**Course Delivery Plan**

**Department of Nutrition and Food Engineering**

**Semester**: Spring 2021

**Course Code: NFE 323 Credit Hours: 3**

**Course Title: Food Processing and Packaging Engineering**

**Course Rationale:** This course attempts to strengthen the skill raw materials and packaging materials for commercial food items considering and able them competent for the industrial and global perspectives.

**Objective of the course:**

* To enhance knowledge on food processing techniques
* To foster knowledge on different food packaging materials
* To develop skills on manufacturing of packaging materials and food products
* To introduce them the recent development of food packages.

**Learning outcome:**

* Able to gain basic ideas of raw materials and their properties.
* Able to gain knowledge on theoretical and practical aspects of food packaging materials.
* Able to competent them in packaging industry.
* Able to manage a food processing and packaging plant.

**Theory Session Plan (In order of Conduction in the class):**

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| --- | --- | --- |
| **Week No** | **Topics** | **Assessments****(ASSN/CT/Mid/Final)** |
| WK 1 | 1. Introduction to Food Packaging
 | None |
| WK 2 | 1. Food Packaging Machineries
 | None |
| WK 3 | 1. Food packaging materials (Traditional & Modern)
 | None |
| WK 4 | 1. Food packaging materials (Traditional & Modern)
 | Quiz 1 |
| WK 5 | 1. Modified Atmosphere Packaging
 | None |
| WK 6 | 1. Active Packaging
 | None |
| WK 7 | 1. Food packaging and Labeling Act
 | Quiz 2 |
| **WK 8** | **Midterm Exam****Syllabus: 1-7** | **Midterm Exam** |
| WK 9 | 1. Quality and shelf life of packaged foods.
2. Testing of packaging materials
 | None |
| WK 10 | 1. Environmental Impact
 | Quiz 3 |
| WK 11 | 1. Raw materials and properties
 | None |
| WK 12 | 1. Raw material handling, Physical Separation, Extrusion,
2. Drying, Evaporation,
 | None |
| WK 13 | 1. Food Processing Equipment’s
 | Quiz 4 |
| WK 14 | **16. Review class (If needed)** | None |
|  | **----- Final Exam Week ------*****Lecture: 07-16 (Final Exam)*** | **Final Exam** |

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| **Text Books:**1. Food Packaging and Preservation (theory & practice) by M.Mathlouthi- Elsevier Applied science publisher, London and New york.
2. Packaging foods with plastics by winter A. Jenkins & James P Harrington –Technomic publishing co. Inc, Lancaster. Basel.
 |
| **References:**1. Flexible food packaging (Question & Answers) by Arthur Hirsch VNB – Van Nostrand Reinhold, New York (An AVI Book), ISBN 0-442-00609-8
2. Food and Packaging Interactions by Joseph H. Hotchkiss, (ACS symposium series -365, April 5-10, 1987, American chemical society, Washington DC, 1988.)
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**Evaluation Strategy:**

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| --- | --- |
| **Evaluation Items** | **Marks** |
| Class Participation/ attendance | 7% |
| Quizzes (3) | 15% |
| Assignment | 5% |
| Presentation | 8% |
| Mid-Term | 25% |
| Final | 40% |
| **Total** | **100%** |

**Grading Policy:**

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| --- | --- | --- |
| Letter grades will be awarded as per the rules of DIU as follows: Numerical Grade | Letter Grade | Grade Point |
| 80% and above  | A+ | (A Plus) | 4.0 |
| 75% to less than 80%  | A | (A regular) | 3.75 |
| 70% to less than 75%  | A- | (A minus) | 3.5 |
| 65% to less than 70%  | B+ | (B Plus) | 3.25 |
| 60% to less than 65%  | B | (B regular) | 3.0 |
| 55% to less than 60%  | B- | (B minus) | 2.75 |
| 50% to less than 55%  | C+ | (C Plus) | 2.5 |
| 45% to less than 50%  | C | (C regular) | 2.25 |
| 40% to less than 45%  | D | (D regular) | 2.0 |
| Less than 40%  | F | (F Fail) | 0.0 |

**Course Teacher:**

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