 & K4	NIL
4	…….	…….	K3	NIL

K_1 = Remembering, K_2= Understanding, K_3= Applying,K_4 = Analyzing, K_5 = Evaluating, K_6 = Create

Textbooks:

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

Reference books

S.NO	AUTHOR	TITLE	PUBLISHER
1	Hervé ann Selig	The study of FOOD PROCESSING advanced human Knowledge	DOI
2	Gary H. Perdew	REGULATION OF GENE EXPRESSION	Humana
3	Keya Chaudhuri	Recombinant FOOD PROCESSING Technology	The Energy and Resources Institute
4	Alexander Jonson	Molecular biology	Garland science

WebLinks:

1. https://www.youtube.com/live/_uzZSwHc0rQ?si=SDliXol-MwZQV33l

2. https://youtu.be/6PjVyXGqJSQ?si=lz3v7uOJG5ssc8nC

3. https://www.youtube.com/live/xgd4LK_C7_8?si=uKFXIyUkE_CpNym2

4. https://youtu.be/pIk6IxLC3dY?si=xs2F0BGY82EEw20S

Course outcome & Program outcome mapping

On Completion of the course, the students will be able to	
CO1	Understand the concept OFREPLICATION
CO2	Gain knowledge about Enzymology of replication
CO3	To know the process of transcription
CO4	To know the process of translation
CO5	Illustrate about routes in recombinant FOOD PROCESSING technology
CO6	To know the various blotting techniques in molecular biology

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	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. Food scienceistry program, the students of ourDepartment will be able to:

(P01)Knowledge and understanding of:

Students will be able design, conduct experiments, analyze an 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 (FOOD SCIENCE) THIRD YEAR SEMESTER-V

COURSE-5A FOOD PROCESSING AND PRESERVATION

WEIGHTAGETOCONTENT

Time:2.30hours
Maxmarks:50

UNITNO.	ESSAY QUESTIONS10MARKS	SHORT ANSWER QUESTIONS5MARKS	MARKS ALLOTD TO THEUNIT	AS PER BLOOMSTAXONOMY
UNIT -1	02	02	30	Analyzingapplying
UNIT–II	02	02	30	Understandingevaluating
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 (FOOD SCIENCE)

Paper-5A MODEL PAPER

FOOD PROCESSING AND PRESERVATION

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 **3 x 1 0 = 3 0**

SECTION–A

1. Write about food processing technology.
2. Explain the pasteurized milk general properties.
3. Describe the meat and fish processing general steps involved in block in IQF freezing.

SECTION – B

4. Explain the food preservation and methods.
5. Write about principles and types of concentrated foods.
6. Explain the sugar concentration, principles of gel preparation

PART–II

Answer any **FOUR** questions **4x5=20M**

7. write about tomato ketchup general steps
8. skim milk powder
9. egg processing
10. food preservation
11. principals of gel formation
12. pickling principals
13. Distilled lickers

LABORATORY COURSE

Practical Paper –5A ::FOOD PROCESSING AND PRESERVATION
(at the end of semester V) 30hrs (2h/W) 50Marks

Learning Out comes:

On successful completion of this practical course, student shall be able to:
1.They learn about planning vectors and gain knowledge on the construction of preparations
Libraries
2. Student of this course have knowledge on manipulation, diet expression,
etc which prepares them for further studies in the area

Practical (Laboratory) Syllabus

LIST OF EXPERIMENTS:

1. Blanching and browning control
2. Preparation of fruit preserves (jam, jelly)
3. Preparation of vegetable preserves (pickle)
4. Dehydrated products – vegetables dices tray drying, osmotic dehydration of seasonal fruit.
5. Tomato processing
6. Fruit pulping / juice / beverage preparation

S.NO	AUTHOR	TITLE	PUBLISHER
1	P V G K Sarma	Molecular biology	MJP Publisher
2	, Dr. BHASKAR SARMA	Molecular biology	Mahaveer Publications
3	Ashok Kumar	Recombinant FOOD PROCESSING technology	Narendra Publishing House
4	Kumar, Ashok.	Molecular biology & recombinant technology	Hard Back

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 lessthan15 hours on the field techniques/skills of preparation of isolation of FOOD PROCESSINGfrom coconut techniques in preservation.

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 preservation. Write their observations and submita hand written fieldwork/project work report not exceeding10 pages in the given format to the teacher.

SCHEME OF VALUATION

a. Principle and Procedure	10 marks
b. Conduct of experiment	15 marks
c. Report	10 marks
d. Record	10 mark
e. Viva voce	05 marks
TOTAL	**50 marks**

	P.R.GOVERNMENTCOLLEGE(A),KAKINADA	**Program &Semester** III B.SC FOOD SCIENCE (V B Semester)			
Course Code	**TITLEOFTHECOURSE** CHEMICAL AND THERPUTIC NUTRITION				
Teaching	Hours Allocated:60(**Theory**)	L	T	P	C
Pre-requisites	TO PROVIDE KNOWLEDGE ABOUT DISORDERS OF 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.

COURSEOUTCO**MES**

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.

Skill Development		**Employability**		**Entrepreneurship**	

P.R. GOVERNME COLLEGE(A),KAKINADA

FOOD SCIENCE SYIIABUS

SEMESTER-VII A

CLINICAL AND THERAPUTIC NOUTRITION

Syllabus:

MODULE-I

Meaning and scope of dietetics, role of dietitian, nutrition care process (NCP) types of dietary adaptations for therapeutic needs. Types of diets – normal / general, soft and liquid diets. Mode of feeding– oral, enteral and parenteral feeding. Nutritional Management of infections and fevers: classificationand etiology of fever / infection. Medical nutrition therapy in: Typhoid, Tuberculosis, HIV/AIDS.

MODULE – II

Nutritional management for metabolic disorders. Dietary principles and diet plan for (obesity, DiabetesMellitus (type 1 and type 2), PCOD, Coronary Heart Diseases (CHD), Hypertension

MODULE – III

Dietary principles and guidelines for Gastro Intestinal disorders: Etiology, symptoms and dietary management of peptic ulcer, constipation, diarrhea.Nutritional management for Liver Diseases: Etiology, symptoms and dietary management of Hepatitis,Cirrhosis, Hepatic coma.

Module IV

Nutritional Management of Renal Disorders:
Common Renal Diseases (Acute renal failure, chronic renalfailure, nephrotic syndrome, dialysis and kidney stones. General Principals of dietary Management in Renal Diseases, Etiology, clinical symptoms and Dietary management of Acute and chronic Nephritis, Nephrotic syndrome.

Unit No	Additions	Deletions	Expected levels of learning as per Blooms taxonomy for assessment of CO	Percentage added/deleted
1	……..	…….	K2	5%
2	…….	……..	K3	…….
3	……	Nil	K1	NIL
4	…….	…….	K1 & K2	NIL

K_1 = Remembering, K_2= Understanding, K_3= Applying,
K_4 = Analyzing, K_5 = Evaluating, K_6 = Create

Textbooks:

S.NO	AUTHOR	TITLE	PUBLISHER
1	**Simmi Kharab's**	Clinical nutrition	**Paperback/softback**
2	Thomas m Devlin	Therputic nutrition	**CBS Publishers**

Reference books

S.NO	AUTHOR	TITLE	PUBLISHER
1	Delvin	Food science with clinical correlation	T.M.John Wiley& sons
2	Coico, R and Sunshine	Dietitice	T.M.John Wiley& son`s
3	J.M.Berg	Food science	W.H.Freemanand Co.
4	M.J.Simmons	Modal nutrition science	T.M.John Wiley& son`s

WebLinks:

https://youtu.be/X3TAROotFfM?si=H9FtI6VMDM2tyHPy

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

https://youtu.be/OOXLylm4XD0?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.

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	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. FOOD SCIENCE program, the students of ourDepartment will be able to:

(P01)Knowledge and understanding of:

Students will be able design, conduct experiments, analyze an interpret data for investigating problems in FOOD technology 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 (FOOD SCIENCE) FOOD SCIENCE THIRD YEAR
SEMESTER-VIICOURSE-5B –
CLIMICAL AND THERAPEUTIC NUTRITION

WEIGHTAGETOCONTENT

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 &rembering
Total no. of Questions	**06**	**07**	95	

P.R.GOVERNMENT COLLEGE(A),KAKINADA

B.SC (FOOD SCIENCE)

THIRD YEAR

V B SEMESTER

Course– CLINICAL& THERAPUTIC NUTRITION

ModelQuestionPaper

Time2hrs. **Max.Marks-50M**

PART-I

Answer any THREE questions choosing at least ONE question from each section. 10x3=30M

SECTION – A

1. Describe the role of dietitian and scope of dietetics
2. Write the symptoms of cancer and explain the nutritional managements
3. Explain the causes of CHD and nutritional management

SECTION – B

4. Write the general principle and dietary management of renal diseases
5. Writ the etiology symptoms &Dietary management of peptic ulcer
6. Write the clinical manifestation consequence and dietary management of obesity

PART – II

Answer any FOUR questions. (Short answer questions) 5x4=20M

7. Normal diet
8. Parenteral feeding
9. Nutritional management of diabetics
10. Nutritional management of hyper tension
11. Symptoms and dietary management of diarrhea

LABORATORY COURSE

Practical Paper – 7A ::CLINICAL AND THERAPUTIC NUTRITION
(at the end of semester V) 30hrs (2h/W) 50Marks **Learning Out**

comes:

1. The ability to utilize carbohydrates can be determined by UNDER WEIGHT
2. A loading dose of glucose is given. The planning preparation of obesity.
3. In conditions of insulin deficiency, precausions of under weight.

Practical (Laboratory) Syllabus

Planning and preparation of diet for obesity and underweight conditions

Planning and preparation of diet for insulin and non insulin dependent diabetes mellitus

Planning and preparation of diet for gastrointestinal disorders

Planning and preparation of diet for cardiovascular disorders

Planning and preparation of diet for hepatic disorders

Planning and preparation of diet for pancreatic disorders

Planning and preparation of diet for renal disorders

Preparation of diet counseling aids for common disorders

Lab References:

S.NO	AUTHOR	TITLE	PUBLISHER
1	SAHI NITA	Clinical correlation	JAYPEE BROTHERS MEDICAL PUBLISHERS
2	Poonam Agrawal	Practical FOOD SCIENCE	CBS Publishers
3	Thomas M. Devlin	FOOD SCIENCE	Drexel University Schoolof 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 lessthan15 hours on the field techniques/skills of preparation of counting of WBC techniques in Food scienceistry.

For Student: Student shall visit a related industry/chemistry laboratory in universities/research organizations/private sector facility and observe techniques in Food scienceistry. Write their observations and submit a hand written fieldwork/projectwork report not exceeding10 pages in the given format to the teacher.

SCHEME OF VALUATION

a. Principle and Procedure	10 marks
b. Conduct of experiment	15 marks
c. Report	10 marks
d. Record	10 marks
e. Viva voce	05 marks
TOTAL	**50 marks**