SRR & CVR GOVERNMENT DEGREE COLLEGE
(AUTONOMOUS)

Vijayawada 520004, KRISHNA DISTRICT

Minutes of the Meeting Board of Studies

Department of **Food Technology**
Dated: 20-11-2020

SRR & CVR GOVT. DEGREE COLLEGE (Autonomous)

Machavaram, VIJAYAWADA – 4, Krishna Dist, A. P.

Minutes of the meeting of the Upgradation of Syllabus U. G. (B.O.S.) in the Subject of **FOOD TECHNOLOGY** A. Y.:2020- 2021

The meeting of the Upgradation of Syllabus (B O S) in the subject of **FOOD TECHNOLOGY** was held on **20 November 2020,** in the department of **FOOD TECHNOLOGY, SRR &CVR Govt. Degree College** (Autonomous), Vijayawada-520004.

The following members attended the meeting: (Blended)

1. Syed Vaziha Tahseen (In-charge of the Dept & Chairman, BOS)
2. Dr.J Naveena Lavanya Latha , Assistant professor in Biotechnology, KRU (University Nominee)
3. Dr. B.Babitha, Assistant professor in Food and Nutrition, ANU(Subject expert)
4. Dr. Devala Rao Garikapati, Professor of Pharmaceutical Analysis (Subject Expert)
5. Dr.Sk. Beebi, lecturer in chemistry, SRR&CVR GDC(A) (Member)

Agenda:

In the revised APSHE guidelines the syllabus for FOOD TECHNOLOGY is not formulated, so the department decided to follow UGC syllabus with few suggested modifications defined by the board

Item 1: Approval of syllabus for Semester I and II.

Item 2: Revise the proposed syllabus for Semester III & V

Item 2: Approval of Question paper blue print, model paper, Question paper

Item 3: Approval of stipulated credits, workload, Internal marks breakup.

Item 4: Approval of the duration of the examination for 3 hours.

Item 5: Approval of list of paper setters and examiners

Item 6: Approval of Online Examination pattern in case COVID 19 doesn't subside at the time of Examinations (MCQs Pattern).

Item 7: Approval for bridge course of 10 hours duration.

The Chairperson welcomed the members and had discussion on the Agenda. He / She appraised the members of the guidelines of the UGC, APSCHE, Krishna University and the CCE regarding the framing of Syllabus, etc., and the recommended evaluation ratio for internal and external examinations. The members discussed in detail the various aspects presented before them and unanimously resolved the following:

S No	Name, Designation	Status of the Expert	Offline / Online/ Blended
1	Syed Vaziha Tahseen, In-charge of the Dept	Chairman	Offline
2	Dr.J.Naveena Lavanya Latha, Assistant Professor in Biotechnology	University Nominee	Online
3	Dr.B.Babitha, Assistant professor in Food and Nutrition, ANU	Subject expert	Online
4	Dr. Devala Rao Garikapati, Professor of Pharmaceutical Analysis	Subject expert	Online
5	Dr.Sk. Beebi, lecturer in chemistry, SRR&CVR GDC(A)	Member	Offline

The members of BOS Meeting Resolved:

Item 1: To Approve the newly introduced syllabus for Semester I and II for the academic year 2020-2021.

Item 2: To approve the bridge course syllabus

Item 3: To Approve the validity of the syllabus for the next 2 years.

Item 4: To Approve the Question paper, blue print, model paper and question bank.

Item 5: To Approve the Internal assessment component

Item 6: To Approve the list of paper setters and examiners

Item 7: To approve the governing body resolutions the examination time slot for theory exam is raised 2:30 hrs. to 3:00 hrs.

Item 8: The autonomous question paper pattern 60 marks for theory examination and 40 marks for internal assessment to be retained as it is.

Item 9: For the practical examination 25 marks for internal assessment and 25 for external assessment are retained as it is.

Item 10.: To follow the credits, workload per week, internals breakup, according to the standing instructions, APSCHE's guidelines, governing body's resolutions and examination department instructions.

Item 11: In case the COVID 19 doesn't diminish at the time of semester end examination as per the directions of the principal and COE, examination department, the department is ready to adopt online examination in MCQ pattern.

Signatures of the members of the BOS Meeting:

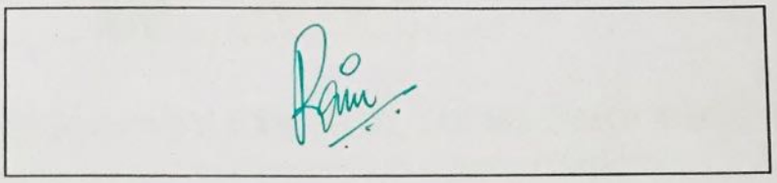
S No	Name & Designation	Status	Signature
1	Syed Vaziha Tahseen, In-charge of the Dept	Chairman	
2	Dr.J.Naveena Lavanya Latha, Assistant Professor in Biotechnology	University Nominee	
3	Dr.B.Babitha, Assistant professor in Food and Nutrition, ANU	Subject expert	
4	Dr. Devala Rao Garikapati, Professor of Pharmaceutical Analysis	Subject expert	
5	Dr.Sk. Beebi, lecturer in chemistry, SRR&CVR GDC(A)	Member	

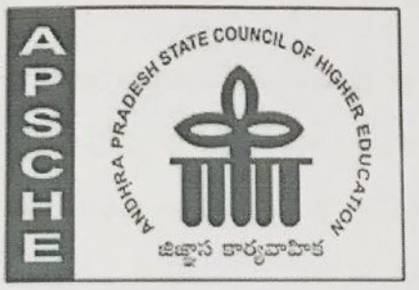
Counter signed by:

Principal

SRR & CVR Govt Degree College (A)

Vijayawada





ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

3rd, 4th and 5th floors, Neeladri Towers, Sri Ram Nagar, 6th Battalion Road,
Atmakur(V), Mangalagiri(M), Guntur-522 503, Andhra Pradesh
Web: www.apsche.org **Email**: acapsche@gmail.com

REVISED SYLLABUS OF B.Sc. (FOOD TECHNOLOGY) UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR B.Sc.

(Food technology)

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Two Courses of 1& 2 Semesters)

(To be Implemented from 2020-21 Academic Year)

Structure of Food Technology Syllabus

(Under CBCS for 3-year B.Sc. Programme)

(With domain subject covered during the first 2 Semesters)

YEAR	SEM	PAPER	TITLE	Marks	No. of Hrs per week	CREDITS
I	I	I	Food and nutrition	100	4	3
			Practical Food and nutrition	50	2	2
	II	II	Fundamentals of Food Technology	100	4	3
			Practical Fundamentals of Food Technology	50	2	2

SRR & CVR GOVERNMENT DEGREE COLLEGE (A) Vijayawada

FOOD TECHNOLOGY SYLLABUS FOR SEMESTER- I

Course I: FOOD AND NUTRITION: FST-1

Work load: 60hrs. per semester 4hrs/week

THEORY

Objectives: This course will enable the student to:

- Understand the relationship between food, nutrition and health.
- Understand the functions of food.
- Learn about various food groups and balanced diet.
- Understand digestion, absorption and function of various nutrients and their sources.

Outcomes: At the end of the course the student will be able to

- Know the Functions of food
- Acquiring knowledge about macro and micro nutrients and their functions.
- Knowing the consequences of deficiency of taking nutrients.
- Understanding importance of non-nutrients in human nutrition
- Apply the concepts of nutrition and food and its relation to health.

CONTENTS

UNIT- I INTRODUCTION TO FOOD AND NUTRIENTS (12 lectures)

Basic terms used in study of food and nutrition, BMI and Nutritional Status, Understanding relationship between food, nutrition and health. Functions of food- Physiological, psychological and social, Concept of Balanced Diet, Food Groups, Food Pyramid.

UNIT - II MACRONUTRIENTS (12 lectures)

Classification, digestion, functions, dietary sources, RDA, clinical manifestations of deficiency and excess and factors affecting absorption of the following in the body. Carbohydrates, lipids and proteins

UNIT – III MICRONUTRIENTS (12 lectures)

Classification, functions, dietary sources, RDA, clinical manifestations of deficiency and excess of the following

- Fat soluble vitamins-A, D, E and K

- Water soluble vitamins – thiamin, riboflavin, niacin, pyridoxine, folate, vitamin B12 and vitamin C
- Minerals – calcium, iron, iodine, fluorine, copper and zinc

UNIT-IV ENERGY (12 lectures)

- Energy value of foods – Determination of gross energy value of foods using Bomb calorimeter and Oxy calorimeter. Physiological energy value of foods.
- Basal Metabolism – Factors affecting Basal Metabolic Rate, Measurement of BMR by Direct and Indirect Calorimetry. Formulas for calculating BMR.
- Computing Total Energy Requirement of the body based on Basal metabolic rate, Physical activity and Thermic effect of food. RDA and sources of energy.

UNIT–V WATER AND NON NUTRIENT CONTITUENTS OF FOOD (12 lectures)

- Water – Functions, sources, requirement and regulation of water balance, Effect of deficiency and excess – Dehydration and over hydration; Electrolyte balance.
- Non nutrient constituents of foods and their importance
  - ➢ Phytochemicals – Curcumin, Lycopene, Flavonoids
  - ➢ Antioxidants – Vitamin C, E and Carotenoids
  - ➢ Detoxifying agents – Anthocyanins, Chlorophylls
  - ➢ Beneficial effects of non- nutrient constituents of food on Health.

Workload 30hrs per semester

PRACTICALS

1. Identification of Nutrient Rich Sources of foods
2. Learning to calculate Nutritive value of different foods
   - I. Cereals
   - II. Pulses
   - III. Fruits
   - IV. Vegetables
   - V. Fleshy foods (meat, poultry, egg, fish)
   - VI. Nuts and oilseeds
   - VII. Milk and milk products
   - VIII. Sugars
3. Planning, Prepare and Calculation of Macro nutrient recipes
   - Carbohydrates
   - Proteins
   - Fats
   - Fibre
4. Planning, Prepare and Calculation of Micronutrient recipes
   - Vitamins - Vitamin A, Vitamin C
   - Minerals – Calcium, Iron

Recommended Readings

1. Bamji MS, Krishnaswamy K, Brahmam, (2016) Textbook of Human Nutrition, 4th edition. Oxford and IBH Publishing Co. Pvt. Ltd.
2. Longvah, T., Ananthan, R., Bhaskarachary, K. and Venkaiah, K. (2017). Indian Food Composition Tables, Published by NIN
3. Raheena Begum, (2013). Textbook of Food, Nutrition and Dietetics, 3rd edition, Sterling Publishers Pvt. Ltd.
4. RavinderChada and PulkitMathur, (2015). Nutrition – A Life Cycle Approach, 1st edition, Orient Black Swan Private Limited
5. Shubhangini A. Joshi, (2002). Nutrition and Dietetics, 2nd edition, Tata McGraw-Hill Publishing Company Ltd.
6. Srilakshmi, B., (2018). Nutrition Science, 6th edition, New Age International Publishers.
7. Swaminadhan S, (2005). Advanced Text book on foods & nutrition, Vol. I&II (2nd revised and enlarged) Bappco.
8. VijayaKhader, (2000). Food, nutrition & health, Kalyani Publishers.

FOOD TECHNOLOGY

Semester I

FOOD AND NUTRITION

Model Question Paper

Time: 3 hrs. **Max. Marks: 60**

PART – A

Answer any FIVE questions. Each question carries 4 Marks **(5x4 = 20 Marks)**

1. Food pyramid
2. Classify carbohydrates.
3. Explain dehydration.
4. Write about Kwashiorkor.
5. What are the dietary sources and functions of zinc?
6. Define Food, Nutrition and Health. What are the visible symptoms of good health?
7. What are the functions of lipids?
8. Discuss the functions of Vitamin B1- Thiamine in the body.
9. Write about flourosis.
10. Explain the functions and sources of water

PART– B

Answer FIVE questions. Each Question carries 8 Marks **(5x8 = 40 Marks)**

11. a) Discuss the functions of Proteins.

(OR)

b) Write about the classification of Lipids.

12. a) Write about functions, deficiency and dietary sources of vitamin-A.

(OR)

b) Write about the functions, deficiency and dietary sources of vitamin-C.

13. a) Discuss the functions, deficiency, RDA and dietary sources of Iron.

(OR)

b) What are the functions of calcium? Give dietary sources and RDA of calcium for different age groups.

14. a) What is BMR? Discuss the factors that affect BMR.

(OR)

b) Explain the determination of energy value of foods by Bomb calorimeter.

15. a) What are Phytochemicals? Explain their beneficial effects on Health.

(OR)

b) Define water balance. Explain the regulation of water balance in the body.

SRR & CVR GOVERNMENT DEGREE COLLEGE (A) Vijayawada

FOOD TECHNOLOGY SYLLABUS FOR SEMESTER- I

BLUE PRINT FOR QUESTION PAPER

S.NO	TYPE OF QUESTIONS UNITS	SA 4 marks	SA 4 marks	SA 4 marks	LA 8 marks	LA 8 marks	LA 8 marks	Total 60 marks
		Questions given	Questions To attempt	Total marks	Questions given	Questions to attempt	Total marks	Total 60 marks
1	UNIT-1 Introduction to Food and Nutrients	2Q	STUDENT CHOICE	4M		STUDENT CHOICE		4M
2	UNIT-I Macronutrients	3Q		8M	2Q		8M	16M
3	UNIT-III Micronutrients	3Q		4M	4Q		16M	20M
4	UNIT-IV Energy				2Q		8M	8M
5	UNIT-V Water and non nutrient constituents of food	2Q		4M	2Q		8M	12M
	Total questions to attempt	5Q		20M	5Q		40M	60M

SRR & CVR GOVERNMENT DEGREE COLLEGE (A) Vijayawada

FOOD TECHNOLOGY SYLLABUS FOR SEMESTER- II

Course II: Fundamentals of Food Technology FT – 2

Work load: 60hrs. per semester 4hrs/week

THEORY

Objectives: The course will enable students to

- understand the history and evolution of food processing.
- study the structure, composition, nutritional quality and post harvest changes of various plant foods.
- study the structure and composition of various animal foods.

Outcomes: At the end of the course the student will be able to

- apply knowledge in describing the structure and composition of various foods
- understand physical and chemical changes that takes place in foods
- have knowledge on microbial spoilage of food and safe food handling practices.

CONTENTS

UNIT - 1 Introduction (4 lectures)

Historical evolution of food processing technology.

UNIT - II Compositional, Nutritional and Technological aspects of Plant foods I.

Cereals and Millets (10 lectures)

Structure and composition of cereal, Parboiling of rice- advantages and disadvantages.

Malting, gelatinization of starch, types of browning- Maillard & caramelization.

Pulses (6 lectures)

Structure and composition of pulses, toxic constituents in pulses, processing of pulses soaking, germination, decortications, cooking and fermentation.

Fats and Oils (6 lectures)

Classification of lipids, types of fatty acids - saturated fatty acids, unsaturated fatty acids. essential fatty acids, trans fatty acids. Refining of oils. types- steam refining. alkali refining. bleaching, steam deodorization, hydrogenation. Rancidity –Types- hydrolytic and oxidative rancidity and its prevention.

UNIT - III Compositional, Nutritional and Technological aspects of Plant foods II.

Fruits and Vegetables (8 lectures)

Classification of fruits and vegetables, general composition, enzymatic browning, names and sources of pigments, Dietary fibre. Post harvest changes in fruits and vegetables – Climacteric rise, horticultural maturity, physiological maturity, physiological changes, physical changes, chemical changes, pathological changes during the storage of fruits and vegetables.

UNIT - IV Compositional, Nutritional and Technological aspects of Animal foods

Flesh Foods - Meat, Fish, Poultry (12 lectures)

Meat - Definition of carcass, concept of red meat and white meat, composition of meat, marbling, post-mortem changes in meat- rigor mortis, tenderization of meat, ageing of meat. Fish - Classification of fish (fresh water and marine), aquaculture , composition of fish, characteristics of fresh fish, spoilage of fish- microbiological, physiological, biochemical. Poultry - Structure of hen's egg, composition and nutritive value, egg proteins, characteristics of fresh egg, deterioration of egg quality, difference between broiler and layers.

Milk and Milk Products (6 lectures)

Definition of milk, chemical composition of milk, its constituents, processing of milk, pasteurization, homogenization. An overview of types of market milk and milk products.

Unit - V Food Microbiology (8 lectures)

- Food Spoilage – Microorganisms causing spoilage – Factors responsible for spoilage and changes brought about in food by microorganisms
- Microorganisms that bring about useful changes in food.
- Microbiology of different foods – Contamination and spoilage of milk, egg, meat, fish, vegetables and fruits
- Food Sanitation and Hygiene – Safe food practices during preparation, storage and serving of food.

PRACTICALS

1. Study different types of browning reactions: enzymatic and non enzymatic.
2. To study gelatinization behaviour of various starches
3. To study the concept of gluten formation of various flours.
4. To study malting and germination.
5. To study dextrinization in foods.
6. Identification of pigments in fruits and vegetables and influence of pH on them.

Recommended Readings

1. Bawa. A.S, O.P Chauhan etal. Food Science. New India Publishing agency, 2013
2. Roday,S. Food Science, Oxford publication, 2011.
3. B. Srilakshmi, Food science, New Age Publishers,2002
4. Meyer, Food Chemistry, New Age,2004 5. De Sukumar., Outlines of Dairy Technology. Oxford University Press, 2007

FOOD TECHNOLOGY

Semester II

FUNDAMENTALS OF FOOD TECHNOLOGY

Model Question Paper

Time: 3 hrs. **Max. Marks: 60**

PART – A

Answer any FIVE questions. Each question carries 4 Marks **(5x4 = 20 Marks)**

1. Discuss the advantages and disadvantages of parboiling of rice
2. Explain gelatinization and Millard reaction
3. What is rancidity and explain the types of rancidity
4. Explain the maturity indices of fruits and vegetables
5. Write the composition of pulses
6. Dietary fibre
7. What is rigormortis
8. Write the composition of milk
9. Explain the safe food practices while preparing food
10. How to detect the deterioration of egg

PART– B

Answer FIVE questions. Each Question carries 8 Marks **(5x8 = 40 Marks)**

11. a) Write the historic evolution of food processing technology

(OR)

b) Write the structure and composition of cereal grain.

16. a) Explain toxic contents in pulses and its elimination.

(OR)

b) Classify lipids and explain types of fatty acids.

17. a) Explain enzymatic browning in fruits and vegetables.

(OR)

b) Write the composition of meat and explain marbling.

18. a) Explain the structure and composition of egg.

(OR)

b) Explain the processing of milk.

19. a) Explain the factors responsible for spoilage of food.

(OR)

b) Explain the role of useful microorganisms in food.

SRR & CVR GOVERNMENT DEGREE COLLEGE (A) Vijayawada

FOOD TECHNOLOGY SYLLABUS FOR SEMESTER- II

BLUE PRINT FOR QUESTION PAPER

S.NO	TYPE OF QUESTIONS / UNITS	SA 4 marks	SA 4 marks	SA 4marks	LA 8 marks	L A 8marks	LA 8marks	Total 60 marks
		Questions given	Questions To attempt	Total marks	Questions given	Questions to attempt	Total marks	Total 60 marks
1	UNIT-1 Introduction		STUDENT CHOICE		1Q		8M	8M
2	UNIT-I Compositional, Nutritional and Technological Aspects of Plant Foods - I	4Q		8M	3Q	STUDENT CHOICE	8M	16M
3	UNIT-III Compositional, Nutritional and Technological Aspects of Plant Foods - II	2Q		4M	1Q		8M	12M
4	UNIT-IV Compositional, Nutritional and Technological Aspects of Animal Foods	3Q		4M	3Q		8M	12M
5	UNIT-V Food microbiology	1Q		4M	2Q		8M	12M
	Total questions to attempt	5Q		20M	5Q		40M	60M

Practical examination pattern for semester end examination

Practical – 1

Practical examination in dept. of Food Technology is held before 1st and 2nd semester exams twice in a year to test practical skills among the students.

Total marks allotted for practical are 50 marks which are divided as 25 for internal and 25 for external for a duration of three hours in each semester.

The division of marks is as follows

External

Major experiment	Minor experiment	Viva
15 marks	5 marks	5 marks

Internal

Record	Project viva	Continuous assessment
10 marks	10marks	5 marks

INTERNAL ASSESSMENTS

A total of 40 marks are allotted for internals in Dept. of Food Technology, which facilitate continuous assessment of students, to know their progress. It also facilitates the teacher to take necessary remedial activity for slow learners and to encourage the bright students by giving respective tasks.

Mid Semesters: Among the 40 marks of internals, 10 marks are given for common written test as Mid sem exam. Two mid sem exams each of 25 marks will be conducted and the average is taken.

Two assignments are conducted for 10 marks, 5 marks will be given for each assignment

5 marks are allotted for student seminars and 5 marks are allotted for continuous assessment including viva/PPT

10 marks are allotted for project work

Division of 40 marks of Internal Assessment

1	2	3	4	5	6	7	8
1st Mid semester exam	2nd mid semester exam	Total of mid semester exams	Assignments	Student seminars	Continuous assessment including viva	Project	Total marks of internal
Written test	Written test	Average of 1 & 2 exams	Assignments each for 5 marks				
25 marks	25 marks	10 marks	10 marks	5 marks	5 marks	10marks	40 marks

SRR & CVR GOVERNMENT DEGREE COLLEGE (AUTONOMOUS) Vijayawada 520004

DEPARTMENT OF FOOD TECHNOLOGY

List of Examiners

1. Dr Manjula, Guest faculty, Dept. of Food and Nutrition Sciences, Acharya Nagarjuna University, Phone No. 9959336370

2. Dr B Kusuma Neela, Lecturer, Dept. of Applied Nutrition, SDMSM Kalasala, Vijayawada, Phone No. 9246043722

3. Dr KN Varalakshmi, HOD, Dept. of Applied Nutrition, SDMSM Kalasala, Vijayawada, Phone No. 9347718787