

ACTION TAKEN REPORT 2017-18

The stakeholders have appraised the updated course contents, knowledge of the students, willingness towards continuous learning, communication skills, satisfactory level of response from the Institution, etc. The action taken report on the following feedback is mentioned here.

Sl. No.	Feedback	Action taken
1	Recruiters suggested that the students should be practically trained in food quality and safety oriented courses such as Food Microbiology and Food Biochemistry.	New course <i>17FP2006 Food Microbiology Lab</i> was approved by members BoS, 2017.
2	Parents suggested that students be exposed to elements of nutrition for better understanding of food systems.	New course <i>17FP2045 - Nutrition and Food Science</i> was approved and added into the curriculum vide BoS 2017.
3	Students suggested that the syllabus of “Bakery and Confectionery Technology” should be reframed to include beverage component to enable students to be affluent with operations in the food beverage industry.	The syllabus of “Bakery and Confectionery Technology” was reframed to include beverage component. The revised course, <i>17FP2020 - Bakery, Beverages And Confectionery Technology</i> has content regarding beverage manufacture to enable students to be affluent with operations in the food beverage industry.
4	Alumnus suggested that the course “Applied Thermodynamics for Food Engineers” can be given one additional credit for tutorials which will improve the skill development and employability.	Revision was carried out on selective analytical papers such as <i>17FP2002- Applied Thermodynamics for Food Engineers</i> with a tutorial component to help students perform better in problem solving.

Action Taken : 1

New laboratory based courses on Food Microbiology and Food Biochemistry was introduced for 2017-21 batch B.Tech (FPE) students so that students can be practically oriented in food quality and safety aspects.

17FP2006 FOOD MICROBIOLOGY LAB

Credits : 0:0:2

Course Objectives:

- To understand the working principle of microscopes and sterilization techniques.
- To know the preparation of media for the cultivation of microorganisms.
- To identify the isolated strains using staining techniques and biochemical tests.

Course Outcomes:

- Use aseptic technique to properly handle microorganisms to avoid contamination.
- Understand and apply the knowledge to handle microscopes to observe stained microorganisms.
- Enumerate the microorganisms to check the quality characteristics of food.
- Isolate the pure culture from mixed population found in contaminated foods.
- Identify the microorganisms using staining techniques.
- Assess the quality of raw milk by methylene blue reduction test.

List of Experiments

1. Microscopy
2. Sterilization and Disinfection
3. Preparation of culture media.
4. Methods of pure culture techniques for bacteria.
5. Staining techniques - Monochrome staining
6. Gram staining
7. Negative staining,
8. Lacto phenol cotton blue staining for fungi.
9. Hanging drop preparation to observe motility of bacteria
10. Enumeration of microorganisms from water/milk
11. Enumeration of microorganisms from any contaminated food.
12. MPN Test for coliforms.
13. Methylene blue reduction test for assessing the quality of raw milk.
14. Biochemical characterization of bacteria.

DEPARTMENT OF BIOSCIENCES AND TECHNOLOGY
FOOD PROCESSING AND ENGINEERING
MINUTES OF THE BOARD OF STUDIES MEETING
CONDUCTED ON 12TH APRIL, 2017

The meeting of the Board of Studies of the Department of Food Processing and Engineering, School of Biotechnology and Health Sciences, under the chairmanship of Dr. T. V. Ranganathan, Professor and Coordinator – UG, Food Processing and Engineering, Karunya University was held on 12.04.2017. The following BOS members for the year 2016-17 of the Department of Food Processing and Engineering attended the meeting

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2. Dr. S. Gobikrishnan : Member
3. Dr. Emilin Renitta : Member
4. Dr. A. Nishadh : Member
5. Dr. D. Tiroutchelvame : Member Secretary
6. Er. Dayanand Peter : Member
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8. Mrs. Shilu Leslie : Member
9. Dr. M.M. Pragalyaashree : Member

External Members:

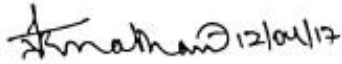
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2. Mr. Manuel Tim Prashanth, Auditor – Technical, Adelle Foods London, No.1, CSI Nagar, Dharapuram – 638656. (ALUMNI)

Agenda of the meeting

S. No.	Agenda taken up	
1.	Approval of course structure and course components for the 2016-20 batch B.Tech.	Please refer Annexure – I
2.	Approval of the course structure, course components and curriculum for the 2017- 21 B.Tech. students	Please refer Annexure – II
3.	Any other matter	

1. The course structure and the list of subjects to be offered for the 2016-20 batch B.Tech.(FPE) students were discussed and the necessary revisions were made.
2. The members discussed in detail about the course structure, list of courses, and the detailed syllabus for the B.Tech.(FPE) students admitted from 2017 onwards.
3. The members suggested to make the corrections in the detailed five units syllabus and the same has been revised.
4. Based on the feedback received from alumni, the BoS members discussed about the inclusion of tutorial hours for the course “Applied Thermodynamics for Food Engineers”. It was approved with a credit of 3:1:0 credits by including one credit for tutorials which will improve the skill development and employability.
5. “Principles of Food Process Engineering” subject was allocated under the Engineering Sciences and Technical Arts category.
6. The earlier Mechanics of Fluids course was renamed as “Fluid Mechanics for Food Engineers” with 3:1:0 credits. The members suggested to allot one hour of tutorials for problem solving in fluid mechanics to improve the engineering skills for better employability.
7. As per the feedback received from the students, the subject “Bakery and Confectionery Technology” was renamed into “Bakery, Beverages and Confectionery Technology” with inclusion of beverage component in the syllabi to enable students to be affluent with operations in the food and beverage industry.
8. The subject “Food Preservation Principles” was renamed as “Principles of Food Science and Nutrition”
9. The syllabus for the Hotel management department was decided and named as “Nutrition and Food Science”
10. The following courses were newly introduced for 2017-21 batch B.Tech (FPT) students to enhance technical, employability, and entrepreneurial skills:
 - Food Microbiology
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 - Food Biochemistry and Nutrition
 - Food Biochemistry Lab
 - Non-Thermal Techniques of Food Preservation
 - Nutrition and Food Science

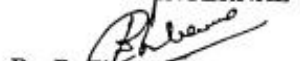
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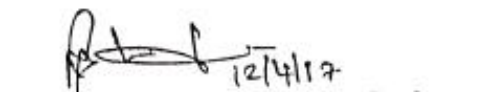
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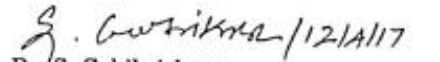
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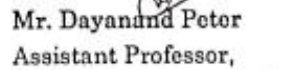

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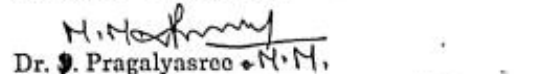
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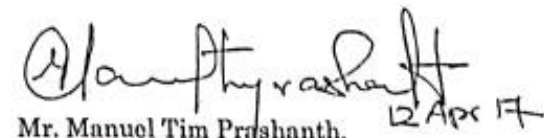
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 12 Apr 17
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Auditor - Technical, Adelle Foods London,
No.1, CSI Nagar, Dharapuram - 638656.
External Member - Alumni

Action Taken : 2

Parents suggested that students be exposed to elements of nutrition for better understanding of food systems.

17FP2045 NUTRITION AND FOOD SCIENCE

Credits: 3:0:0

Course Objectives:

- To learn the nutrients required for health, and their sources in diets.
- To learn how nutrients in foods affect and are affected by metabolic functions of the human body.
- To learn how variability among research results leads to consumer perceptions of changing or conflicting recommendations for dietary practices from the nutrition community.

Course Outcomes:

- To understand the basis in the area of nutritional assessment in health and disease
- To evaluate the biological functions of foods for health in addition to nutritional values
- To judge the potential for adverse events related to dietary supplements
- To identify which nutrients are sources of energy for the body and how an excess or a deficiency of energy can affect the body.
- To formulate nutrition therapy for chronic disease
- To compare the various types of nutrition research with respect to type and reliability of information produced.

Unit I - HUMAN NUTRITION : Historical perspective of nutrient requirements – Assessment of nutritional status - recommended dietary allowances of macronutrients for all age groups - Assessment of protein quality – Malnutrition and related disorders – Balanced Diet. Factors influencing dietary intake: Food habits, food fads and fallacies, their influence on health and wellbeing.

Unit II - BIOMOLECULES : Carbohydrates- Definition, classification, Functions, Sources of Carbohydrates, Deficiency. Lipids – Definition, classification, function, sources, Refined & Hydrogenated fats process. Proteins – Definitions, Classification, Function, Amino Acids, Sources of Proteins

Unit III - VITAMINS : Physiological role, bio-availability, requirements, sources and deficiency of Fat soluble Vitamins: Vitamin A, Vitamin D, E & K. Water soluble vitamins: Vitamin C, Thiamine, Riboflavin, Niacin, Pantothenic acid, Biotin, Folic acid, Vitamin B12, Vitamin B6.

Unit IV - MINERALS : Physiological role, bio-availability, requirements, sources and deficiency of Macro minerals: Calcium, Phosphorus Magnesium, Sodium, Potassium chloride. Micro minerals: Iron, Zinc, copper, selenium, chromium, iodine, manganese, Molybdenum and fluoride.

Unit V - RECENT TRENDS IN NUTRITION : Principles of dietary management in gout, rheumatism, AIDS/HIV - Cancer-risk factors, symptoms, dietary management, role of food in prevention of Cancer. Role of functional foods, health foods and novel foods, organically grown foods, recent concepts in human nutrition like nutrigenomics, nutraceuticals etc.

Text Books

1. Gordon M. Wardlaw – 2004. Perspectives in Nutrition, 6th edition, WCB McGraw-Hill Publishers, Boston (ISBN 007-244212-3)
2. Shubhangini A. Joshi -1992. “Nutrition and Dietetics”Tata Mc Grow- Hill publishing Company Ltd, New Delhi.
3. Srilakshmi. B – 2016. “Nutrition Science”, 5th edition, New Age International (P) Ltd, Publishers, Chennai

Reference books

1. Ronald Ross Watson, Functional foods and Nutraceuticals in Cancer Prevention, Ed. Wiley – Blackwell, 2003. ISBN-13: 978-0813818542.
2. Nelson D.L., M.M. Cox, Lehninger Principles of Biochemistry, W.H. Freeman & Company Publications, 2013. ISBN-10: 1-4292-3414-8
3. Tymoczko, J.L., Berg, J.M., Stryer, L. Biochemistry – A short course, 3rd edition. W.H. Freeman. 2009. ISBN-10: 1-4641-2613-5

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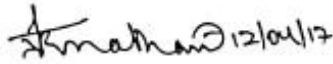
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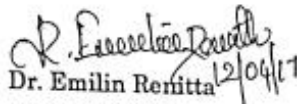
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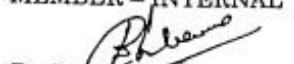
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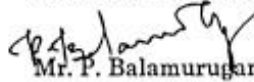
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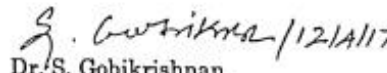
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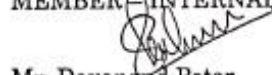

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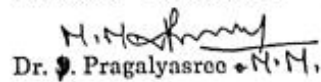
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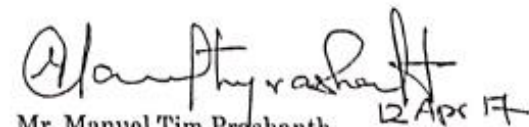
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Action Taken : 3

The syllabus of “Bakery and Confectionery Technology” should be reframed to include beverage component to enable students to be affluent with operations in the food beverage industry.

17FP2020 BAKERY, BEVERAGES AND CONFECTIONERY TECHNOLOGY

Credits: 3:0:0

Course Objectives:

- To provide know how on the machinery and process involved in the baking and confectionery process
- To understand the various types of sugar and its grades
- To know the process and machinery involved in the manufacture of beverages.

Course Outcomes:

- To gain knowledge on the ingredients, process and machinery involved in bakery and confectionery and beverage technology.
- To understand the importance and effect of quality of raw materials on the final products
- To apply the knowledge gained in formulating new types of products
- To critically analyze the process for maintaining and improving the quality of the final product
- To evaluate the steps involved in the process and improve existing technologies or develop newer technologies
- To design and create newer process and products that are better economically, nutritionally or technologically.

Unit I - LABORATORY TESTING OF WHEAT GRAIN QUALITY: Moisture tests, Grain hardness testing. Visco graph, Amylograph, Farinograph. Dough mixers, Dividers, rounders, Proofing, moulding, Ovens, Slicers, Packaging materials and equipment, Sanitation and safety.

Unit II - MATERIALS OF BAKING : Bread manufacturing process – Straight dough fermentation, Sponge and dough, Biscuit-Types of biscuit dough – Developed dough, short dough, semi-sweet, enzyme modified dough and batters- importance of the consistency of the dough- Cake – Flour specification – ingredients – manufacturing process – types of chemically aerated goods.

Unit III - SUGAR MANUFACTURE : Energy and material balance of cane sugar process. Extraction of juice, extraction yields, drying and uses of Bagasse, Purification of juices-juice filtration and chemical purification, Clarification stages, Lime addition, pH control, Treatment of clarified juice, evaporation –multiple effect evaporators, Vacuum pans, Crystallization, Washing of sugar crystals and centrifugal separation/dewatering of sugar and other related processes. Sugar Refining, Sugar analysis, Sugar recovery – improvement, Sugar balance, energy conservation, Sugar plant sanitation.

Unit IV - MANUFACTURE OF ALCOHOLIC AND CARBONATED BEVERAGES : Manufacture of beer, wine and champagne - Quality characteristics, Manufacture of distilled beverages including whisky, brandy, rum and gin – Quality aspects - Manufacture of sugar-free, sugarless, carbonated beverages - quality aspects

Unit V - CONFECTIONERY TECHNOLOGY: Types of Confectionery, raw materials and processing of toffee, chocolates, fruit drops, hard boiled candies. Additives for Confectioneries. Equipments used in Confectionery manufacture.

Text Book

1. Samuel A. Matz, “Bakery Technology and Engineering”, Chapman & Hall, 3rd Edition, 1992.

Reference Books

1. Bakery Products – Science and Technology, Ed., Y.H. Hui, Blackwell Publishing, 2006. ISBN-13: 978-0-8138-0187-2
2. Sumnu SG and Sahin S. Food Engineering aspects of Baking sweet goods. CRC Press,2008. ISBN 978- 1- 4200- 5274- 9
3. Hunsigi G. Production of Sugarcane Theory and Practice, Springer Verlag, 1993. e-ISBN-13: 978-3-642-78133-9
4. Varnam A.H. & Sutherland J.P. BEVERAGES - Technology, Chemistry and Microbiology, Springer- Science Business Media, B.V., 1994. ISBN 978-1-4615-2508-0 (eBook)
5. Lees R and Jackson EB. Sugar Confectionery and Chocolate Manufacture, Chapman and Hall Pub.,1992. e-ISBN-13: 978-1-4684-1495-0
6. Edwards, W .P. The Science of Sugar Confectionery, RSC Publishing, UK., 2000. ISBN 0-8 5404-593- 7

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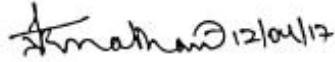
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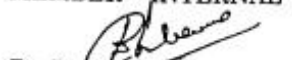
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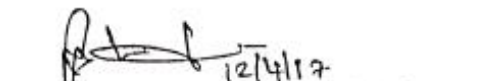
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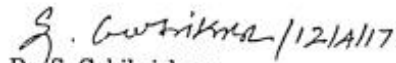
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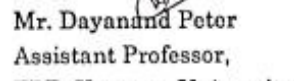

Mrs. Shilu Leslie, Assistant Professor,
FPE, Karunya University
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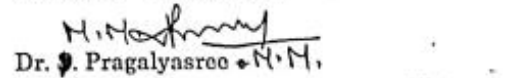
 12/4/17
Dr. M. Balakrishnan, Associate Professor
(Food & Agrl. Process Engineering),
Tamil Nadu Agricultural University
Agricultural Colloge & Research Institute
Killikulam - 628252 -
External Member - Academics

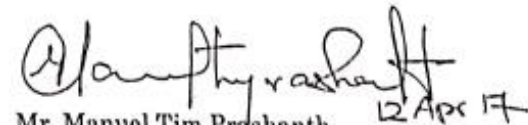
 12/11/17

Dr. S. Gobikrishnan
Assistant Professor & Coordinator - PG
FPE, Karunya University
MEMBER - INTERNAL


Dr. A. Nishadh
Assistant Professor
FPE, Karunya University
MEMBER - INTERNAL


Mr. Dayanand Peter
Assistant Professor,
FPE, Karunya University
MEMBER - INTERNAL


Dr. J. Pragalyasree - N.M.
Assistant Professor, FPE, Karunya University
MEMBER - INTERNAL

 12 Apr 17
Mr. Manuel Tim Prashanth,
Auditor - Technical, Adelle Foods London,
No.1, CSI Nagar, Dharapuram - 638656.

External Member - Alumni

Action Taken : 4

Alumnus suggested that the course “Applied Thermodynamics for Food Engineers” can be given one additional credit for tutorials which will improve the skill development and employability.

17FP2002 APPLIED THERMODYNAMICS FOR FOODENGINEERS

Credits: 3:1:0

Course Objectives

- To understand the importance of thermodynamics in food system.
- To apply the concept of statistical thermodynamics for various food system
- To develop an efficient system using thermodynamic principle

Course Outcomes

- To identify the thermodynamic variables that will affect the food processing
- To estimate the effect of various thermodynamic properties on food system
- To solve the problems related to food processing using thermodynamic principles
- To model food system based on thermodynamic properties
- To develop an efficient food processing method
- To predict the bottleneck using the thermodynamic principles

Unit I - FUNDAMENTAL CONCEPTS AND CALCULATION OF THERMODYNAMIC QUANTITIES: Thermodynamic terms, variables, processes and states. First and zeroth law of thermodynamics. State and path function. C_p and C_v . Joule Thomson porous plug experiment. Calculation of thermodynamic quantities - Isothermal expansion, free expansion and adiabatic reversible process.

Unit II - FIRST AND SECOND LAW OF THERMODYNAMICS AND ITS APPLICATION : Steady flow energy equation and its application to steam generator, condenser, nozzles and air compressors. Second law of thermodynamics and its application to refrigerator, heat engine and heat pump. Concept of entropy and calculation of entropy changes.

Unit III - THERMODYNAMIC PROPERTIES OF PURE FLUIDS :

Energy properties, Helmholtz and Gibbs free energy, fundamental property relations, Maxwell's equations - Clausius - Clapeyron equations. Differential equation for S , U , H . Gibbs- Helmholtz equation. Fugacity, fugacity coefficient, activity, effect of temperature and pressure on fugacity, determination of fugacity of real gases.

Unit IV - PROPERTIES OF SOLUTIONS : Partial molar properties, concept of chemical potential, fugacity in solutions-Lewis Randall rule, Raoult's law, Henry's law. Activity in solutions- activity coefficients, pressure and temperature effects, Gibbs- Duhem equations.

Unit V - PSYCHROMETRY : Psychrometric properties of air. Psychrometric charts, psychrometric process – sensible heat exchange process, latent heat exchange process, adiabatic mixing, evaporative cooling – problems.

DEPARTMENT OF BIOSCIENCES AND TECHNOLOGY
FOOD PROCESSING AND ENGINEERING
MINUTES OF THE BOARD OF STUDIES MEETING
CONDUCTED ON 12TH APRIL, 2017

The meeting of the Board of Studies of the Department of Food Processing and Engineering, School of Biotechnology and Health Sciences, under the chairmanship of Dr. T. V. Ranganathan, Professor and Coordinator – UG, Food Processing and Engineering, Karunya University was held on 12.04.2017. The following BOS members for the year 2016-17 of the Department of Food Processing and Engineering attended the meeting

Internal Members:

1. Dr. T. V. Ranganathan : Member
2. Dr. S. Gobikrishnan : Member
3. Dr. Emilin Renitta : Member
4. Dr. A. Nishadh : Member
5. Dr. D. Tiroutchelvame : Member Secretary
6. Er. Dayanand Peter : Member
7. Er. P. Balamurugan : Member
8. Mrs. Shilu Leslie : Member
9. Dr. M.M. Pragalyaashree : Member

External Members:

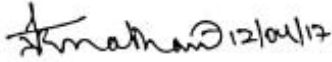
1. Dr. M Balakrishnan, Associate Professor (Food & Agrl. Process Engineering), Tamil Nadu Agricultural University Agricultural College & Research Institute, Killikulam – 628252. (ACADEMIA)
2. Mr. Manuel Tim Prashanth, Auditor – Technical, Adelle Foods London, No.1, CSI Nagar, Dharapuram – 638656. (ALUMNI)

Agenda of the meeting

S. No.	Agenda taken up	
1.	Approval of course structure and course components for the 2016-20 batch B.Tech.	Please refer Annexure – I
2.	Approval of the course structure, course components and curriculum for the 2017- 21 B.Tech. students	Please refer Annexure – II
3.	Any other matter	

1. The course structure and the list of subjects to be offered for the 2016-20 batch B.Tech.(FPE) students were discussed and the necessary revisions were made.
2. The members discussed in detail about the course structure, list of courses, and the detailed syllabus for the B.Tech.(FPE) students admitted from 2017 onwards.
3. The members suggested to make the corrections in the detailed five units syllabus and the same has been revised.
4. Based on the feedback received from alumni, the BoS members discussed about the inclusion of tutorial hours for the course “Applied Thermodynamics for Food Engineers”. It was approved with a credit of 3:1:0 credits by including one credit for tutorials which will improve the skill development and employability.
5. “Principles of Food Process Engineering” subject was allocated under the Engineering Sciences and Technical Arts category.
6. The earlier Mechanics of Fluids course was renamed as “Fluid Mechanics for Food Engineers” with 3:1:0 credits. The members suggested to allot one hour of tutorials for problem solving in fluid mechanics to improve the engineering skills for better employability.
7. As per the feedback received from the students, the subject “Bakery and Confectionery Technology” was renamed into “Bakery, Beverages and Confectionery Technology” with inclusion of beverage component in the syllabi to enable students to be affluent with operations in the food and beverage industry.
8. The subject “Food Preservation Principles” was renamed as “Principles of Food Science and Nutrition”
9. The syllabus for the Hotel management department was decided and named as “Nutrition and Food Science”
10. The following courses were newly introduced for 2017-21 batch B.Tech (FPT) students to enhance technical, employability, and entrepreneurial skills:
 - Food Microbiology
 - Food Microbiology Lab
 - Food Biochemistry and Nutrition
 - Food Biochemistry Lab
 - Non-Thermal Techniques of Food Preservation
 - Nutrition and Food Science

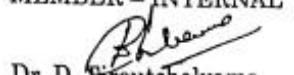
Signature of Committee Members:

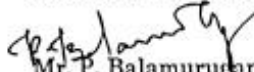
 12/04/17

Dr. T. V. Ranganathan
Professor and Coordinator - UG, FPE
Karunya University
MEMBER - INTERNAL


 12/04/17

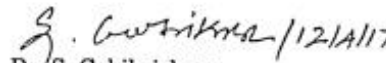
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FPE, Karunya University
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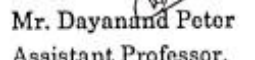

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Assistant Professor, FPE, Karunya University
MEMBER - INTERNAL

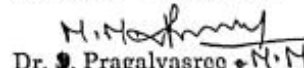
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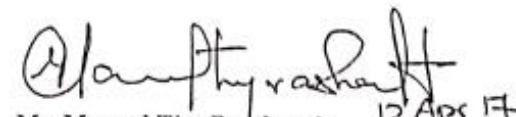
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