

**DR. A .P. J. ABDUL KALAM TECHNICAL UNIVERSITY
LUCKNOW**



Evaluation Scheme & Syllabus

For

**B.TECH. FINAL YEAR
(FOOD TECHNOLOGY)**

Based on

AICTE MODEL CURRICULUM & NEP2020

(Effective from the Session: 2025-26)

**DR. A. P .J. ABDUL KALAM TECHNICAL UNIVERSITY
LUCKNOW**

DR. A. P. J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW

B.TECH IV YEAR VII & VIII SEMESTER FOOD TECHNOLOGY

		SEMESTER-VII												
S. N.	Subject Codes	Subject	Learning Mode	LTP			EvaluationScheme				End Semester		Total	Credit
				L	T	P	CT	TA	Total	PS	TE	PE		
1	BFT701	Food Quality and Food Laws	Offline	3	-	-	20	10	30	-	70	-	100	3
2	BFT 071-074	Department Elective – IV	Offline	3	-	-	20	10	30	-	70	-	100	3
3	BOE**	Open Elective – II	Offline/ MOOCs	3	-	-	20	10	30	-	70	-	100	3
4	BFT751	Food Quality Evaluation Lab	Offline	0	0	2	-	-	-	50	-	50	100	1
5	BFT752	Mini Project of Internship Assessment*		0	0	4	-	-	-	100	-	-	100	2
6	BFT753	Project – I		0	0	10	-	-	-	150	-	-	150	5
7	BFT754	Startup and Entrepreneurial Activity Assessment#		0	0	4	-	-	-	100	-	-	100	2
		Total		9	0	20							750	19
		PC- Program Core *The Mini Projector internship (5-6 weeks) will be conducted during the semester break after VI semester and shall be assessed during VII semester. #The Startup and Entrepreneurial Activity Assessment will be done in 7thsemester under which a student will have to undergo a startup /entrepreneurship activity of at least 60 hours till 6thsemester												

		SEMESTER-VIII												
S. N.	Subject	Subject	Learning Mode	LTP			EvaluationScheme				End Semester		Total	Credit
	Codes			L	T	P	C T	TA	Total	PS	TE	PE		
1	BOEM**	Open Elective – III	MOOC	3	-	-	20	10	30	-	70	-	100	3
2	BOEM**	Open Elective-IV	MOOC	3	-	-	20	10	30	-	70	-	100	3
3	BFT851	Project – II		0	0	18				100		350	450	10
		Total		6	0	18							650	

** The Internal Assessment of MOOCs will be done by the respective institute, and the External Assessment (End Semester Examination) will be done by the University.

Department Elective - IV

- BFT 071: Food Packaging
- BFT 072: Food Processing Waste Management
- BFT 073: Specialty Foods
- BFT 074: Fundamental Aspects of Food Biotechnology

Tentative List of MOOC Course offered as Open Elective – II for AY 25-26 Odd Semester Only#

MOOC Course Code	Title of Course	Details
	Environmental, Food & Dairy Microbiology	By Debjani Dutta, St. Xavier's College, Kolkata Swayam Portal
	Human Nutrition and Biochemistry	By Dr. V. Vijaya Lakshmi Swayam Portal

subject to approval from academic council of AKTU

Subject Code: BFT 701	Course Title: Food Quality and Food Laws	
Examination Duration: 3 Hours	Semester: VII (Odd)	
L: T: P: 3:0:0 Credit: 3	Pre requisites: Food Technology	
Objectives: • To provide comprehensive understanding of essential ingredients of fertilizers and the production processes of different fertilizers.		
Course Outcome: On successful completion of the course, the student will be able to: CO 1: Explain the concepts of food quality, quality control, quality assurance, Total Quality Control (TQC), and TQM; analyze sensory and statistical quality control methods. CO 2: Apply instrumental techniques to measure food attributes such as texture, color, volume etc. and interpretation of these results CO 3: Understand the concept and objectives of Sensory evaluation Process, Tests and itsv applications in Food Quality Management. CO 4: Understand the concept of Food Quality Management system and its implementation prerequisites. CO 5: Explain key FSSAI standards, definitions, and penalties; compare them with international food law systems.		
REFERENCE BOOKS:		
SN	Name of Authors/Books/Publisher	Year of Publication/ Reprints
1	Amihud Kramer, Bernard A. Twigg, “Quality Control for the Food Industry: Fundamentals v. 1”, The AVI Publishing Company. Inc., Westport, USA 1970[3rd Edition]	2017
2	John M. deMan, John W. Finley, and W. Jeffrey Hurst, “Rheology and Texture in Food Quality” , 4 TH Edition, Published by Westport: AVI Publishing	2002
3	Pomeranz Y., Meloan, Clifton E., “Food Analysis : Theory and practice IS: 6273 (Part-1& Part-2)” , Westport, Conn., AVI Publishing Company.	2007
4	Maynard A. Amerine Rose Marie Pangborn and Edward B. Roessler, “Principles of Sensory Analysis of Food” , Academic Press , NY	2013
5	Food Safety and Standards Act. [https://www.fssai.gov.in]	2006

CO-PO Mapping (1 to 3 scale)

CO/PO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
CO-1	3	2	3	1	2	2	-	-	-	-	-
CO-2	3	1	3	1	2	2	-	-	-	-	-
CO-3	2	1	2	2	1	1	-	-	-	-	-
CO-4	2	1	1	1	2	1	-	-	-	-	-
CO-5	3	2	3	2	3	3	-	-	-	-	-
Avg	2.6	1.4	2.4	1.4	2	1.8					

Course Details

Units	Contents	Lecture Hours
I	Ways of describing of Food Quality, Quality control and Quality Assurance functions. Total Quality Control (TQC) and the role of management / TQM. Statistical quality control. Quality costs.	7

II	Quality attributes of foods, their classification and significance. Instrumental measurements of important Food Attribute: Appearance, Color, Volume, Density and Specific gravity, Consistency , Defects etc. Rheological and textural characteristics . Texture profile analysis.	8
III	Application of Sensory Evaluation in Quality Management of foods. Objectives & Panels involved. Lab Setup and Equipments. Sensory Evaluation Tests. Analysis and Interpretation of sensory scores. Application of sensory evaluation in Quality Management of foods. Correlation between instrumental and Sensory analysis of food quality attributes	8
IV	Introduction, prerequisite program of Food Quality Management System, Understanding of Good Manufacturing Practices (GMP), Good Hygienic Practices (GHP), Good Agricultural Practices (GAP), ISO series, HACCP systems	8
V	Food standards and Specifications: Compulsory and voluntary trade and Company standards. FSSAI: Definitions, Objectives, Salient Features and Provisions..Comparison with other International Standards.	9
	Total	40

Subject Code: BFT 071	Course Title: Food Packaging	
Examination Duration: 3 Hours	Semester: VII (Odd)	
L: T: P: 3:0:0 Credit: 3	Prerequisites: Food Technology	
Objectives: • To provide basic knowledge of packaging, its types and components, package developments. • To provide knowledge of different types of packaging materials & their forms used in food packaging • To provide knowledge of package developments and packaging laws and regulations in food industries • To provide knowledge about package performance and various testing of packaging materials		
Course Outcome:: Students completing the course will be able to CO 1: Understand the basic concept of packaging and advancement in food packaging. CO 2: Understand the different types of packaging material and their properties CO 3: Understand the forms/ manufacture of packaging materials used in food packaging CO 4: Understand the selection of packages for specific food & agricultural commodities CO 5: Gain insight of package printing and packaging/ Labelling laws		
REFERENCE BOOKS:		
SN	Name of Authors/Books/Publisher	Year of Publication/ Reprints
1	M. Mahadeviah and R.V. Gowramma, “ Food Packaging Materials”, Tata. Mc Graw Hill co. Ltd. New Delhi	1996/2007
2	Stanley Sacharow and R.C. Griffin, “Principles of Food Packaging” , AVI Publishing Company 1980	1980
3	Coles R., McDowell D. and Kirwan, M.J.,” Food Packaging Technology”, Blackwell Publishing Co.	2003
4	Proceedings of IFCON-1988	1988

CO-PO Mapping (1 to 3 scale)

CO/PO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
CO-1	3	1	2	1	2	-	-	-	-	-	-
CO-2	3	2	2	1	1	-	-	-	-	-	-
CO-3	3	1	2	2	2	-	-	-	-	-	-
CO-4	1	2	3	2	1	-	-	-	-	-	-
CO-5	1	1	1	1	2	-	-	1	-	-	-
Avg	2.2	1.4	2	1.4	1.6	-	-	0.2	-	-	-

Course Details

Units	Contents	Lecture Hours
I	Basic Concepts: Concept of packaging, Functions of a Food Package, Package development factors and Food package development. Newer trends: Aseptic Packaging, Vacuum and gas packaging, Edible packaging, Active and intelligent packaging.	8
II	Cellulosic and Polymeric packaging materials and forms: Food grade polymeric packaging materials, Rigidplastic packages. Films: Multilayer films, Oriented, Co-extruded films , Laminates and Metalized Polymeric materials, their mechanical sealing and barrier properties: Cellophane, Olefins, Polyamides, Polyesters, PVC, PVDC, PVA, Copolymers.	8
III	Glass containers: Composition, Properties, Bottle making and Closures for glass containers. Metal containers: Bulk containers, Tin-plate containers, Tin free	8

	steel containers, Aluminum containers, Latest development in metal cans and protective lacquers.	
IV	Food product characteristics and package requirement, Selection of materials, Forms, Machinery and methods for fresh produce (Fruits, Vegetables, Egg, Meat and Fish), Edible oils and Fats, spice and spice products.	8
V	Evaluation of Food Packaging Materials and Package Performance. Evaluation of OTR/ GTR/ WPTR. Package printing, Packaging Laws and Regulations, Food Safety and Environmental issues related to Food Packaging. Disposal of Non-Biodegradable Packaging Materials and Environmental Concerns.	8
	Total	40

Subject Code: BFT 072	Course Title: Food Processing Waste Management	
Examination Duration: 3 Hours	Semester: VII (Odd)	
L: T: P: 3:0:0 Credit: 3	Prerequisites: Food Technology	
Objectives: • To provide knowledge of Food Processing Industry Waste Management. • To provide knowledge of the various aspects and methods adopted for Waste Management. • To provide knowledge regarding the environmental considerations and Laws pertaining to these.		
Course Outcome: Students completing the course will be able to CO 1: Understand the byproducts associated with various food processing industries and its utilization CO 2: Understand the basic principles of Waste Characteristics pertaining to Food Processing Industry CO 3: Understand the basic principles of Waste Management pertaining to Food Processing Industry CO 4: Understand the selection of suitable waste treatment method for specific food industry CO 5: Understand the laws and regulations pertaining to Waste Management and Disposal.		
REFERENCE BOOKS:		
SN	Name of Authors/Books/Publisher	Year of Publication/ Reprints
1	The Environment (Protection) Act 1986. (Act No.29 of 1986)	1986, amended 1991
2	AFST(I) & CFTRI Proceedings of the Symposium on By-products From Food Industries: Utilization and Disposal	1980
3	Panoth Abhirami, Lavanya D, Mohan G Naik, Venkatachalapathy N.,” Waste to Wealth: Potential of Rice Bran Wax as Edible coating”, Indian Food Industry Mag, AFST (India), CFTRI, Mysore, Vol No. 38, Issue No. 1: 38-43	2019
4	J.H. Green, A.Kramer, “Food Processing Waste Management , Westport - Conn : AVI Publishing Company	1981
5	Training Manual Food Safety Supervisor Course Advance (Level 2)	2017

CO-PO Mapping (1 to 3 scale)

CO/PO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
CO-1	3	2	2	1	1	2	-	-	-	-	-
CO-2	3	3	1	2	1	1	-	-	-	-	-
CO-3	1	1	2	1	2	2	-	-	-	-	-
CO-4	1	3	2	2	1	2	-	-	-	-	-
CO-5	1	1	1	-	-	2	-	-	-	-	-
Avg	1.8	2	1.6	1	1	1.8					

Course Details

Units	Contents	Lecture Hours
I	Basic considerations: Standards for emission or discharge of environmental pollutants from food processing Industries as per the updated provision of Environment (Protection) Act, 1986. Elements of importance in the efficient management of food processing wastes. Environmental Labs, Government analysts, Sampling Procedures etc as per EPA, 1986.	8
II	Characterization and Effective Utilization of by-products from Cereals, Pulses and Oilseeds Industries. Fruits, Vegetables and Plantation products, Fermented foods, Dairy Industry and Milk Products Industry, Fish, Meat, Egg and Poultry processing industries.	8

III	Characterization of food Industry effluents, Physical and Chemical parameters, Oxygen demands and their interrelationships, Residues (Solids), Fats, Oils and Grease, Forms of Nitrogen, Sulphur and Phosphorus, Anions and Cations, Surfactants, Colour, Odour, Taste, Toxicity. Unit concept of treatment of Food Industry Effluent. Screening, Sedimentation Flootation as pre - and primary treatments.	8
IV	Biological oxidations: Objects, Organisms, Reactions involved, Oxygen requirements, Aeration devices / Equipments used. Systems: Lagoons, Activated sludge process, Oxidation ditches, Rotating biological contactors and their Variations and advanced modifications. Types, Working Principle, Functioning, Merits and Limitations.	8
V	Advanced wastewater treatment systems. Physical separations, Micro-strainers, Filters, Ultra filtration and reverse osmosis. Physico-chemical separations: Activated Carbon Adsorption, Ion Exchange, Electro-dialysis and Magnetic Separation. Chemical oxidations and treatment Coagulation and flocculation. Removal of Nitrogen and Phosphorus from Food Processing Waste Waters. Disinfection. Handling and disposal of Sludge. Environmental Considerations.	8
	Total	40

Subject Code: BFT 073	Course Title: Speciality Foods	
Examination Duration: 3 Hours	Semester: VII (Odd)	
L: T: P: 3:0:0 Credit: 3	Prerequisites: Food Technology	
Objectives: • To impart the knowledge about the relationship between food, nutrition and health. • To understand the nutritional requirements and balanced diets for different age groups. • To understand the concept of modification in normal diets for management and prevention of various diseases.		
Course Outcome:: Students completing the course will be able to CO 1: Understand the basic concepts of Food Nutrition and Recommended dietary intakes. . CO 2: Understand Nutritional requirements for different age groups CO 3: Understand the concept of Balanced Diets and plan nutritious meals for different age groups CO 4: Modify the normal diets that can be used for management and prevention of various diseases CO 5: Understand the beneficial effects of conventional and non-conventional foods and food constituents		
REFERENCE BOOKS:		
SN	Name of Authors/Books/Publisher	Year of Publication/ Reprints
1	Benzamin T. Burton, Human Nutrition, Tata Mc Graw Hill	1976
2	P.S. Howe, Basic Nutrition in Health & Disease, W. B. Saunders Co., Philadelphia (7th ed.)	1981
3	Robert E.C. Wildman, Denis M. Medeiros, Advanced Human Nutrition, CRC Press	2014
4	Shubhangini A. Joshi Nutrition and Dietetics, Tata McGraw-Hill Education	2010
5	M. Swaminathan, Advanced Text-Book On Food & Nutrition (Vol- I & II), Bangalore Printing and Publishing	2012
6	N. Shakuntala Manay and M.Swamy: Food Facts & Principles, New Age International	2008

CO-PO Mapping (1 to 3 scale)

CO/PO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
CO-1	3	1	2	-	1	3	-	-	-	-	-
CO-2	3	2	1	1	-	2	-	-	-	-	-
CO-3	3	2	2	2	1	1	-	-	-	-	-
CO-4	2	3	3	3	2	3	-	-	-	-	-
CO-5	2	1	1	2	1	2	-	-	-	-	-
Avg	2.6	1.8	1.8	1.6	1	2.2					

Course Details

Units	Contents	Lecture Hours
I	Nutrition, Energy requirements of the body, Recommended Dietary Intakes (RDI) and its uses. Factors affecting nutritional requirement of an individual, Malnutrition. Role of nutrients, Effects of deficient or excess intake of the individual essential nutrients.	8
II	Balanced diet and basic food groups; Digestion, absorption and utilization of nutrients in the body. Foods for pregnant ladies and nursing mothers, Infant and baby foods, Adolescent / Teen-age foods, Geriatric foods.	8

III	Therapeutic Diets, Modification in texture and consistency of diet, Modification of normal diet during illness and convalescence. Diet during energy imbalance and metabolic disorders.	8
IV	Diets recommended and restricted in Gastrointestinal disorders, Cardiovascular diseases, Kidney and Liver disease. Dietary modification in Food allergy and Fever & Infections. Diet during Gallbladder and Pancreatic disturbances.	8
V	Beneficial Effects of Spices, Gamma-linolenic acid, Spirulina, Antioxidants and other foods for special medicinal purpose. Functional foods & Nutraceuticals, Gluten free foods, Low glycemic index foods, Foods for special dietary use, Organic foods, and Novel & Proprietary foods	8
	Total	40

Subject Code: BFT 074	Course Title: Fundamental Aspects of Food Biotechnology	
Examination Duration: 3 Hours	Semester: VII (Odd)	
L: T: P: 3:0:0 Credit: 3	Prerequisites: None	
Objectives: • To provide basic knowledge of Food biotechnology and its applications in Food Processing Industry • To learn about the production of different food products by Microbial means. • To study the Fundamentals of Tissue Culture and Genetic Engineering		
Course Outcome:: Students completing the course will be able to CO 1: Understand the importance of Biotechnology in Food processes. CO 2: Understand the microbial production of organic acids, vitamins and bio-pigments. CO 3: Understand the sources ,advantages, production &application of microbial enzymes. CO 4: Understand the production of fermented food products like beer, wine, tofu and soy sauce. CO 5: Understand the basics of Tissue Culture, Genetic Engineering and Genetically Modified Foods.		
REFERENCE BOOKS:		
SN	Name of Authors/Books/Publisher	Year of Publication/ Reprints
1	Crueger and Crueger , Biotechnology: A Textbook of Industrial Microbiology, Sinauer Associates Inc.,U.S.	2017
2	Frazier, W.S. and Weshoff, D.C., Food Microbiology, McGraw Hill Book Co., New York	1988
3	Roger, A., Gordon, B. and John, T, Food Biotechnology, Cambridge University Press	1989
4	Prescott & Dunn Industrial Microbiology, CBS Publishers and Distributors	2004

CO-PO Mapping (1 to 3 scale)

CO/PO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
CO-1	3	2	3	1	2	2	-	-	-	-	-
CO-2	3	1	3	1	2	2	-	-	-	-	-
CO-3	2	1	2	2	1	1	-	-	-	-	-
CO-4	2	1	1	1	2	1	-	-	-	-	-
CO-5	3	2	3	2	3	3	-	-	-	-	-
Avg	2.6	1.4	2.4	1.4	2	1.8					

Course Details

Units	Contents	Lecture Hours
I	Introduction, history, scope and present status of biotechnology in India with reference to Food Technology. Fermentation, types of fermentation: solid and submerged fermentation. Bioreactor, types of bioreactors, Advantages and disadvantages, applications and design aspects of bioreactors used in food industry.	8
II	Biotechnological methods for the production of organic acids, vitamins and bio-pigments (with reference to the microorganisms involved, substrates used, optimum process parameters and their applications) Production of single cell proteins, microbial lipids (microorganisms involved, raw materials, advantages, commonly used methods, safety concerns)	8
III	Sources of enzymes, advantages of microbial enzymes, production, extraction and purification of enzymes. Biotechnological approach for the production of fermented food products, Beer, Wine, Tofu, Soy Sauce, Tempeh, Kefir.	8

IV	Tissue culture technology and its application in food industry. Structure of DNA and RNA, Mutation, Mutagens, Types of Mutations and applications of Mutations in Strain Improvement	8
V	Genetic Engineering and applications, Gene Cloning procedures-general outline, Recombinant DNA Technology, Genetically Modified Foods and their applications. Safety issues related to Genetically Modified Foods.	8
	Total	40

Subject Code: BFT 751	Course Title: Food Quality Evaluation Lab	
Examination Duration: 3 Hours	Semester: VII (Odd)	
L: T: P: 3:0:0 Credit: 3	Prerequisites: Food Technology	
Objectives: • To provide basic insight into the practical aspects of Food Quality • To provide knowledge for the assessment of quality of foods from different food categories		
Course Outcome:: Students completing the course will be able to CO 1: Understand the testing and evaluation of various parameters of food quality CO 2: Understand the different techniques to perform sensory evaluation study of foods CO 3: Understand the concepts of Food quality and its role in food industry CO 4: Understand the quality evaluation of industrial food products CO 5: Understand the quality assessment of food products as per FSSAI Act		
REFERENCE BOOKS:		
SN	Name of Authors/Books/Publisher	Year of Publication/ Reprints
1	S.Ranganna, “Handbook of Analysis and Quality Control for Fruit and Vegetable Products”. S, Tata McGraw-Hill Education 2 nd Edition	2017
2	Quality Y.Pomeranz: Food Analysis: Theory and practice	2000
3	M.A. Amerine: Principles of Sensory Analysis of Food	2005 (Reprint)
4	Morris B. Jacobs: The chemical analysis of foods and food products, III Edition, CBS Publishers and distributors New Delhi.	2013 (Reprint)

CO-PO Mapping (1 to 3 scale)

CO/PO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
CO-1	2	3	2	1	1	-	-	-	-	-	-
CO-2	1	2	3	1	3	-	-	-	-	-	-
CO-3	3	1	1	2	1	-	-	-	-	-	-
CO-4	2	3	2	2	1	-	-	-	-	-	-
CO-5	2	1	1	1	2	-	-	-	-	-	-
Avg	2	2	1.8	1.8	1.6						

Course Details

Units	Contents
I	Sensitivity tests(Threshold/Dilution) to measure Individual Ability for sensory analysis
II	Difference tests to evaluate qualitative and quantitative differences and/ or preference between test products
III	Assessment of quality of wheat flour (Water Absorption Power, Gluten Content, Sedimentation Value etc.)
IV	Assessment of quality of Bakery Products: Bread, Biscuits, Cakes etc.
V	Assessment of quality of vegetable oils
VI	Assessment of quality of Fruit &Vegetable Products: Tomato Products, Jam, Jelly, Marmalades, Squashes & Cordials, Canned Products.
VII	Assessment of Quality of Beverages: Tea & Coffee, Carbonated and RTS Beverages.
VIII	Assessment of Quality of Milk
IX	Assessment of Quality of Dairy Products like Butter, Ice-cream, Cheese etc.
X	Assessment of Quality of Fermented Foods like Yoghurt, Sauerkraut etc.

Subject Code: BFT 752	Course Title: Mini Project of Internship Assessment
Examination Duration: --	Semester: VII (Odd)
L: T: P: 0:0:4 Credit: 2	Prerequisites: Nil
Objectives: Student is able to learn process industry practices and understanding the correlation between the theoretical and practical knowledge	
Course Outcome: Students are expected to: CO 1: understand the industrial plant processes CO 2: correlate theoretical and practical knowledge CO 3: analyse the problems in industries CO 4: develop lifelong learning skills CO 5: develop the teamwork CO 6: apply the various engineering tools for solving complex problems	

CO-PO Mapping (1 to 3 scale)

CO/PO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
CO-1	2	2	1	-	2	2	2	-	-	-	3
CO-2	3	3	2	1	3	3	3	1	-	-	2
CO-3	3	1	1	-	2	3	2	1	2	-	2
CO-4	3	1	1	2	3	3	3	-	1	-	3
CO-5	2	2	-	2	2	2	3	2	2	-	2
CO-6	1	1	1	-	1	1	3	1	1	-	3
Avg	2.3	1.7	1.2	1.7	2.2	2.3	2.7	1.3	1.5	-	2.5

Course Details

- The Mini Project or internship (5-6 weeks) conducted during summer break after VI semester and will be assessed during VII semester.
- The Mentor/Teacher shall guide and supervise the activities of the student while the student is undergoing Industrial Training.
- The Industrial Training report is to be prepared in consultation with the Mentor/Teacher and industry. Students are required to submit neatly typed and spiral bound training report after joining the college in 7th Semester.
- The report should include information about working of the industry and specific information of the work done by the student in the industry. The students are also required to attach the Certificate issued by the competent authority from the industry where he/she has undergone training mentioning the successful completion of the training. The report must be duly signed by his/her Mentor.
- The students are required to share their experience during the Industrial training at the start of the term and assessment for the same will be made through presentation. The student is required to present the report of the skills / knowledge acquired by her/him during the training for his industrial training evaluation. Report should be prepared as per the guidelines of Institute.

Subject Code: BFT 753	Course Title: Project - I
Examination Duration: --	Semester: VII (Odd)
L: T: P: 0:0:10 Credit: 5	Prerequisites: Nil
Objectives: Student is able to apply their theoretical and practical knowledge during the curriculum and solve the problem in Food Technology	
Course Outcome: Students are expected to: CO-1: demonstrate a sound technical knowledge of their selected project topic. CO-2: undertake problem identification, formulation and solution. CO-3: design solutions to complex problems utilising a systems approach. CO-4: apply concepts for optimization of ongoing processes/product formulations CO-5 design and optimize new product development CO-6: demonstrate the skills, knowledge, and attitudes of a professional engineer.	

CO-PO Mapping (1 to 3 scale)

CO/PO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
CO-1	3	2	2	1	2	2	1	-	-	-	1
CO-2	3	3	2	1	-	2	3	1	-	1	2
CO-3	2	2	1	-	2	2	-	1	1	1	2
CO-4	3	1	2	2	1	1	2	1	1	-	1
CO-5	2	2	2	2	2	2	2	2	2	1	2
CO-6	2	2	1	1	-	-	-	1	1	-	3
Avg	2.5	2.0	1.7	1.4	1.8	1.8	2.0	1.2	1.3	1.0	1.8

Course Details

The student can also choose a state-of-the-art problem of their own interest based on the recent trends in Food Technology / Science in consultation with the guide. They shall work on the designated problem either individually or in groups (no of students in groups decides by faculty).

During the Project-I the students are required to:

1. Define the project problem.
2. Write a project proposal including concise introduction of latest published papers in the following order– a. Project title b. Introduction c. Origin of the problem d. Literature review of research and development at national & international level e. Significance of the problem f. Objective g. Methodology h. Details of collaboration (if any)
3. Carry out preliminary investigations if any or product design or process design etc.
4. Summarize the results (if any). The student is required to prepare a month wise work plan (for both semesters) immediately after the allotment of the project and the department is required to maintain a progress report of every student/project. The progress report should reflect monthly progress done by the student as per the work plan. The progress report is to be duly signed by the respective project guide by giving the remarks/marks/grades etc. on the periodic progress done by the student should submit the project report at the end of respective terms to the examiners as a supporting document for evaluation. Every student will be examined orally based on the topic of his/her project and relevant area to evaluate his understanding of the problem and the progress made by the student during the term. Students should submit a neatly typed and spiral bound research proposal at the end of the first term in the following format. Font: Times New Roman, Font size: 12, Headings: 14, Spacing: 1.5, typed on one side of the A4 size paper with proportionate diagrams, figures, graphs, photographs, tables etc. Referencing style: 1.

Author Name, Title of Paper, Publisher/ Journal Volume, (Year), Page no. (Reference numbers should be mentioned in the main text as a superscript).

The report should contain:

Page 1: The cover page - should mention: Project title, Name of the student, Name of the guide, Exam seat number and Year.

Page 2: Certificate

Page 3: Index

Page 4 onwards: Research proposal (as above), experimental investigation details and result if any. Last page: References The department should prepare a template of the format of the project report and supply it to the students so as to maintain the uniformity in the project reports. Students are encouraged to participate and present their project work in various events, competitions, conferences and seminars etc. in consultation with their guide.

Note: The project guides are required to educate the students about antiplagiarism policy of AKTU and apply the same while doing the project.

Subject Code: BFT 754	Course Title: Startup and Entrepreneurial Activity Assessment
Examination Duration: --	Semester: VII (Odd)
L: T: P: 0:0:4 Credit: 2	Prerequisites: BFT 753
Objectives: Student is able to understand the start and entrepreneurial policies of country and able to define objective of work for start-up/entrepreneurial activity	
Course Outcome: Students are expected to: CO-1: demonstrate a sound knowledge of start-up and entrepreneurship CO-2: develop the entrepreneurship development skills CO-3: skill development of teamwork, leadership, etc CO-4: understand the policies of central and state government for start-up skill CO-5: understand entrepreneurial opportunity and enterprise planning CO-6: develop the own business model/plan	

CO-PO Mapping (1 to 3 scale)

CO/PO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
CO-1	-	-	-	-	-	2	2	1	2	3	3
CO-2	1	-	-	-	-	2	3	1	2	3	2
CO-3	1	-	-	-	-	3	1	2	1	3	1
CO-4	-	-	-	-	-	1	2	2	2	2	1
CO-5	1	-	-	-	-	2	2	2	1	3	1
CO-6	-	-	-	-	-	2	1	1	1	2	2
Avg	1.0	-	-	-	-	2.0	1.8	1.5	1.5	2.7	1.7

Course Details:

- A) Institute should organize the motivational talk/workshop/seminar on the following topics in order to motivate the students for start-up/entrepreneurship
- Introduction to Entrepreneurship development
 - Entrepreneurship Development Skills
 - Various Central and State Level Organizations Which Help the Entrepreneurs, Banks and non-banking financial organisations, Fund Collection for Entrepreneurship
 - Sensing entrepreneurial opportunities, selecting the right opportunity, Site Selection, Feasibility Analysis
 - Business plan - concept, format, components of business plan. Significance of Business Plan. Making of a Business plan
- B) Institute should appoint one mentor for student or group of students to monitor the progress of the student and student should encourage to work on project/idea to convert into start-up. Student should encourage to participate in the start-up hackathon organized by ministry of education, other agencies
- C) Student is expected to develop the own business model on selected topic and submit complete report of the same in format provided by institute. Assessment will be done based on the business model developed by the student in form of product/web portal/idea base presentation, etc.

Subject Code: BFT 851	Course Title: Project - II
Examination Duration: --	Semester: VII (Odd)
L: T: P: 0:0:18 Credit: 10	Prerequisites: BFT 753
Objectives: Student is able to apply their theoretical and practical knowledge during the curriculum and solve the problem in chemical engineering	
Course Outcome: Students are expected to: CO-1: demonstrate a sound technical knowledge of their selected project topic. CO-2: undertake problem identification, formulation and solution. CO-3: design solutions to complex problems utilising a systems approach. CO-4: apply concepts for optimization of ongoing processes/product formulations CO-5 design and optimize new product development CO-6: demonstrate the skills, knowledge, and attitudes of a professional engineer.	

CO-PO Mapping (1 to 3 scale)

CO/PO	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
CO-1	3	2	2	1	2	2	1	-	-	-	1
CO-2	3	3	2	1	-	2	3	1	-	1	2
CO-3	2	2	1	-	2	2	-	1	1	1	2
CO-4	3	1	2	2	1	1	2	1	1	-	1
CO-5	2	2	2	2	2	2	2	2	2	1	2
CO-6	2	2	1	1	-	-	-	1	1	-	3
Avg	2.5	2.0	1.7	1.4	1.8	1.8	2.0	1.2	1.3	1.0	1.8

Course Details

During the second term (Project Part-II) the students are required to:

1. Carry out detailed work on previously defined (Project Part-I) project problem.
2. Write a Project Report, which should be broadly divided into the following sections define by the supervisor. *Font: Times New Roman, Font size: 12, Headings: 14, Spacing: 1.5, typed on one side of the A4 size paper with proportionate diagrams, figures, graphs, photographs, tables etc. Referencing style: Author Name, Title of Paper, Publisher/ Journal Volume, (Year), Page No. (Reference numbers should be mentioned in the main text as a superscript)*

The Project Report should contain in the following order:

1. The cover page –must mention: Project title, Name of the student(s), Name of the guide, Exam seat number and Year.
2. Certificate from guide
3. Certificate from industry (if any)
4. Index
5. Detailed Project Report having sections ‘a’ to ‘g’ from above. The student is required to prepare a month wise work plan (for both semesters) immediately after the allotment of the project and the department is required to maintain a progress report of every student/project. The progress report should reflect monthly progress done by the student as per the work plan. ***The progress report is to be duly signed by the respective project guide by giving the remarks/marks/grades etc.*** on the periodic progress done by the student at the mid of the term and should be submitted along with project report at the end of respective terms to the examiners as a supporting document for evaluation.

Each student is required give presentation of his work for 15 minutes using 20-22 slides. The presentation will be followed by question answer session of 5 min. The department/university will provide template of the format of the project report so as to maintain the uniformity in the project reports. Students are encouraged to participate and present their project work in various events, competitions, conferences and seminars etc. in consultation with their guide.

Note: Students must check plagiarism policy of AKTU and apply the same while doing the project.