SEMESTER S8

CEREALS AND LEGUME TECHNOLOGY

Course Code	**OEFTT836**	**CIE Marks**	40
Teaching Hours/Week (L:T:P:R)	3:0:0:0	**ESE Marks**	60
Credits	3	**Exam Hours**	2 Hrs. 30 Min.
Prerequisites (if any)	Nil	**Course Type**	Theory

Course Objectives:

Aim of this course is create the basic knowledge on different types of Cereals & Legumes and its processing methodologies.

SYLLABUS

Module No.	Syllabus Description	Contact Hours
1	**Rice processing** Status of grain processing industries in India–rice-varieties-nutrient composition. Parboiling – physico chemical changes during parboiling – soaking – steaming – drying. Modern methods of parboiling-Rice milling. Equipments involved in the rice milling processing–Cleaner–Stoner–Husker-Separator-Whitening machine. By product utilization–processing of rice bran oil	9
2	**Wheat and Barley Processing** Wheat- nutrient composition – classification of wheat. Milling of wheat-equipments used in the milling – break roll reduction roll- purifier – plan sifter – scalping - scratch system. Types of wheat flour .Barley–Nutrient composition –Commercial production of malt	9
3	**Corn, oats and millet processing** Milling of corn -Dry milling and wet milling- Gluten and starch separation – enzyme hydrolysis – acid hydrolysis- HFCS. Processing of oats. Millet –	9

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	major millet – minor millet - Processing of pearl and finger millets.	
4	**Value added products from Cereals and Processing of Legumes** Processing of breakfast cereals – processing of extruded products (noodles and pasta)-bread - Processing of protein isolates, flaked products- Processing of popcorn, puffed snacks, -Processing of special dietary foods. Legumes Types – nutrient composition – anti nutritional factors present in the pulses – Commercial milling of pulse – premilling techniques- Processing of soya bean.	**9**

Course Assessment Method
(CIE: 40 marks, ESE: 60 marks)

Continuous Internal Evaluation Marks (CIE):

Attendance	Assignment/ Microproject	Internal Examination-1 (Written)	Internal Examination- 2 (Written)	Total
5	15	10	10	40

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End Semester Examination Marks (ESE)

In Part A, all questions need to be answered and in Part B, each student can choose any one full question out of two questions

Part A	Part B	Total
• 2 Questions from each module. • Total of 8 Questions, each carrying 3 marks **(8x3 =24marks)**	• Each question carries 9 marks. • Two questions will be given from each module, out of which 1 question should be answered. • Each question can have a maximum of 3 sub divisions. **(4x9 = 36 marks)**	**60**

Course Outcomes (COs)

At the end of the course students should be able to:

Course Outcome		Bloom's Knowledge Level (KL)
CO1	Explain the processing of rice and utilization of by-products.	**K2**
CO2	Explain the processing of barley and wheat	**K2**
CO3	Explain the processing of corn, oat and millets	**K2**
CO4	Identify the value added products and their processing	**K3**
CO5	Select the processing of various legumes and their products.	**K3**

Note*: K1- Remember, K2- Understand, K3- Apply, K4- Analyse, K5- Evaluate, K6- Create*

CO-PO Mapping Table:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2										1
CO2	3	2	2									1
CO3	2	2	3									1
CO4	2	2										1
CO5	2	3										1

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Text Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	The Chemistry and Technology of Cereals as Food and Feed	Matz, Samuel A.	CBS	2nd Edition, 2014.
2	Post-Harvest Technology of Cereals, Pulses and Oil Seeds	Chakraverty, A.	Oxford & IBH	Third Edition, 2008
3	Technology of Cereals	N.L.Kent	Elsevier, 1994.	Fourth Edition

Reference Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Principles of Cereal Science and Technology	Delcour, Jan A. and R. Carl Hoseney.	American Association of Cereal Chemists	3rdEdition 2010
2	Handbook of Cereal Science and Technology	Karl Kulp	CRC Press	2nd Rev. Edition2000.
3	Millets Nutritional Value And Processing Technology ,	Chavan, U D & J V Patil,	Astrall Publications	1st edition, , 2016
4	Cereals Processing Technology, Bio-Green	Gavin ed Owens	Bio-Green Elsevier	1st Edition (2015), 978-935107329,2015
5	Advances in Cereal Science: Implications to Food Processing and Health Promotion,	Joseph Awika (Editor), VienoPiironen (Editor), Scott Bean (Editor	OUP USA	ISBN13: 9780841226364 eISBN: 9780841226418 (7June2012),

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Video Links (NPTEL, SWAYAM…)	
Module No.	**Link ID**
1	https://www.youtube.com/watch?v=pY-W5HLf3R4
2	https://www.youtube.com/watch?v=9I6-eVtcpao
3	https://www.youtube.com/watch?v=S3uetP9g72Y
4	https://www.youtube.com/watch?v=dB7Tb-WvOXs