#### **Supporting Documents-**

#### 1.1.3

#### **Department of Food Science & Technology**

#### Mapping of Courses to Employability/ Skill Development



#### Paper UC-MSFT-511-19 Food Chemistry

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   | Yes                                       | Implication   | <      | ۷                                   | <    | <           | <   | <  | < | <      | - «     | COS. Ability to integrate chemistry and biochemistry principles into real-world food science and nutritional problems.   |
|---|---|---------------|--------|-------------------------------------|------|-------------|-----|----|---|--------|---------|--|
| MST, Comprehensive Continuous evaluation<br>Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam | Yes                                       | Implication   | ٧      |                                     | <    | ٧.          | <   | ۷. | < | <      | f) <    | CO4. Ability to explain influence of factors such as temperature, pH, ionic characteristic and strength, bonding, etc. on chemical changes in food systems and judge how to adjust these conditions to improve or minimize chemical and biochemical deterioration of food systems. |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   | Yes                                       | Evaluation    | V      | ٧                                   | ۷.   | ٧.          | ۷.  | ۷. | < | <      | - S (1) | CO3. Ability to identify the structure of food constituents and relate the structure to the constituents function and importance in foods with respect to food quality, nutrition, safety, processing, etc.  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   | Yes                                       | Understanding | ٧      | ď                                   | . <  | <           | e e | <  | < | <      | <       | CO2. Understanding of food components reactions and their impact on sensory, nutritional, and functional properties of foods.  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   | Yes                                       | Understanding | ٧      | ٧                                   | <    | ۷ .         | <   | <  | < | <      | ٠,٠     | CO1. Students shall be aware of the underlying chemistry, properties and effects of processing on food components.   |
| Focus on Employability / Entrepreneurshi Assessment Tooks to Measure Attainment of P  | Focus on Employability./ Entrepreneursh o | <b>Sal</b>    | 0<br>6 | POI PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 | P0 7 | 9<br>0<br>5 | 8   | č  | Ö | I PO 2 | P0      | Course Ontcome   |

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#### Paper UC-MSFT-512-19: PRINCIPLES OF FOOD ENGINEERING

|   |   | Understand   |  |      | r  | _           | - | F  | $\vdash$    | $\mid$ | -                        |  | _  |
|---|---|--|--|------|----|-------------|---|----|-------------|--------|--------------------------|--|--|
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes   |  | <  | <    | <  | <           | < | <  | <           | <      | <u>as</u> <u>≥e</u><br>✓ | COS. Student shall be able to understand Basics of Mathematical Calculations related to above Engineering Applications as applied to Food Processing Operations.   | - <del>-</del> -   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Apply  | 4  | ٧    | <  | <           | < | ~  | \ \ \ \ \ \ | <      | . 0 <u>0</u> 0 <u>4</u>  | CO4. Students shall be able to understand Basics of Psychrometrics & Air Conditioning Processes related to Food Processing Operations.   | ·  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Understand   | ٧  | ٧    | ۷. | <           | < | <. | <           | <      | s as s                   | CO3 Students shall be able to understand working of equipments in Food Industry related to transport of Fluids, Thermal Processing and Material Handling along with basics as applied to Food Processing Operations. | 7 6  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Apply  | ٧  | ٧    | <  | ۷.          | < | ٠  | <           | <      | 9 <u>.</u>               | CO2. Students shall be able to understand Basics Fundamentals of Food Processing Operations.   | ,  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Apply  | ٧  | v    | <  | ۷.          | < | <  | ۷.          | ٠ .    | - <del> </del>           | CO 1: Students shall be able to understand Basics of Mass & Energy Conservation as applied to Food Processing Operations.  |  |
| Focus on  Employability <i>J.</i> Entrepreneurshi Assessment Tools to Measure Attainment of p   | Focus on<br>Employability /<br>Entrepreneurshi<br>p | Company of the Compan | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 Skill | P0.8 | 80 | 5<br>O<br>6 | 8 | 8  | 8           | P 8    | 8                        | Course outcoine  | by all the comments of the com |

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#### Paper UC-MSFT-513- 19: FOOD MICROBIOLOGY

| MST, Comprehensive Continuous evaluation  | <del>,</del>                       |               |   |   | <u>.</u> | _ | ι. | <del></del>                                     |           |   | ٤. |  |
|---|------------------------------------|---------------|---|---|----------|---|----|---|-----------|---|----|--|
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar, Presentation Case Studies, Attendance,Class Participation) End semester exam    | Yes                                | Analysis      | < | < | <        | ٧ | <  | <   | <         | < | <  | and spoilage microorganisms are commonly inactivated killed or made harmless in foods and identify ways to control microorganisms in foods.  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                | Understanding | < | < | ٧        | < | <  | <   | ۷.        | < | <  | CO3. Understand the role and significance of intrinsic and extrinsic factors on growth of microorganisms in foods and differentiate which organisms would be likely to grow in a specific food product.  CO4 Identify the conditions under which the important authorouse. |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                | Evaluation    | < | < | <        | ٧ | <  | <   | <         | < | <  | CO2. Ability to identify the characteristics of important pathogens and spoilage microorganisms in foods.  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                | Understanding | < | < | ۷.       | < | <  | <   | 4         | < | <  | COI. Understand the principles involving food spoilage and preservation involving microorganisms and explain why microbiological quality control programmes are necessary in food production.  |
| Employability / Employability / Entrepreneurshi Assessment Fools to Measure Attainment of p  CO   | Employability /<br>Entrepreneurshi |               | 9 | Š | P0 7     | 0 | 8  | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 Sk | S Charles | 8 | 3  | Course Outcome   |

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#### Paper UC-MSFT-514-19: FOOD PROCESSING & PRESERVATION

| Attendance, Class Participation) End semester exam   |  | Implication   |         |   |     |         |    |    |   |                | -         |  |
|--|--|---------------|---------|---|-----|---------|----|----|---|----------------|-----------|--|
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies,  | Yes  |               | ٧       | ٧ | 4   | <       | <  | <  | < | ٧              | Κ.        | CO5. To learn different permitted food additive used in food industry.                         |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam  | Yes  | Implication   | <       | ٧ | ٧.  | <       | ų. | ۷. | < | <              | of <      | CO4. To learn the effects of preservation methods on the quality of food.                      |
| MST, Comprehensive Continuous evaluation<br>Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam  | Yes  | Analysis      | <       | < | 4   | ~       | <  | <  | 4 | <              | 2         | specific foods.  |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam  | Yes  | Understanding | <       | < | <   | <       | 4  | -  | < | <              | Tigg<br>V | CO2. To learn principles of different techniques used in processing and preservation of foods. |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam  | Yes  | Fundamentals  | ei.     | ٧ | ٧.  | <       | ۷. | <  | < | <              | ح ا       | CO1. To impart knowledge on the causes of food spoilage.                                       |
| Focus on Focus on Francis on Focus on Focus on Femployability / Femployabi | Focus on Employability / Entropreneurshi P |               | გ.<br>წ | 8 | 207 | POS POS |    | 8  | 3 | PO1PO2 PO3 PO4 | 8 4 4     | Course Outcome   |

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Paper UC-MSFT-515- 19: LAB - I (FOOD MICROBICLOGY)

|   |  | Ollher stalling of |        |          |   | -                       |    | -  | L        | -    |                              |   |
|---|--|--------------------|--------|----------|---|-------------------------|----|----|----------|------|------------------------------|---|
| Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam  | Yes  | 0                  | <      | <        | < | <                       | ٧  |    |          | ٠.   | ····                         |   |
| MST, Comprehensive Continuous evaluation  |  |                    |        |          |   |                         |    |    |          |      | od products.                 | CO5. Ability to interpret microbiological analysis of food products   |
| MST, Comprehensive Continuous evaluation<br>Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam | Yes  | Understanding      | ۷.     | ح        | < | ۷.                      | ح  |    | ۷.       | ۷.   | food<br>nce of V<br>hnology. | CO4. Understand microbiological analysis methods for food products and ability to analyze different foods for presence of hazardous microorganisms using food microbiology technology |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   | Yes  | Applicability      | <      | <        | ح | ۷                       | ~  | V  | ۷.       | V    | microbial<br>V               | CO3. Ability to isolate and identify common food borne microbial pathogens.   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   | Υes  | Applicability      | ۲      | N.       | < | <                       | ٧. | V  | ۷.       | ۷.   | s and to                     | CO2. Ability to carry out various sterilization techniques and to identify the most suitable technique for specific food.   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   | Yes  | Implication        | <      | ۷ .      | ح | <                       | ٧  | ٧. | <        | ٧    | ds to carry                  | CO1. Acquire the practical skills for the sampling of foods to carry out microbial analysis.  |
| Focus on  Employability /  Entrepreneurshi Assessment Tools to Measure Attainment of  D  CO   | Focus on<br>Employability /<br>Entrepreneurshi |                    | 8<br>8 | Suprace. |   | PO1 PO2 PO3 PO4 PO5 PD6 | 8  | 8  | <u> </u> | 1 PO |                              | Curso Cuccome   |

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Paper UC-MSFT-516-19: LAB - II (FOOD PRESERVATION & ANALYSIS)

| Converse of the second of the |    |     | 8  |    | O A STATE OF THE S |   | . Come | Š<br>Š | S Carrent<br>Grant Carre |                  | Focus on<br>Employability/<br>Emperieurshi | Facus on Employability / Emplo |
|---|----|-----|----|----|--|---|--------|--------|--------------------------|------------------|--|--|
| CO1. To understand the sampling techniques and preparation of test samples.   | <  | ۷   | <  | <  | <.   | < | ۷.     | ٧      | ٧.                       | Understanding &  | Yes  | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam  |
| CO2. To understand the effect of various preservation techniques on the quality and safety of food products.  | ۷. | <   | <  | <  | ح  | < | ٧      | ۷ .    | Ā                        | Understanding &  | Yes  | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam  |
| CO3. To design and evaluate a processing procedure used to preserve a food product.   | ح  | < - | ۷. | ۷. | ٧  | ¥ | ٧      | ٧      | 4                        | creation & evalu | Yes  | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam  |
| CO4. To understand the physical and chemical evaluation of thermally processed food.  | ۷. | <   | <  | ۷. | <  | ٧ | ٧      | ٧      | ٧                        | understanding    | ·<br>Yes                                   | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam  |
| CO5. To understand and utilize different food preservation techniques   | <  | ٠ < | <  | <  | <  | < | ح      | ٧      | ۷.                       | understanding &  | Yes  | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam  |

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#### Paper UC-MSFT-517- 19: NUTRACEUTICAL & FUNCTIONAL FOODS

| CO5. To learn the marketing and regulatory aspects of u v v v v v v v v v v v v v v v v v v   | CO4. Describe a healthy diet and food choices, and explain why v v v v such choices will help prevent health problems.                            | CO3. to understand the role of various nutraceuticals and functional VVVVV foods towards managing chronic diseases.                               | CO2. To understand the source of various nutraceuticals and v v v v v functional foods.   | CO1. To understand the concept of nutraceuticals and functional decironal foods towards managing chronic diseases.                                | Course Outcome Po 1 Po 2 Po 3 Po 4 Po 5 Po 6                                   |
|---|---|---|---|---|--|
| <<br>   | <   | <   | ۷   |   |  |
| <   | <   | <   | <   | ۷.  | PO 7 PO 8  |
| <   | <   | <   | <   | <   | PO 9   |
| Understand  | Understand  | Understand  | Understand  | Understand  | IINS   |
| Yes   | Yes   | Yes   | Yes   | Ύes   | Employability /<br>Entrepreneursh  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p CO |

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Paper UC-WSFT-521- 19: DAIRY TECHNOLOGY

|  | 5 |     | 5  | 5  | 5<br>n | 5<br>5 | 3  | 9  | D |            | Focus on<br>Employability/<br>Entrepreneurshi | Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of                       |
|--|---|-----|----|----|--------|--------|----|----|---|------------|---|--|
|  | 4 | Ì   | Š  |    |        |        |    |    |   |            |   |  |
| CO1. Composition of milk and milk products.                        | < | ۷ . | ۷. | ۷. | <      | <      | <  | <  | < |            | Yes   | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies,           |
| CO2. Processing of milk and milk products.                         |   |     |    |    |        |        |    |    |   |            |   |  |
|  | < | ×   | <  | <  | <      | ۷.     | ۷. | ۷, | < |            | Yes   | Quiz, Assignment, Seminar, Presentation Case Studies,  |
|  |   |     |    |    |        |        |    |    |   | Understand |   | Attendance, Class Participation) End semester exam   |
| CO3. Different milk product development.                           |   |     |    |    |        |        |    |    |   |            |   | MST, Comprehensive Continuous evaluation   |
|  | < | <   | <  | ح  | ۷.     | <      | ۷. | <  | ۷ | Understand | Yes   | Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam |
| CO4. Organization and operations involved in milk processing unit. |   |     |    |    |        |        |    |    |   |            |   | MST, Comprehensive Continuous evaluation   |
|  | < | ۷   | <  | <  | <      | <      | <  | ٧  | ٧ | Арріу      | Yes   | Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam |
| CO5. To understand legislation for the quality control of milk and |   |     |    |    |        |        |    |    |   |            |   | MST. Comprehensive Continuous evaluation   |
| milk products.   | < | <   | <  | <  | *      | ۷.     | <  | <  | 4 | Analyze    | Yes   | Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam |
|  | L |     |    |    |        | L      |    |    |   |            |   | ,  |

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#### Paper UC-MSFT-522- 19: TECHNOLOGY OF FRUITS AND VEGETABLES

| CO5. Students shall be able to understand Basics of By Product Utilization & Waste Utilization related to Fruits & Vegetables.                    | CO4. Students shall be able to understand Basics of New Food Products Development & Ideas Generation for Product Development.                     | CO3. Students shall be able to understand Industrial Processes for Commercial Production of Jams, Jellies, Marmalade, Fruit Juices, Concentutes, Fruit Juice Powder, Dehydrated Fruits, and Canning of Fruits & Vegetables. | CO2. The students shall be able to understand Technologies involved in Processing, Preservation & Value- Addition of Fruits & Vegetables.         | CO1. The students shall be able to understand Biological, Chemical & Physical Properties of Fruits & Vegetables.                              | Course Ourcome   |
|---|---|---|---|---|--|
| ۷ .   | ٧ -   | ٧ .   | ٧   | ٧   | Po 1   |
|   | /   | \<br>\  |   | · ·   | 2 PO   |
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| <   | V   | <   | ٧   | ۷.  |  |
| . <   | <   | <   | ٠ ٧   | ۷.  | 5  |
| <   | . <   | ح   | ۷   | <   | POS PO6 PO7 PO8 PO9  |
| <   | <   | <   | ٧   | <   | Ø<br>∞   |
| <   | ۷.  | <   | V   | ٧   | P 09   |
| Apply   | Understand  | Apply   | ,<br>Apply  | Аррју   | Skill  |
| Yes   | Yes   | Yes   | Yes   | Yes   | Focus on Employability / Entirepreneurship   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam | Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p |

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| CO5. Piringer, O. P. & Baner, A. L. (2000). Plastic Packaging Materials for Food: Wiley-VCH, Weinheim.  | CO4. Robertson, G. L. (2006). Food Packaging. Principles and Practice (2 <sup>nd</sup> ed.): CRC Press, Boca raton.                               | CO3. Eiri Board of Consultants. (2007). Food Packaging<br>Technology: Engineers India Research Institute, New Delhi                               | CO2. Coles, R. & Kirwan, M. (2011). Food and Beverage Packaging Technology (2 <sup>nd</sup> ed.): Wiley-Blackwell, UK.                            | CO1. Rooney, M.L. (1995). Active Food Packaging: Blackie Academic & Professional, Glasgow, UK.  | Course Outrome  |
|---|---|---|---|---|---|
| stic Packaging  | Principles and  | ackaging<br>, New Delhi   | Beverage<br>ell, UK.  | ging: Blackie   |   |
| ٧   | ٧   | ٧   | <   | ۷   | PO1PO2  |
| ٠ ح   | V   | ٧   | ٧   | ٧   | THE PROPERTY LINES AND ADDRESS OF THE PARTY |
| ٧   | ٧   | ٧   | ٧   | ٧   | P03 P04   |
| 4   | ٧   | ٧   | ٧   | ٧   |   |
| <   | ٧   | ٧   | ٧   | ٧   | PO 5  |
| <   | 4   | ¥   | <   | ٧   | PO 5 PO 6 PO 7  |
| <   | <   | <   | ۷.  | <   | PO 7  |
| <   | ۷.  | <   | <   | ۷.  | 8   |
| <   | <   | ٠ ﴿   | ۷.  | ۷.  | 8   |
| Understand  | Аррју   | Αρρίγ   | Understand  | Apply   | Skill   |
| Yes   | Yes   | Yes   | Yes   | Yes   | Employability/<br>Entrepreneurshi<br>P  |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam | Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p   |

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Name of the Department: Food Science & Technology

Paper UC-MSFT-524-19: LAB - III (DAIRY TECHNOLOGY)

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Implications                         | ۷.   | ۷.          | <    | <  | «                                       |         |     | ۷     | 4 | CO5. Quality control of milk & milk products.                           |
|---|--|--------------------------------------|------|-------------|------|----|---|---------|-----|-------|---|---|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Analytic skills                      | <    | <           | <    | <  | ۷.                                      |         | ۷.  | ۷     | V | CO4. Characterization of milk products.                                 |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Creation and new product development | <    | ٧           | ۷.   | <  | ۷.                                      |         |     | v.    | V | CO3. Development of different milk products.                            |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Analytic skills                      | <    | <           | <    | <  | ٧                                       |         | ٧.  | ٧.    |   | CO2. Physical, Chemical & Microbial analysis of milk and milk products. |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Fundamentals                         | <    | <           | <    | ۷. | <                                       | ٠       | . < |       |   | CO1. How to do sampling of milk and milk products.                      |
| Focus on Employability / Emtrepreneurshi Assessment Tools to Measure Attainment of CO   | Focus on<br>Employability /<br>Entrepreneursh<br>p |                                      | P0 9 | <b>8</b> 08 | PO 7 | 8  | PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 Ski | 3<br>PO | 8   | 1 PO: | 8 | Course Outcome  |

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# Paper UC-MSFT-525- 19: LAB - IV (TECHNOLOGY OF FRUITS AND VEGETABLES)

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | holistic<br>development              | <       | ۷.      | ۷.  | <        | ٧                             | ٧    | ٧ |        | ٧   | CO5. To develop proficiency skill in preserving fruits and vegetables into various products.     |
|---|---|--------------------------------------|---------|---------|-----|----------|-------------------------------|------|---|--------|-----|--|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Understanding                        | ٧       | <       | <   | ۷.       | ٧.                            | ۷.   | ٧ | ų.     | , ° | CO4. Understand principles and methods of preservation of fruits and vegetables.                 |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Creation and new product development | <       | ۷       | <   | < '      | ۷.                            | ٧    | ٧ | <      | ٧   | CO3. Ability to develop various fruit and vegetable products with quality assurance and safety.  |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes   | applicability                        | <       | ٧       | <   | 4        | ٧                             | ٧    | ٧ | ٧      | ٧   | CO2. Ability to establish the quality specifications for the processing of fruit and vegetables. |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes   | Analysis                             | ۷ .     | ٧       | ٧   | <b>*</b> | ٧                             | ٠, , | < | ∢      | ٠   | CO1. Ability to assess the quality of fruit and vegetables.                                      |
| Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of P CO   | Focus on<br>Employability /<br>Entrepreneurshi<br>p | <b>Sal</b>                           | 9 Maria | P07 P08 | 907 | 0<br>6   | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 | 2    | 8 | 1 PO 2 | 8   | Course Outcome   |

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Paper UC-MSFT-526- 19: LAB – V (PACKAGING TECHNOLOGY)

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Applicability            | <       | 4    | <    | <       | <  |      |    | ۷                   | CO5. Application of different packing materials for food industry. |
|---|---|--------------------------|---------|------|------|---------|----|------|----|---------------------|--|
| MST, Comprehensive Continuous evaluation. Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam    | Yes   | Knowledge                | ٧.      | <    | <    | <       | <  |      | <  | ۷                   | CO4. Laws and regulation related to labelling of food product.     |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Knowledge<br>upgradation | <       | <    | <    | <       | <  |      | ۷. | ۷                   | CO3. Novel packaging used in food industry.                        |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes   | Analysis                 | 4       | <    | v.   | <       | ٧. | ٧    | v  | ٧                   | CO2. Quality testing techniques for different packaging materials. |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes   | Analysis                 | ۷.      | ۷.   | 4    | ٤       | <  |      | ۷. | ٧ ٧                 | erent types of materials and media used for                        |
| Focus on Employability / Entrepreneurshi Assessment Fools to Measure Attainment of p CO   | Focus on<br>Employability /<br>Entrepreneurshi<br>p |                          | 15 6 Od | 8.04 | PO 7 | POS PO6 |    | 3 PO | 8  | PO 1 PO 2 PO 3 PO 4 | Course Outcome   |

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#### Paper UC-MSFT-527- 19: BIOPROCESS TECHNOLOGY

|   |      |      |      |                         |      |      |      |     |          |            | Focus on<br>Employability/ |   |
|---|------|------|------|-------------------------|------|------|------|-----|----------|------------|----------------------------|---|
| Course Outcome  | PO 1 | PO 2 | PO 3 | PO1 PG2 PO3 PO4 PO5 PO6 | PO 5 | PO 6 | P0 7 | P08 | PO 9 Ski |            | ntrepreneurshi<br>)        | Entrepreneurshi Assessment Tools to Measure Attainment of p   |
| CO1. Appreciate the positive role and benefits of microorganisms and enzymes in food production, processing, and preservation.  | *    | ۷    | ٧    | V                       | ٧.   | ٧    | ٧    | ٧   | ۷        | Арріу      | Yes                        | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam |
| CO2. Understand basic biological and chemical processes of living cells, enzymes, and microbial nutrition in relation to fermentation processes.                      | ٧ .  | ٧.   | ٧    | ٧                       | ۷.   | ٧    | ٧    | ٧   | ٧        | Understand | Yes .                      | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam |
| CO3. Understand principles of inoculum /starter culture development for industrial fermentations and fermenter /reactor design, control and operation.                | ٧    | ٧    | ٧    | ٧                       | ٧    | ٧    | ٧    | ٧   | ٧        | Understand | Yes                        | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam |
| CO4. Understand both upstream and downstream unit operations and technologies used for substrate preparation and recovery and purification of fermentation products.  | v.   | ٧    | ٧    | ٧                       | ٧    | v    | ٨    | ٧   | · V      | Apply      | Yes                        | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam |
| CO5. Discuss and evaluate the operational considerations and relative advantages relating to the choice of techniques used in downstream processing of food products. | ٧.   | ٨    | ٧    | ٧                       | ٧    | ۷    | ۷.   | <   | ۷ .      | Аррју      | Yes                        | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     |

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KAPURTHALA

#### Paper UC-MSFT-528-19: TECHNOLOGY OF BEVERAGES

| CO5. Knowledge of recent high value added beverages and recent trends in beverage industry.   | CO4. Ability to understand the impact of processing on quality of beverage.   | CO3. Understanding of permitted additives in beverages.   | CO2. Ability to explain processing of fruit juice beverages, carbonated beverages, citrus beverages, tea and coffee.                              | CO1. Ability to understand the science and technology for processing different types of beverages.  | Course Outcome PO 1  |
|---|---|---|---|---|--|
| ٧.  | ٧   | ٧   | ٧   | ٧   | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6  |
| <   | ٧   | ď   | ٧   | ٧   | <b>P</b> 03  |
| <   | ٧   | ٧   | ٧   | ۷.  | 4  |
| <   | ٧   | ٧   | ۷   | ٧.  | 0.5  |
| ۷   | ٧   | ۷   | ٧   | ۷.  | 06   |
| <   | ۷.  | ۷.  | V   | ۷.  | PO 7   |
| ۲   | <   | ٧   | ٧   | ۷ .   | 80<br>00<br>90   |
| <   | <   | <   | ٧   | <   | PO 9 Ski   |
| Apply   | Understand  | Understand  | Apply   | Apply   | The property of the control of the c |
| Yes   | Yes   | Yes   | Yes   | Yes   | Employability /<br>Entrepreneurship  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Employability / Emtrepreneutshi Assessment Tools to Measure Attainment of p. CO  |

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Paper UC-MSFT-529- 19: LAB - VI (BIOPROCESS TECHNOLOGY)

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Understanding                        | <      | ٧.   | ۷.   | ۷      | ٧                               | ٠    |      | ٧    | CO5. Understand principles underlying Quality Assurance.   |
|---|--|--------------------------------------|--------|------|------|--------|---------------------------------|------|------|------|--|
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes  | leadership                           | <      | <    | <    | <      | <                               |      |      | ۷    | CO4. Experience in functioning within a team.  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Creation and new product development | <      | <    | ۷.   | <      | ۷.                              |      | ۷.   | ٧ ٧  | CO3. Produce some foods and drinks e.g. yoghurt resulting from acidic fermentation.  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Understanding                        | v.     | v.   | ۷.   | ۷      | ۷                               |      | ۷    | ۷    | CO2. Isolate and identify microorganisms from fermenting fruits, cereals and milk, produce some drinks and foods e.g. bread, beer, wine and vinegar resulting from alcoholic fermentation. |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Understanding                        | <      | ٧    | ۷    | ۷.     | ٧                               |      |      | ٧    | CO1. Understand the various concepts of fermentation.  |
| Focus on Empioyability / Entrepreneurshi Assessment Tools to Measure Attainment of P CO   | rocus on<br>Employability /<br>Entrepreneurshi |                                      | 8<br>8 | 8 O4 | PO 7 | , PO 6 | PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 | 3 PO | 2 PO | I PO | Course Outcome   |

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KAPURTHALA

#### Paper UC-MSFT-530- 19: LAB - VII (TECHNOLOGY OF BEVERAGES)

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | introspection  | <    | ۷.   | <    | <                               | ۷      |       | <   | ٧.        | <  | CO5. Ability to acquire skill for standardization of methods for developing beverages.                              |
|---|--|--|------|------|------|---------------------------------|--------|-------|-----|-----------|----|---|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Creation and new product development   | ٧    | ۷.   | < -  | <                               | ۷.     | ۷.    | ٧.  | ٧         | v  | CO4. Ability to acquire skill for development of high value added tea and coffee beverages.                         |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Understanding  | ٧    | ٧    | <    | ٧                               | ٧      | ٧     | ٧   | ٧         | ۷. | CO3. Ability to understand regulatory requirements regarding quality of water for beverages.                        |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes  | evaluation   | ∢.   | ď    | ۷.   | ٧                               | ٧      | ٧     | ٧   | ٧         | ٧  | CO2. Ability to assess various quality parameters of beverages including sensory evaluation.                        |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes  | analysis   | <    | ٧    | ٧    | ٧                               | ٧      |       | ٧   | ٧         | ٧  | CO1. Ability to use laboratory techniques to analyze and measure important physicochemical parameters of beverages. |
| Focus on  Employability f  Entrepreneurshi Assessment Tools to Measure Attainment of p  CO  | Focus on Employability / Entrepreneurshi p | A STATE OF THE STATE OF T | PO 9 | 8.0d | PO 7 | PO3 PO4 PO5 PO6 PO7 PO8 PO9 Ski | 1 PO 9 | 3 PO: | PO: | PO 1 PO 2 | 8  | Course Outcome  |

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Name of the Department: Food Science & Technology

Paper UC-MSFT-611- 19: TECHNOLOGY OF CEREALS, PULSES AND OILSEEDS

| a constitution of the property |  |  |      |      | $\mid$ |        |      |          | _                                      | L                                      |   |
|--|--|--|------|------|--------|--------|------|----------|--|--|---|
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance Class Participation) End semester exam  | Yes  |  | < -  | <    | ٧      | ۷      | <    |          | _                                      | ٧ .                                    | CO5. Student will be able to understand technology for Oil Extraction & Oil Seed Processing along with equipments.  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam  | Yes  |  | ٧.   | ٧    | ٧.     | ٧      | ٧    | · •      | حـــــــــــــــــــــــــــــــــــــ | ۷.                                     | CO4. Student will be able to understand technology for Milling of Corn & Corn based other Food Products along with equipments.  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam  | Yes  |  | <    | ٧    | ٧      | <      | ٧    | ۷        | ٧.                                     | ۷.                                     | CO3. Student will acquire the understanding of working of equipments related to Wheat & Rice Milling along with equipments related to Wheat based & Rice based Food Products. |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam  | Yes  |  | ٧    | ۷.   | ٧      | ٧      | ۷.   | <u> </u> | ۷.                                     | ۷.                                     | CO2. Student will acquire the understanding of the technology for Rice Milling & Rice based other Food Products.  |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam  | Yes  |  | v    | ۷    | <      | <      | ٧    | <u> </u> | <                                      | ۷                                      | CO1. Student will acquire the understanding of the technology for Wheat Milling & Wheat based Food Products.  |
| Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p CO  | Focus on Employability / Entrepreneurshi p | Sall Special Sall Special Spec | PO 9 | PO 8 | PO 7   | 5 PO 6 | 1 PO | ა<br>ზ   | 2 PO                                   | PO1 POZ PO3 PO4 PO5 PO6 PO7 PO8 PO9 SW | Course Outcome  |

Dr.Rajneesh Sachdev (FST)
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Depit: of Face North Rechoical University
KAPURTHALA

Name of the Department: Food Science & Technology
PaperUC-MSFT-612- 19: FOOD SAFETY, STANDARDS AND QUALITY CONTROL

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                     | understanding | ٧       | ٧   |      | v      | <u> </u>                      | <u> </u> | ٠     | ۷   | CO5. To understand the sensory evaluation methodology used in food industry.           |
|---|---|---------------|---------|-----|------|--------|-------------------------------|----------|-------|-----|--|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                     | understanding | ۷.      | <   | <    | <      | \ \ \ \                       |          | ۷     | ۷ . | CO4. To understand the different food safety management used worldwide.                |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                     | understanding | <       | <   | <    | <      | , v                           | <i>'</i> | ٧ ٧   | ۷   | CO3. GMPs and GHP regulations in the food sector.                                      |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                     | understanding | ٧       | ٧   | <    | ٧      | /<br>V                        | , ,      | ٧     | ۷   | CO2. To understand the risk assessments procedure for food sector.                     |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                     | understanding | ۷.      | ٧ . | ٧    | ۷.     | ٠,                            | /        | /     | ٧   | CO1. To create understanding of quality control and assurance system in food industry. |
| Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p  | Focus on Employability / Entrepreneursh |               | P09 St. | 804 | P0.7 | 5 PO 6 | Pd 1 Po 2 Po 3 Po 4 Po 5 Po 6 | 3 PO     | 2 200 | 200 | Course Outcome   |

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#### Paper UC-MSFT- 613- 19: AGRI BUSINESS MANAGEMENT

| Attendance, class Participation) and semester exam  |  | Apply      |        |     |      |           | - |      |              |                     |          |   |
|---|--|------------|--------|-----|------|-----------|---|------|--------------|---------------------|----------|---|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies,  | Yes  |            | <      | <   | ۷.   | <         | < | <    | <b>4</b>     | ۷.                  | <u>~</u> | CO5. Understand the impact of planning, decision making and risk taking on an agri-business.  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Understand | ۷.     | ٧   | ų.   | ۷.        | ٧ | ۷.   | ۷.           | ۷.                  | ٧        | CO4. Understand the need for careful management of a business human resources.  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Understand | ۷      | ۷.  | <    | <         | < | ۷    | <            | ۷                   | < .      | CO3. Acquire knowledge of the legal and ethical environment impacting agriculture organizations and effectively evaluate the impact of trade policy.      |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes  | Аррју      | ٧      | V   | ٧    | ٧         | ٧ | ٧.   | ٧            | ٧                   | ٧.       | CO2. Ability to understand market types, the procurement, marketing and management of raw and processed agricultural produce meant for human consumption. |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Аррју      | V.     | ٧   | ٧    | ٧         | ٧ | < <  | ٧            | ٧                   | <u>م</u> | CO1. Ability to understand the basic concepts of marketing of food items.   |
| Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p CO   | Focus on<br>Employability/<br>Entrepreneurshi<br>p |            | PO9 Sk | 804 | PO 7 | PO 5 PO 6 |   | PO 4 | <b>P</b> O 3 | PO 1 PO 2 PO 3 PO 4 | PO       | Course Outcome  |

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Paper UC-MSFT-614-19: LAB - VIII (TECHNOLOGY OF CEREALS, PULSES AND OILSEEDS)

|   | Ö   | ð<br>2 | 203 | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 | P05 |    | වි. | 8 O q | 0<br>9<br>8 |                                   | Focusion Employability / Entrepreneurshi p | Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p  |
|---|-----|--------|-----|-------------------------------|-----|----|-----|-------|-------------|-----------------------------------|--|---|
| CO1. Student shall be well versed with Processing Techniques of Cereals.                                | ۷.  | ۷.     | <   | ۷.                            | ٧   | ۷  | <   | ٧     | ٧           | understanding                     | Yes  | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam |
| CO2. Student shall be well versed with quality parameters of cereals.                                   | ۷.  | ٧      | ۷   | ۷ .                           | <   | ۷  | <   | ۷     | ٧           |                                   | Yes  | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies,   |
|   |     |        |     |                               |     |    |     |       |             | o contraction of                  |  |   |
| CO3. Student will be able to understand practical implication of Milling of Wheat & Rice.               | ۷.  | ٧      | V   | ٧                             | ٧   | ٧  | ٧.  | ٧     | V           | understanding<br>and implications | Yes  | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam |
| CO4. Student will be able to get acquaintance with machinery being utilized in Milling of Wheat & Rice. | ٧ . | ٧      | ۷.  | ۷.                            | ٧   | ۷. | V   | ۷     | <           | knowledge updra                   | Yes  | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     |
| CO5. Student will be able to understand Lab SOPs for above.   |     |        |     |                               |     |    |     |       |             |                                   |  | MST. Comprehensive Continuous evaluation  |
|   | <   | <      | <   | ۷.                            | <   | <  | ۷   | . «   | <           | understanding                     | Yes  | Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam  |
|   | L   | L      |     | L                             | L   | L  |     |       |             | anaci suai ana                    |  |   |

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#### Paper UC-MSFT-616-19: NUTRITION AND HEALTH

| CO5. Review Biochemistry of Energy Transfer particularly the lactic acid system and the aerobic systems.  | CO4. Describe a healthy diet and food choices, and explain why such choices will help prevent health problems.                                | CO3. Distinguish sound nutritional information from unreliable v v v v v  | CO2. Describe the digestion and metabolism of the energy nutrients $\sqrt{V}$ (carbohydrates, lipids, protein) and non-energy nutrients (vitamins/minerals). | CO1. Utilize knowledge from the physical and biological sciences VVV v as a basis for understanding the role of food and nutrients in health and disease processes. | Course Outcome PO 1 PO 2 PO 3 PO 4  |
|---|---|---|--|---|---|
|   |   | ۷.  | ۷.   | ۷.  | 3 PO .  |
| <   | <   | ۷.  | ۷ .  | <   |   |
| <   | <   | ح   | <  | <   | P   |
| <   | <   | <   | <  | <   | PG 5 PG 6 PG 7 PG8  |
| <   | ۷.  | < .   | <  | <   | 8 O d   |
| <   | <   | <   | <  | <   | 9 Oq  |
|   |   |   |  |   |   |
| Yes   | Yes   | Yes   | Yes  | Yes   | Focus on Employability / Entrepreneurshi p  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam            | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam                   | Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of P. CO. |

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KAPURTHALA

Name of the Department: Food Science & Technology

Paper UC-MSFT-618-19: LAB - X (NUTRITION AND HEALTH)

| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes  | analysis and                | <       | ۷.   | <    | ٠.        | < | <    | ۷.   | ۷.                  | ۰  | CO5. Students will be able to demonstrate critical thinking skills to analyze data and interpret results in the nutritional sciences. |
|---|--|-----------------------------|---------|------|------|-----------|---|------|------|---------------------|----|---|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | leadership                  | <       | <    | <    | ۷.        | < | <    | <    | <                   | <  | CO4. Experience in functioning within a team.   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | analysis and interpretation | <       | ۷.   | <    | <         | < | <    | <    | ٧                   | <  | CO3. Understand how nutrition science studies are designed, analyzed and interpreted.   |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes  | skill<br>development        | <       | <    | ح    | ۷.        | ٧ | . <  | ۷    | <                   | ٧  | CO2. Describe the methods used to carry out nutrition research.   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | understanding               | <       | <    | ٧    | ٧         | ٧ | ٧    | ٧    | ٧                   | ٧  | CO1. Describe methods used to assess nutrition status.  |
| Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p CO   | Focus on Employability / Entrepreneurshi p |                             | 90.9 SK | PO 8 | PO 7 | PO 5 PO 7 |   | PO 4 | E O4 | PO 1 PO 2 PO 3 PO 4 | රී | Course Outcome  |

Dr.Rajneesh Sachdev (FST)
(Signature of Head of Department)

ried: N Couprit of Four North Act of hology LX Gujral Punjab Technical University KAPURTHALA

Paper UC-MSFT-621- 19: SNACK FOOD TECHNOLOGY

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Understand | ۷.   | ٧   | ٧   | <    | ય    | ٧   | ď    | ٠     |                      | CO5. Students shall be able to understand Basics Kitchen Recipe with scaling up to Commercial Level of all above.  |
|---|--|------------|------|---|-----|------|------|-----|------|-------|----------------------|--|
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes  | Understand | ح    | ح   | <   | <    | <    | ۷.  | <    | ۷.    | - &                  | CO4. Students shall be able to understand preparation of Fruits & Vegetables based Snack Item along with introduction of related equipments.                     |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Арріу      | ٧    | ٧   | V   | ٧    | ٧    | ٧   | ٧    | ۷     | ۷                    | CO3. Students shall be able to understand preparation of Grain based Snacks Food Item.   |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes  | Apply      | ٧.   | ٧   | ۷.  | ٧    | ٧    | ٧   |      | ď     | fast v               | CO2. Students shall be able to understand preparation of Breakfast Snacks in particular cereal based Snacks Food Items.  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Apply      | ۷    | 4   | . 4 | 4    | V    | v   | v    | <     |                      | CO1. Students shall be able to understand Basics of Preparing Extruded Snack Foods Items along with working of equipments related to extrusion of Food Products. |
| Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of P CO   | Focusion<br>Employability /<br>Entrepreneurshi |            | PO 9 | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 SK | 207 | PO 6 | PO S | POA | PO 3 | 1 PO: | 8-1-4-15<br>8-1-4-15 | Course Outcome   |

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Dr.Rajneesh Sachdev (FST)
(Signature of Head of Department)

Paper UC-MSFT-623-19: TECHNOLOGY OF MEAT, FISH AND POULTRY

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Analyze    | <  | <   | <  | <   | <    | ۷.  | <    | <  | <u>۔ ,</u> | CO5. Student will be having broad knowledge of status & scope of Meat, Egg, & Poultry industry world wide.  |
|---|--|------------|----|---|----|-----|------|-----|------|----|------------|---|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Understand | ۷  | 4   | <  | 4   | ۷.   | ٠   | ٧.   | <  | ٧          | CO4. Student shall be well versed with manufacturing practices of egg based, fish based and meat based by products & their processing techniques. |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Apply      | ۷  | <   | <  | ٧   | ٧    | - v | ٧    | ٧  | ۷.         | CO3. Student shall be well versed with processing, preservation & quality control of Meat, Egg & Fish in Food Industry.                           |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes  | Understand | ۷. | ۷   | ٧. | v   | ٧    | ٧   | v    | ٧. |            | CO2. Students shall acquire the ability of value- addition to Meat, Poultry, Egg & Fish.  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Apply      | <  | ۷   | <  | . < | . 4  | <   | <    | ۷. | . «        | CO1. Student shall know about the significance & necessity of organized animal product sector.  |
| Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p CO   | Focus on Employability / Entrepreneurshi p |            | ဝိ | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 Sk | 8  | 906 | 5 Od | 5   | PO 3 | 8  | 3          | Course Outcome  |

Dr.Rajneesh Sachdev (FST)
(Signature of Head of Department)

Head (A)
Dept. of Face North State of Arthur State (A)
LK Gujral Punjab Fechnical University
KAPURTHALA

25/53

# Name of the Department: Food Science & Technology (M.Sc. Clinical Research)

Paper UC-MSCR102-19 Fundamentals of Clinical Research

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                               | Understand | ۷.                                       | <   | <    | <   | <    | ٧    | 4  | ٧.        | ٧    | CO5. Understand the importance of use of placebo controls and placebo response in clinical trials     |
|---|-----------------------------------|------------|--|-----|------|-----|------|------|----|-----------|------|---|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                               | Understand | . <                                      | ۷ . | <    | V   | ٧    | ٧    | ٧  | ٧         | ۷.   | CO4. Understand different phases of clinical trials   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                               | Understand | ٧  | ٧   | ٧    | ۷.  | ۷    | ٧    | ۷. | ۷.        | <    | CO3. Understand the preclinical phase of drug development   |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes                               | Apply      | ٧  | ٧   | <    | ٧   | ۷.   | ٧    | ٧  | <         | <    | CO2. Appreciate the impact of pharmaceutics science in new drug development and clinical use of drugs |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                               | Understand | ۲.                                       | ۷.  | ٧    | ٧   | ۷    |      | ٧  | <         | ٧    | CO1. Understand the strategies and techniques involved in drug discovery process                      |
| Employability / Entrepreneurshi Assessment Tools to Measure Attainment of  CO  CO   | Employability / Emtrepreneurshi p |            | PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 Skill | PO8 | PO 7 | P06 | PO 5 | PO 4 |    | PO 1 PO 2 | PO - | Course Outcome  |

Dr.Rajneesh Sachdev (FST)
(Signature of Head of Department)

Depth of Food North 200 Microbiogy
UK Gujiai Punjab Technical University
KAPURTHALA

26/50

# Name of the Department: Food Science & Technology (M.Sc. Clinical Research)

Paper UC-MSCR 104-19 Clinical Research Lab I

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                             | Understand   | ٧                 | ٧          | ٧                           | ٧      | ٧   | ٧   | < | ۷.    | stration<br>ting . | CO5 Understand the different routes of drug administration and pre-clinical non-invasive techniques for drug testing |
|---|---------------------------------|--|-------------------|------------|-----------------------------|--------|-----|-----|---|-------|--------------------|--|
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes                             | Apply  | <                 | <          | ۷.                          | <      | <   | <   | < | <     | ji ji              | CO4 Perform validation and prepare standard operating procedures of laboratory equipments                            |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                             | Create   | <                 | <          | <                           | <      | ح ح | <   | < | <     |                    | CO3 Prepare clinical trial protocol  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                             | Apply  | ۷                 | د          | ٤                           | ۷.     | ٠ ح | <   | < | ۷.    | ignificanc         | CO2 Perform common biochemical test of clinical significance   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                             | Арріу  | <                 | <          | < .                         | <      | ۷.  | ۷.  | < | ح .   | _                  | CO1 Prepare standard drug solutions of various concentrations  |
| Employability J Entrepreneurshi Assessment Tools to Measure Attainment of p   | Employability / Entrepreneurshi | The state of the s | <b>0</b> 1 may an | PG 9 Skill | PO1 PO2 PO3 PO4 PO5 PO6 PO7 | 0<br>0 | 0   | 800 | 8 | # PO: |                    | Course Outcome   |

Dr.Rajneesh Sachdev (FST)

(Signature of Head of Department)

(M.Sc. Clinical Research) Name of the Department: Food Science & Technology

Paper UC-MSCR 105-19 Professional Communication

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Apply      | ۷.         | <   | <    | <                       | <    | ٧.   | ۷.   | ۷.     | <  | CO5 Develop the skills to master in the writing formal emails and letters                                     |
|---|---|------------|------------|-----|------|-------------------------|------|------|------|--------|----|---|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Understand | ۷.         | <   | <    | <                       | <    | <    | ٧    | ٧      | ٧  | CO4 Learn about the standard organization of the essay  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Арріу      | ď          | <   | ۷.   | <.                      | v.   | ۷.   | <    | ٧      | ٧  | CO3 Produce on their own clear and coherent texts   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Understand | 4          | ٧   | <    | ۷.                      | v    | <    | ٧    | ٧      | ٧  | CO2 Understand spoken and written English language, particularly the language of their chosen technical field |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes   | Apply      | ٧          | <   | ۷.   | ٧                       | ٧    | ٧    | ٧    | <      | ۷  | CO1 Acquire basic proficiency in reading, comprehension and writing   |
| Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p CO   | Focus on<br>Employability /<br>Entrepreneurshi<br>p |            | PO 9 Skill | P08 | PO 7 | PO1 PO2 PO3 PO4 PO5 PO6 | PO 5 | PO 4 | £ 04 | 1 PO 2 | ро | Ourse Outcome   |

Dr.Rajneesh Szchdev (FST)
(Signature of Head of Department)

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Deptt, of Food North Assembles (K. Gujral Punjab Technical University KAPURTHALA

Name of the Department: Food Science & Technology M.Sc. Clinical Research

Paper UC-MSCR 106-19 Journal Club

| CO5 Demonstrate skill in scientific communication both orally and in writing vigorian with a scientific communication both vigorian vigori | Yes | ndorstand Yes | CO2 Develop an approach to analyse the various types of articles  V V V V V V V Apply  MST, Comprehensive Continuous evaluation V V V V V Apply  Apply  Attendance, Class Participation) End semester e | COI Critically review the literature    V   V   V   V   V   V   V   V   V | Focus on Focus on Employability / Employability / Employability / Entrepreneurshi Assessment Tools to Measure Attainment of P0 1 P0 2 P0 3 P0 4 P0 5 P0 6 P0 7 P0 8 P0 9 Skill p | meurshi Assessment Tools to Measure Attainment of CO  MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam MST, Comprehensive Continuous evaluation es Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation End semester exam Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | p Yes Yes Yes | Analyze Apply Apply Local Control Cont | < < < < < O | < < < < < < © | 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | < < < < < C | 2 2 2 2 D | <del>G</del> | 2 2 2 2 <b>3</b> | PPO | ndy |
|--|-----|---------------|---|---|--|--|---------------|--|-------------|---------------|---|-------------|-----------|--------------|------------------|-----|-----|
|--|-----|---------------|---|---|--|--|---------------|--|-------------|---------------|---|-------------|-----------|--------------|------------------|-----|-----|

Dr.Rajneesh Sachdev (FST)
(Signature of Head of Department)

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Name of the Department: Food Science & Technology (M.Sc. Clinical Research)

Paper UC-MSCR 111-19 Intellectual Property Rights

|   | Ö  | PO 2 | PO3 | Port from 1 | PO5 | 8  | PO 1 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 SKII | Š. | Portugue<br>Granda |            | Focus on Employability / Entrepreneurs hip | Assessment Tooks to Measure Attainment of CO   |
|---|----|------|-----|-------------|-----|----|--|----|--------------------|------------|--|--|
| CO1 Understand of the core doctrines of intellectual property |    |      |     |             |     |    |  |    |                    |            |  | MST, Comprehensive Continuous evaluation   |
| law   | ٧  | ۷    | <   | ٧           | ٧   | ۷  | <  | ٧  | ٧                  | Understand | Yes  | Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   |
| CO2 Understand the appropriate procedures for obtaining       |    |      |     |             |     |    |  |    |                    |            |  | MST, Comprehensive Continuous evaluation   |
| intellectual property protection                              | ٧  | ٧    | ٧   | ۷           | <   | <  | <  | <  | _ <                | Understand | Yes  | Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   |
| CO3 Describe the international treaties, conventions on IPR   |    |      |     |             |     |    |  |    |                    |            |  | MST, Comprehensive Continuous evaluation   |
|   | <  | ۷    | <   | <           | <   | <  | <  | <  | <                  | Remember   | Yes  | Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   |
| CO5 Appreciate importance of compulsory licensing             | <  | <    | <   | ۷.          | <   | ۷. | <  | <  | ح                  | Apply      | Yes  | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies,  |
| COS Understand the patent infringement related issues         |    |      |     |             |     |    |  |    |                    |            |  |  |
| CO3 Onderstand the patent mirrilgement related issues         | ۷. | ۷.   | <   | <           | <   | ۷. | ۷  | ۷. | <                  | Арріу      | Υes  | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam  |
|   |    |      |     |             |     |    |  |    |                    |            |  | The I state in the John State of the State o |

Understand the patent infringement related issues (Signature of Head of Department)

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# Name of the Department: Food Science & Technology M.Sc. Clinical Research

Paper UC-MSCR201-19 Pharmacotherapeutics-1

| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes                                       | Analyze    | 4  | <       | ۷   | ۷.   | \ \ \ \ \ \ | <    | <    | ۷.   | ٧      | CO5 Identify the need for further knowledge and formulate relevant learning outcomes   |
|---|---|------------|--|---------|-----|------|-------------|------|------|------|--------|--|
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes                                       | Apply      | <.   | <       | ح   | <    | ح           | <    | <    | ۷.   | \<br>\ | CO4 Integrate pharmacology, pathophysiology, pharmacodynamic, pharmacokinetics and other biomedical and pharmaceutical sciences as they pertain to clinical therapeutics of certain disorders                              |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes                                       | Apply      | ٠ <  | ٧.      | ۷.  | ٧    | ٧           | <    | ۷.   | <    | <      | CO3 Choose and justify appropriate drug and treatment duration to a given patient with regard to current recommendations and patient-related factors such as other diseases, age, organ functions and other drug treatment |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                       | Apply      | ۷.   | ٧.      | ٧   | ٧    | ٧           | ٧    | <    | ٧    | <      | CO2 Apply their knowledge and understanding of the pathophysiology and management (pharmacological and non-pharmacological) of diseases  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                       | Understand | <  | <       | ۷.  | ٧    | ٧           | ٧    | ۷    | ٧    | 4      | CO1 Develop an understanding of the basic concepts of common diseases prevalent in the society   |
| Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p. CO  | Focus on Employability/ Entrepreneurshi p |            | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 Ski | 80<br>8 | P07 | PO 6 | PO 5        | PO 4 | PO 3 | PO 2 | PO 1   | Course Outcome   |

Dr.Rajneesh Sachdev (FST)
(Signature of Head of Department)

Deptt of Faul North And Controls I.K. Gujrai Punjab Technical University KAPURTHALA

Name of the Department: Food Science & Technology M.Sc. Clinical Research

Paper UC-MSCR202-20 Clinical Research Regulations & Ethics

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                       | Analyze    | ۷.  | <      | <   | <    | ٧ | ۷.     | <    | <   | <   | CO5 Make comparison between the regulatory guidelines applicable in different regions                             |
|---|---|------------|---|--------|-----|------|---|--------|------|-----|-----|---|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                       | Арріу      | ح   | ۷.     | <   | <    | ٧ | <      | ٧    | ٧.  | ۷.  | CO4 Appreciate the importance of quality system and SOPS  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                       | Аррју      | V   | <      | ۷.  | ٧    | ٧ | ٧      | ٧    | ٧   | ٧   | CO3 Be familiar with the documents required to be compiled for an ethical & regulatory clinical trial application |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                       | Understand | ٧   | ٧      | ٧   | ٧    |   | <      | <    | <   | < . | CO2 Understand the practical use and evolution of these regulations   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                       | Understand | ٧   | ٧      | ٧   | ٧    | < | <      | ۷.   | <   | <   | CO1 Comprehend clinical trial regulations and appreciate their importance   |
| Focus on Focus on Focus on Focus on Focus on Femologyability / Entrepreneurshi Assessment Tools to Measure Attainment of p                        | Focus on Employability / Entrepreneursh p |            | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 Sk | 8<br>8 | P07 | PO 6 | 8 | P<br>0 | PG 3 | P02 | 8   | aumann G-asing.   |

Dr.Rajneesh Sachdev (FST) (Signature of Head of Department)

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M.Sc. Clinical Research Name of the Department: Food Science & Technology

Paper UC-MSCR203-19 Clinical Research Lab II

| CO5 Appreciate the significance of statistical analysis in clinical research V V  | CO4 Apply GCP in collection of clinical data  V V V   | CO3 Develop SOPs and various documents required for conduct of quality clinical studies   | CO2 Trained about the sample collection and analysis and interpretation of lab data in compliance with GLP  | CO1 Understand the practical application of clinical trial regulations for conduct of clinical trials   | Course Outcome PO 1 PG 2 PG 3 PG 4 PG 5 PG 6 PG 7 PG 8                                 |
|---|---|---|---|---|--|
| ٧   | ٧   | ٧   | ٧   | ۷   | PO 4   |
| ٧   | ٧   | ٧   | ۷ .   | <   | 0<br>5   |
| ۷   | ۷.  | <   | ٧   | ۷   | 06   |
| ٧   | . 4   | <   | ۷.  | <   | Ŏ.   |
| ۷   | <   | ۷ .   | ۷.  | ۷.  | Õ<br>&   |
| ۷   | ٧.  | ۷.  | ۷.  | <   | S 60d  |
| Apply   | Apply   | Create  | Арріу   | Apply   |  |
| Yes   | . Yes   | Yes   | Yes   | Yes   | Employability /<br>Entrepreneurshi<br>p  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam | Employability /  <br>Entrepreneurshi Assessment Tools to Measure Attainment of<br>p CO |

Dr.Rajneesh Sachdev (FST)
(Signature of Head of Department) Head (W/

#### M.Sc. Clinical Research Name of the Department: Food Science & Technology

Paper UC-MSCR 204-19 Professional Communication Lab

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Analyze    | v   | ٧ | ٧,   | ۷    | ٧    | <    | ٧.   | <    | <    | CO5 Identify the need for further knowledge and formulate relevant learning outcomes                          |
|---|---|------------|---|---|------|------|------|------|------|------|------|---|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Apply      | <   | < | v.   | V    | ٧ .  | ٧ .  | ٧    | ٧    | ۷.   | CO4 Develop the skills to communicate in English language with clients at work place                          |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Apply      | ٧   | ۷ | ٧    | ٧    | ۷.   | ٧    | ٧    | v.   | 4    | CO3 Produce on their own clear and coherent texts   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Understand | ٧   | < | ٧    | ٧    | ٧    | ٧    | 4    | ۷.   | <    | CO2 Understand spoken and written English language, particularly the language of their chosen technical field |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Apply      | <   | ٧ | ٧.   | ٧    | ۷.   | <    | ٧    | <    | <    | CO1 Acquire basic proficiency in listening and speaking English language                                      |
| Entrepreneurshi Assessment Tools to Measure Attainment of p   | Focus on<br>Employability /<br>Entrepreneurshi<br>p |            | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 Suit | 8 | PO 7 | PO 6 | PO 5 | PO 4 | PO 3 | PO 2 | PO 1 | Course Outcome  |

Dr.Rajneesh Sachdev (FST)
(Signature of Head of Department)

Fredo M Dept. of Your November 10 Sept. of Your Nove

#### Name of the Department: Food Science & Technology M.Sc. Clinical Research

Paper UC-MSCR 205-20 Medical Writing

| Attendance, Class Participation) End semester exam  | Yes                                     | Understand | <        | <    | ٠    | <                       | <    | <    | <  | <       | <.  |   |
|---|---|------------|----------|------|------|-------------------------|------|------|--|---------|-----|---|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                     | Understand | <        | ۷.   | <    | <                       |      | ۷.   | <  | <       | <   | CO4 Understand about clinical research and the latest techniques and trends in the industry  CO5 Understand career prospects in the medical writing |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes                                     | Apply      | ٧        | <.   | <    | . <                     | <    | <    | <  | <       | <   | CO3 Become ready to be absorbed Professionals   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                     | Арріу      | <        | <    | <    | ۷.                      | <    | <    | <  | <       | ٧   | CO2 Demonstrate writing, reading, editing, and reviewing skills   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes                                     | Apply      | <        | ۷.   | <    | ۷.                      | <    | <    | ۷.   | <       | ٧.  | CO1 Improve medical writing skills and better understanding the biomedical publication process  |
| Focus on Employability / Employability / Entrepreneurshi Assessment Tools to Measure Attainment of CO   | Focus on Employability/ Entrepreneurshi |            | P0 9 Ski | PO 8 | p0.7 | 804 F04 504 504 F04 E04 | 5.04 | PO 4 | Accessed to the property of th | PO1 PO2 | PO: | Course Outcome  |

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Paper UC-MSCR 206-19 Journal Club

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Apply      | <    | ۷                           | ٧   | ٧      | ۷    | ٧                                     | ٠    |          | ommunication both       | CO5 Demonstrate skill in scientific communication both orally and in writing |
|---|---|------------|------|-----------------------------|-----|--------|------|---------------------------------------|------|----------|-------------------------|--|
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes   | Evaluate   | ۷.   | <                           | <   | <      |      |                                       | _    | _        | y are clinically        | CO4 Comprehend how results of study are clinically significant               |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Understand | ۷    | <                           | <   | <      | <    |                                       | <    | 4        | bias and types of study | CO3 Become familiar with sources of bias and types of study designs          |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Apply      | ۷.   | ۷.                          | <   | ۷.     | ٧    | · · · · · · · · · · · · · · · · · · · | ٧    | <i>,</i> | he various types of     | CO2 Develop an approach to analyse the various types of articles             |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Analyze    | ٧.   | <                           | <   | ۷.     | <    | <b>4</b>                              | <    | ۷        |                         | CO1 Critically review the literature   |
| Focus on Employability / Employability / Entrepreneurshi Assessment Tooks to Measure Attainment of p  CO  | Focus on<br>Employability/<br>Entrepreneurshi | S. III     | PO 9 | PO2 PO3 PO4 PO5 PO6 PO7 PO8 | P07 | 5 PO 6 | 1 PO | 3 PO                                  | 04 7 | PO 1     |                         | Course Outcome   |

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Paper UC-MSCR 212-19 International Regulatory Affairs

| CO5 Make comparison between the regulatory guidelines applicable in different regions   | CO4 Understand clinical trials requirements for approvals for conducting clinical trials  | CO3 Understand preparation of dossiers and their submission to regulatory agencies in different countries   | CO2 Participate as an effective member in pharmaceutical regulatory affairs team  | CO1 Understand the regulatory guidance's and guidelines for filing and approval process applicable in different regions                           | Course Outcome  |
|---|---|---|---|---|---|
| <   | ٧   | ٧   | ٧   | <   | PÓ 2  |
| ٧   | ٧.  | ٧.  | ٧   | ۷,  | PO 3  |
| ٧.  | ۷   | ٧   | V   | <b>V</b>  | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7  |
| <   | ٧   | ٧   | ٧   | ٧   | PO 5  |
| ٧   | ٧   | ۷.  | V   | ۷.  | 06  |
| <   | ٧   | <   | <   | <   | P0 7  |
| <   | ۷   | <   | <   | ۷   | 808   |
| <   | <   | <   | ۷.  | <   | 6.0d  |
| Analyze   | Understand  | Understand  | Apply   | Understand  |   |
| Yes   | Yes   | Yes   | Yes   | Yes   | Focus on<br>Employability/<br>Entrepreneurship  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p CO |

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Paper UC-MSCR 213-19 Biostatistics in Clinical Research

| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes   | Apply   | <        | ۷       | ۷. | <               | <    | <    | <    | <       | <  | COS Understand and apply statistical considerations when preparing a protocol                                       |
|---|---|---------|----------|---------|----|-----------------|------|------|------|---------|----|---|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Apply   |          | ح       | ۷. | ۷.              | <    | ۷.   | <    | <       | <  | CO4 Acquire practical understanding of parametric and nonparametric assumptions and tests                           |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Analyze | ٧        | <       | ٧  | <               | <    | <    | ٧    | ٧       | ٧  | CO3 Demonstrate skills in interpreting and communicating the results of statistical analysis, orally and in writing |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Analyze | ٧        | ٧       | ٧  | ٧               | ٧    | <    | ٧    | ٧       | ٧  | CO2 Demonstrate skills in the analysis of clinical research data  |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes   | Аррју   | ٧ .      | <       | <  | ٧               | <    | ۷    | ۷.   | <       | <  | CO1 Apply an appropriate statistical test   |
| Focus on Employability / Emtrepreneurshi Assessment Tools to Measure Attainment of p (CO  | Focus on<br>Employability /<br>Entrepreneurshi<br>p |         | PIS 6 Od | P07 P08 |    | PO3 PO4 PO5 PO6 | PO 5 | PO 4 | PO 3 | PO1 PO2 | BO | Course Outcome  |

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#### M.Sc. Clinical Research Name of the Department: Food Science & Technology

### Paper UC-MSCR301-19 Pharmacotherapeutics-II

| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Analyze    | 4                                      | ۷ ۷ | <       | ٧.   | <    | ۷    | ٧<br>٧ | <    | <    | CO5 Identify the need for further knowledge and formulate relevant learning outcomes  |
|---|--|------------|--|-----|---------|------|------|------|--------|------|------|---|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Apply      | ۷.                                     | <   | V V V V | <    | <    | <    | ۷.     | <    | ۷.   | CO4 Integrate pharmacology, pathophysiology, pharmacodynamic, pharmacokinetics and other biomedical and pharmaceutical sciences as they pertain to clinical therapeutics of certain disorders |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Apply      | ď                                      | ٧.  | ٧       | ٧    | ٧    |      | ٧      | ٧    | ٧    | CO3 Choose and justify appropriate drug and treatment duration to a given patient with regard to current v recommendations and patient-related factors such as other                          |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Apply      | ٧                                      | ٧   | ٧       | ٧    | V    | ۷ .  | ٧.     | ٠ ٧  | ٧    | CO2 Apply their knowledge and understanding of the pathophysiology and management (pharmacological and non-pharmacological) of diseases   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Understand | <                                      | ۷.  | <       | <    | <    | ۷.   | ٧      | ٧    | ٧    | CO1 Develop an understanding of the basic concepts of common diseases prevalent in the society  |
| Focus on Employability / Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p CO   | Focus on<br>Employability /<br>Entrepreneurshi<br>IP |            | PG1 PG2 PG3 PG4 PG5 PG5 PG7 PG8 PG9 SG | PO8 | PO 7    | PO 6 | PO 5 | PO 4 | PO 3   | PO 2 | PO 1 | Course Outcome  |

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Paper UC-MSCR302-20 Clinical Study Design

| CO1 Develop an understanding of the basic concepts of different types of clinical study designs  O2 Apply their knowledge and understanding in choosing the appropriate study design elements for preventing bias  O3 Understand the key study design elements for conduct a clinical trial  O4 Understand what are the essential documents required to conduct a clinical trial design for special population  C3 Learn about the trial design for special population  C3 Learn about the trial design for special population  C4 Develop an understanding of the basic concepts of different types of clinical trial design of the basic concepts of different types of clinical trial design for special population  At the proposability between the proof pro | Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes             | Understand | <   |      | <    | <   | <     | <    | <   | <    | 4    |   |
|--|--|-----------------|------------|-----|------|------|-----|-------|------|-----|------|------|---|
| ts of V V V V V V V V V Understand required to V V V V V V V V V V V V Understand  | MST, Comprehensive Continuous  |                 |            |     |      |      |     |       |      |     |      |      | CO5 Learn about the trial design for special population     |
| ## PO 1 PO 2 PO 3 PO 4, PO 5 PO 6 PO 7 PO 8 PO 9 Skill  sts of   | Attendance, Class Participation) End se  |                 | Understand | ·   |      |      |     | ***** |      |     |      |      |   |
| ## PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 Skill  sts of  | Quiz,Assignment,Seminar,Presentation   | Yes             | •          | <   | <    | <    | ď   | <     | <    | ٧   | <    | <    | conduct a clinical trial                                    |
| ts of v v v v v v v v understand v v v v v v v v v v v v v v v v v v v   | MST, Comprehensive Continuous e  |                 |            |     |      |      |     |       |      |     |      |      | CO4 Understand what are the essential documents required to |
| ## PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 Skill sts of   | Attendance, Class Participation) End se  |                 | Understand |     |      |      |     |       |      |     |      |      |   |
| ## PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 Skill sts of   | Quiz,Assignment,Seminar,Presentation   | Yes             |            | <   | <    | <    | <   | <     | <    | <   | <    | <    | preventing bias   |
| ing of the basic concepts of V V V V V V V V V Apply   | MST, Comprehensive Continuous e  |                 |            |     |      |      |     |       |      |     |      |      | CO3 Understand the key study design elements for            |
| ing of the basic concepts of  vidy designs  vidy vidy vidy vidy vidy vidy vidy vidy  | Attendance, Class Participation) End se  |                 | Apply      |     |      |      |     |       |      |     |      |      |   |
| ing of the basic concepts of v v v v v v v v v understanding in choosing   | Quiz, Assignment, Seminar, Presentation  | Yes             |            | <   | <    | <    | ٧   | ۷     | ۷.   | ۷   | <    | <    | the appropriate study design                                |
| asic concepts of V V V V V V V Understand  | MST, Comprehensive Continuous e  |                 |            |     |      |      |     |       |      |     |      |      | CO2 Apply their knowledge and understanding in choosing     |
| asic concepts of V V V V V V V V V V V V   | Attendance, Class Participation) End se  |                 | Understand |     |      |      |     |       |      |     |      |      |   |
| PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 Skill  | Quiz, Assignment, Seminar, Presentation  | Yes             |            | <   | <    | <    | <   | <     | <    | <   | ۷    | <    | different types of clinical study designs                   |
| PO1PO2 PO3 PO4 PO5 PO7 PO8 PO9 Skill   | MST, Comprehensive Continuous e  |                 |            |     |      | •    |     |       |      |     |      |      | CO1 Develop an understanding of the basic concepts of       |
| Employability / Employability / Entrepreneurshi Assessment Tools to Measure At   |  | p c             | Skill      | PO9 | PO 8 | PO 7 | 904 | PO 5  | PO 4 | PO3 | PO 2 | PO 1 | Course Outcome  |
| Employability)   | Assessment Tools to Measure At   | Entrepreneurshi |            |     |      |      |     |       |      |     |      |      |   |
|  |  | Employability/  |            |     |      |      |     |       |      |     |      |      |   |
|  |  | Focus on        |            |     |      |      |     |       |      |     |      |      |   |

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#### M.Sc. Clinical Research Name of the Department: Food Science & Technology

### Paper UC-MSCR303-19 Research Methodology

| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes  | Apply      | ۷.  | <   | <   | <    | _    | <      | <    |        | 4 | CO5 Understand the basics of writing and presenting scientific data                        |
|---|--|------------|-----|---|-----|------|------|--------|------|--------|---|--|
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes  | Analyze    | ۷.  | ۷.  | <   | <    | <    |        | <    | <      | ے | CO4 Differentiate between primary and secondary data and significance of each type of data |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Understand | ۷.  | <   | ۷.  | 4    | ۷.   | ۷.     | ٧    | ٧      | ٧ | CO3 Develop an understanding about different research designs                              |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Apply      | 4   | <   | ż   | ۷.   | ۷.   | ٧      | ٧    | ٧      | ٧ | CO2 Apply their knowledge and understanding in defining specific research problems         |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes  | Understand | <   | ٧.  | ۷.  | <    | <    | ٧      | ٧.   |        | V | CO1 Develop an understanding of the basic concepts of research methodologies               |
| Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p CO   | Focus on<br>Employability/<br>Entrepreneurshi<br>p |            | 604 | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 Sk | P07 | PO 6 | 5 Od | , Od 1 | , 0d | 1 PO ; | 9 | Course Outcome   |

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Paper UC-MSCR304-19 Pharmacovigilance

| Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam  | Yes             | Understand | <    | <    | <   | <    | <        | <    | <    | · <         |    | and apply statistical considerations when preparing a protocol |
|--|-----------------|------------|------|------|---|------|----------|------|------|-------------|----|--|
| MST, Comprehensive Continuous evaluation   |                 | Арріу      |      |      |   |      |          |      |      |             |    | CO5 Understand drug monitoring, risk management studies        |
| Quiz, Assignment, Seminar, Presentation Case Studies, Attendance. Class Participation) End semester exam | Yes             |            | <    | <    | <   | ۷.   | <        | <    | <    | <           | <  | communication of safety signals with stakeholders              |
| MST Comprehensive Continuous evaluation  |                 |            | •••  |      |   |      |          |      |      |             |    | CO4 Develop practical understanding of signal detection and    |
| Attendance, Class Participation) End semester exam   |                 | Apply      |      |      |   |      |          |      |      |             |    | saiviy sinaivs   |
| MST, Comprehensive Continuous evaluation Ouiz Assignment Seminar Presentation Case Studies.              | Yes             |            | <    | ۷.   | <   | <    | <u>۔</u> | <    | <    | <u>ــــ</u> | <  | CO3 Demonstrate basic tools used in pharmacovigilance          |
| Attendance, Class Participation) End semester exam   |                 | Understand |      |      |   |      |          |      |      |             |    |  |
| Quiz, Assignment, Seminar, Presentation Case Studies,  | Yes             |            | 4    | ۷.   | ۷.  | ۷.   | ۷.       | <    | ۷.   | <           | <  | causality assessment   |
| MST, Comprehensive Continuous evaluation   |                 |            |      |      |   |      |          |      |      |             |    | CO2 Define and classify ADRs, detection, reporting and         |
| Attendance, Class Participation) End semester exam   |                 | Understand |      |      |   |      |          |      |      |             |    | risks  |
| Quiz, Assignment, Seminar, Presentation Case Studies,  | Yes             |            | ۷    | ۷    | <   | ۷    | <        | <    | <    | <           | <  | adverse reactions and to introduce measures to manage those    |
| MST, Comprehensive Continuous evaluation   |                 |            |      |      |   |      |          |      |      |             |    | CO1 Develop an understanding of early detection of new         |
| CO THE SHOP SHOW THE SHOP SHOP SHOP SHOP SHOP SHOP SHOP SHOP   | Ö               | Skill      | PO 9 | PO 8 | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 SK | PO 6 | PO 5     | PO 4 | PO 3 | PO 2        | PO | Course Outcome   |
| Entrepreneurshi Assessment Tools to Measure Attainment of  | Entrepreneursh  |            |      |      |   |      |          |      |      |             |    |  |
|  | / Employability |            |      |      |   |      |          |      |      |             |    |  |
|  | Focus on        |            |      |      |   |      |          |      |      |             |    |  |

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Paper UC-MSCR 305-19 Clinical Research Lab III

| CO5 Comprehend the significance of documentation in clinical research   | CO4 Develop clinical study protocols  | CO3 Develop various documents essential in clinical research  | CO2 Develop SOPs and various documents required for conduct of quality clinical studies   | CO1 Understand the practical application of clinical trial regulations for conduct of clinical trials   | Course Outcome  |
|---|---|---|---|---|---|
| ۷ .   | <u> </u>  | <   | <u> </u>  | <del></del>   | PO1 PO2 P03 PO4 PO5 PG6 PO7 PO8 PO9 SI  |
|   | <del></del> -   | <   | <b>-</b>  | ۷   | ) 2 PC  |
| ٧   |   | ۷.  | ٧   | ٧   | ) 3 Pc  |
| ٧   | <u> </u>  | ۷   | ٧   | ٧   | <b>2</b>  |
| <   | ٧   | <   | ٧   | ٧   | D 5 P(  |
| ۷   | ∢   | ۷.  | ٧   | ٧   | ) 6<br>P  |
| ٧.  | ۷   | ۷ .   | <   | ٧ .   | 07 2  |
| ٧   | < ·   | ۷.  | <u> </u>  | ٧   | 08 }  |
| <   | ٧   | <   | <   | ٧   | <b>0</b>  |
| Understand  | Create  | Create  | Create  | Арріу   |   |
| Yes   | Yes   | Yes   | Yes   | Yes   | Focus on<br>Employability /<br>Entrepreneurshi<br>p                                 |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Focus on Employability / Employability / Seessment Tools to Measure Attainment of p |

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Paper UC-MSCR 306-19 ICT Skills Lab

| Course Outcome   | <u>Q</u> | PO 2 | PO 3 | PO 4 | PO 5 | P06 | PO 7 | 8 Od | PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 S |            | Focus on<br>Employability /<br>Entrepreneurshi<br>p | Focus on Employability / Employability / Entirepreneurshi Assessment Tools to Measure Attainment of p CO  |
|--|----------|------|------|------|------|-----|------|------|--|------------|---|---|
| CO1 Understand the basics of ICT and the terminologies used in ICT   | ٧.       | ٧    | ٧    | ٧    | ۷.   | ۷   | ٧    | ٧    | ٧  | Арріү      | Yes   | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     |
| CO2 Appreciate the potential of technologies in modern society   | ٧        | ٧    | ٧    | ۷.   | ۷.   | ٧   | V    | ٧    | ٧ ,  | Understand | Yes   | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam |
| CO3 Learn about and using different kinds of IT tools suitably and safely  | ۷        | ٧    | <    | ٧    | ٧    | ٧ . | ٧    | ٧    | ٧  | Apply      | Yes   | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam |
| CO4 Search information on the internet in digital encyclopedias, repositories, etc., or using search engines, in a systematic and coherent fashion | ۷ .      | <    | ۷.   | ٧    | ٧    | ٧   | ٧    | 4    | ٧  | Apply      | Yes   | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam |
| CO5 Understand basic functions of a search engine and implement search criteria definition strategies for filtering the results obtained           | ٧        | ٧    | <    | ۷    | ٧    | ٨ . | ٧    | ٧    | V  | Apply      | Yes   | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     |

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Paper UC-MSCR 307-19 Journal Club

| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam       | Yes  | Apply      | ح   | ٧    | <   | <    | <    | <      | <       | <         | CO5 Demonstrate skill in scientific communication both orally and in writing | cos Demonstrate sk<br>orally and in writing |
|---|--|------------|-----|------|-----|------|------|--------|---------|-----------|--|---|
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam       | Yes  | Evaluate   | <   | <    | <   | <    | <    | <      | <       | <         | CO4 Comprehend how results of study are clinically significant               | CO4 Comprehend h                            |
| MST, Comprehensive Continuous evaluation<br>Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam | Yes  | Understand | <   | <    | <   | <    | 4    | <      | <       | <         | CO3 Become familiar with sources of bias and types of study designs          | CO3 Become famili designs                   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   | Yes  | Apply      | ۷.  | ۷    | <   | <    | <    | <      | v.      | <         | CO2 Develop an approach to analyse the various types of articles             | CO2 Develop an ap<br>articles               |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   | Yes  | Analyze    | ۷.  | ح    | ۷.  | <    | <    | <      | <       | <         | riew the literature  | CO1 Critically review the literature        |
| Employability / Empreneurshi Assessment Tools to Measure Attainment of p CO   | rocus on Employability / Entrepreneurshi p |            | 909 | PO 8 | P07 | PO 6 | PO 5 | 9 PO 4 | PO<br>S | PO 1 PO 2 |  | Course Outcome                              |

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Deptit of Four North Committees of KAPURTHALA

Paper - BSFT112-21 Tech. of Food Preservation

Paper -BSFT113-21 Lab Intro. to Food Science

| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, | Yes Yes                                   | Apply<br>Analyze | < <       | ۷ ۷     | ۷ ۷ | < <       | ۷ ۷  | products.  CO4: Explaining different methods used for food analysis.  CO5: Evaluation of food products by qualitative and quantitative |
|---|---|------------------|-----------|---------|-----|-----------|------|--|
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam   | Yes                                       | Analyze          | ۷.        | ۷.      | ٧   | <         | ۷.   | CO3: Evaluation of composition and functionality of food   |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam   | Yes                                       | Understand       | ۷.        | <       | <   | ۷.        | ۷.   | CO2: Introduction to fundamentals of food processing and evaluation.   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   | Yes                                       | Apply            | ٧.        | ٨       | ۷   | ۷         | ٧    | CO1: To acquaint the students to the work in the food analysis laboratory.   |
| Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p CO   | Focus on Employability/ Entrepreneurshi p | Skill            | Section 1 | P03 P04 | PO3 | PO 1 PO 2 | PO 1 | Course Outcome   |

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KAPURTHALA

#### B.Sc. (Hons) Food Technology Name of the Department: Food Science & Technology

Paper - BSFT114-21 Lab Tech. of Food Preservation

| Attendance, Class Participation) End semester exam  |   |         |     |                      |    |           |      | 5. To understand and utilize different food preservation techniques.   |
|---|---|---------|-----|----------------------|----|-----------|------|--|
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies,  | Yes   | Apply   | <   | ۷.                   | ۷. | ۷.        | <    |  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Analyze | ۷   | ۷.                   | <  | ٧.        | <    | To understand the physical and chemical evaluation of thermally processed food.  |
| MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam     | Yes   | Apply   | ۷ . | ۷.                   | <  | ۷.        | <    | To design and evaluate a processing procedure used to preserve a food product.   |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Analyze | <   | <                    | <  | ٧         | ۷.   | <ol> <li>To understand the effect of various preservation techniques on<br/>the quality and safety of food<br/>products</li> </ol> |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Yes   | Apply   | <   | ۷.                   | ٧  | ٧.        | <    | To understand the sampling techniques and preparation of test samples.   |
| ility / eurshi Assessment Tools to Measure Attainment of  | Focus on<br>Employability /<br>Entrepreneursh |         | 5   | PG 3 PG 4 PG 5 Skill |    | PO 1 PO 2 | PO 1 | Course Outcome   |

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UK Gujral Punjab Technical University
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Paper - BTHU103-18 English

| Course Outcome   | PO 1 I | 0 2 | PO 3 | PO1 PO2 PO3 PO4 | POS | S(I)       | Focus on<br>Employability /<br>Entrepreneurshi | ocus on mpioyability / mpioyability / trepreneurshi Assessment Tools to Measure Attainment of CO  |
|--|--------|-----|------|-----------------|-----|------------|--|---|
| 1. To help the students become the independent users of English language.  | ۷.     | v   | ٧    | ٧               | ٧   | Understand | Yes  | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam       |
| 2. To develop in them vital communication skills which are integral to their personal, social and  | ۷.     | <   | <    | ۷.              | <   | Арріу      | Yes  | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   |
| 3. The syllabus shall address the issues relating to the Language of communication.  |        | ٧   | ٧    | ٧ .             | ٧   | Understand | Yes  | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam   |
| 4. Students will become proficient in professional communication such as interviews, group discussions, office environments, important reading skills as well as writing skills such as report writing, note taking etc. | . <    | <   | <    | <               | <   | Apply      | Yes  | MST, Comprehensive Continuous evaluation<br>Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam |

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Paper - BTHU104-18 Lab English

| Course Outcome  | PO 1 PO 2 PO 3 PO 4 | Ŏ<br>N | <u>3</u> | Š | PO 5 <b>Skil</b> | Skil       | Focus on<br>Employability /<br>Entrepreneurshi<br>o | ocus on moloyability / moloyability / moloyability / moloyability / moloyability / Assessment Tools to Measure Attainment of                        |
|---|---------------------|--------|----------|---|------------------|------------|---|---|
| To help the students become the independent users of English language.  | ۷                   | ۷.     | <        | ٧ | <                | Understand | Yes   | MST, Comprehensive Continuous evaluation<br>Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam |
| 2.To develop in them vital communication skills which are integral to personal, social and professional interactions.   | ۷.                  | ۷      | <        | ٧ | <                | Apply      | Yes   | MST, Comprehensive Continuous evaluation<br>Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam |
| 3.The syllabus shall address the issues relating to the Language of communication   | ۷.                  | ۷.     | ۷.       | < | <                | Understand | Yes   | MST, Comprehensive Continuous evaluation<br>Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam |
| 4. Students will become proficient in professional communication such as interviews, group discussions and business office environments, important reading skills as well as writing skills such as report writing, note taking etc | <                   | <      | <        | < | <                | Apply      | Yes   | MST, Comprehensive Continuous evaluation<br>Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam |

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Paper - BSFT123-18 Lab Food and Nutrition

| 4. Understanding about food assimilation and malnutrition.  | 3. Understanding the concept of nutrition labelling.  | Understanding about concept of nutritious snack, their preparation for different income groups.   | Determination of various food nutrients, sources, and associated deficiencies   | Course Outcome  |
|---|---|---|---|---|
| <   | <   | ۷.  | <   | 6<br>H  |
| <   | <   | <   | ۷.  | 02  |
| . <   | <   | <   | <   | 0<br>3  |
| <   | رح  | <   | ۷   | PO1 PO2 PO3 PO4 PO5 SKIII   |
| <   | <   | <   | <   | S<br>s  |
| Understand  | Understand  | Understand  | Understand  |   |
| Yes   | Yes   | Yes   | Yes   | Focus on Employability / Entrepreneurshi p  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of p CO |

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Paper - BSCSEC-101-21 Enterpreneuship Dev

| 4.To able to develop Food Processing Business plan  | 3. To develop the skills related to Business feasibility analysis such as technical Feasibility, economic Feasibility, organizational feasibility and legal Feasibility. | 2. To develop the ability to entrepreneurial skills.  | 1. To help the students to become the food entrepreneur.  | Course Outcome  |
|---|--|---|---|---|
| ٧   | <  | ۷.  | <   | ල<br>1  |
| ٧   | ٧  | ٧   | ٧   | PO 2  |
| ٧   | ٧  | ٧   | ٧   | PO 3  |
| ۷   | <  | ٧   | ٧   | PO 4  |
| ٧   | ٧  | ٧   | v   | PO 1 PO 2 PO 3 PO 4 PO 5 Skill  |
| Apply   | Analyze  | Apply   | Understand  | Skill   |
| Yes   | Yes  | Yes   | Yes   | Focus on Employability / Entrepreneurshi p  |
| MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam                        | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | MST, Comprehensive Continuous evaluation Quiz, Assignment, Seminar, Presentation Case Studies, Attendance, Class Participation) End semester exam | Focus on Employability / Entrepreneurshi Assessment Tools to Measure Attainment of CO |

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Figure 1

Deptt of Food November 1

IK Gujral Punjab Technical University
KAPURTHALA

Name of the Department: Food Science & Technology Ph.D.: Food Science & Technology (Batch 2020 onward)

Paper PHDFT-101-20: Research Methodology

| Course Outcome  | 9<br>1<br>1<br>0 |    | Š  | PO 1 PO 2 PO 3 PO 4 PO 5 SKIII | POS |               | Focus on Employability /- Entrepreneurshi P | Assessment Tools to Measure Attainment of CO  |
|---|------------------|----|----|--------------------------------|-----|---------------|---|---|
| COI. The students would be acquainted with knowledge related to concept, types and objective of research.   | <                | ٧. | <  | ۷.                             | <   | Understand    | Yes   | MST, Comprehensive Continuous evaluation<br>Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam |
| CO2. Knowledge of fundamentals of planning and hypothesising a research problem anddesigning the experiments would be helpful in effective pursuance of the research objectives.                        | <                | <  | ۷. | <                              | <   | Understand    | Yes   | MST, Comprehensive Continuous evaluation<br>Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam |
| CO3. The students would be acquainted with the effective means of writing, compiling, presenting and discussing the findings of the experiments and their further publications in the reputed journals. | ۷                | ۷  | ٧  | < .                            | ۷.  | Understand    | Yes   | MST, Comprehensive Continuous evaluation<br>Quiz,Assignment,Seminar,Presentation Case Studies,<br>Attendance,Class Participation) End semester exam |
| CO4. Knowledge of statistical tools would be instrumental in drawing inferences and conclusive reports from the laboratory experiment results.  | <                | <  | ٧  | <u>.</u>                       | <   | Analyze,Apply | Yes   | MST, Comprehensive Continuous evaluation Quiz,Assignment,Seminar,Presentation Case Studies, Attendance,Class Participation) End semester exam       |

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