

## Syllabus for Cereals-based Value-added Products Producer

<b>Course Name</b>	<b>Cereals-based Value-added Products Producer</b>
<b>Sector</b>	Agriculture
<b>Sub-sector</b>	Agri based food products, Cereal based products, Cereal based livestock feed products
<b>Course Code</b>	STC-AGR/2025/0281
<b>Level</b>	3
<b>Occupation</b>	Cereals-based Value-added Products Producer
<b>Job Description</b>	The Cereals-based Value-added Products Producer plays a role in production of value-added cereal-based products to meet market demand and consumer preference. He may also set up his own small scale business
<b>Course Duration</b>	<b>Total Duration 390 Hrs. (T-120, P-180, OJT-60 and ES-30)</b>
<b>Trainees' Entry Qualification</b>	Class 10 passed OR Class 8 passed and pursuing continuous schooling in regular school with vocational subject OR Class 8 passed with 3 years relevant experience OR Previous relevant Qualification of NSQF Level 2.5 with 1.5 years' experience
<b>Trainers Qualification</b>	M.Sc./M. Tech in Food Engineering or Food Processing Technology with 1 year experience in relevant field OR B.Sc./B.Tech/B.E. in Food Processing Technology with 2 years' experience in relevant field OR Diploma in Agricultural Engineering or Food Technology with 3 years' experience in relevant field

**Structure of Course:**

Module No.	Module name	Outcome	Compulsory/ Elective	Theory (Hrs.)	Practical (Hrs.)	OJT (Hrs.)	Total (Hrs.) [Multiple of 30]
1	<b>Introduction of Cereal Crops</b>	Identify cereal crops with geographical production statistics	Compulsory	10	20		30
2	<b>Physico-chemical Properties of Cereal Grains</b>	Identify shape and size of cereal grains along with their inherent properties	Compulsory	10	20		30
3	<b>Post-Harvest Operation and Storage</b>	Demonstrate post-harvest activities and storage of cereal grains	Compulsory	10	20		30
4	<b>Milling of Cereal Grains</b>	Exhibit the milling of cereal grains	Compulsory	20	40		60
5	<b>Preparation of Cereal based Processed Food</b>	Prepare cereal based processed food	Compulsory	20	40		60
6	<b>Market-Linkage and Economics</b>	Monitor market trends and enhance sales, profitability and promotion of cereal-based products.	Compulsory	10	20		30
7	<b>Entrepreneurship Development</b>	Plan and prepare a project report to set up a small business unit.	Compulsory	40	20		60
8	<b>OJT</b>	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	Compulsory	-	-	60	60
9	<b>Employability Skill</b>	As per guided curriculum	Compulsory	30	-	-	30
<b>TOTAL</b>				<b>150</b>	<b>180</b>	<b>60</b>	<b>390</b>

**SYLLABUS:****Module 1: Introduction of Cereal Crops****Outcome:** Identify cereal crops along with their geographical production statistics**Theory Content:**

- Explain the concept of cereal crops.
- Classify them based on their characteristics and uses.
- Describe the different types of rice, wheat and maize based on their uses, providing examples for each.
- Explain the structure of rice, wheat and maize grains, highlighting their components and functions.
- Area and production statistics of cereal crops in India and West Bengal.
- Discuss the post-production storage practices and the supply chain process to deliver cereal crops to processing units.

**Practical Content:**

- Demonstrate the morphological differences of grain of different cereal crops.
- Illustrate the area of cultivation for different cereal crops in India and West Bengal by preparing maps.

**Module 2: Properties of Cereal Grains**

**Outcome:** Identify shape and size of cereal grains along with their inherent properties

**Theory Content:**

- Explain the physical properties of grain (shape, size, hardness, roundness, sphericity, volume, density, porosity, specific gravity, surface area, etc.).
- Describe the composition of cereal grains (carbohydrate, fat, protein, minerals, moisture, etc.).
- Explain the mechanical properties such as hardness and elasticity of cereal grains.
- Explain the thermal properties such as ability of cereal grains to store heat, transfer heat showing how quickly heat moves through them.

**Practical Content:**

- Determine of physical properties of cereal grains (size, shapes, bulk density, etc.).
- Measure the moisture content of cereal grains.
- Measure the shape and size of cereal grains
- Assess the roundness and sphericity by grain images and compare with standard reference shapes

**Module 3: Post-Harvest Operations and Storage**

**Outcome:** Demonstrate post-harvest activities and storage of cereal grains.

**Theory Content:**

- Explain the method of drying of cereal grains (sun drying, mechanical drying, etc.).
- Describe the process of cleaning, sorting and grading of cereal grains.
- Identify traditional and modern grain storage structures and grain filling methods.
- Explain the storage environment and its relation with grain properties.
- Describe the importance of size reduction (Uniformity, increased yield, smaller size) in cereal processing

**Practical Content:**

- Identify different types of storage suitable for different cereal crops.
- Clean the grains using sieves or grain cleaning machines.
- Measure the moisture content.
- Demonstrate different methods of grain drying.
- Operate sorting, grading and grain sizing equipment.
- Store the grains in cool, dry and well ventilated storage place.

**Module 4: Milling of Cereal Grains**

**Outcome:** Exhibit the milling of cereal grains.

**Theory Content:**

- Explain the objectives and principles of milling of cereal grains.
- Determine pre-treatment of cereals prior to milling, parboiling of paddy: methods and purposes.
- Describe the milling of rice, milling recovery, products (milled rice) and by-products (bran, husk, etc.).

- Discuss the milling of wheat, products and by-products (*atta*, *maida*, etc.).
- Explain the milling of maize (dry and wet), products (Maize flour, maize starch, maize germ and maize gluten) and byproducts (Maize bran, corn oil cake, wastewater)

**Practical Content:**

- Draw the layout and work flow of rice milling unit, wheat processing unit and maize processing unit.
- Identify cereal processing machines and demonstration of processing activities like loading, adjusting, setting, process monitoring etc.
- Demonstrate grading, bagging, sealing, etc.
- Maintain Milling Register.
- Demonstrate basic maintenance and cleaning of milling equipment.
- Organize a visit to modern Cereal Processing Unit.

**Module 5: Preparation of Cereal based Processed Food**

**Outcome:** Prepare cereal based processed food.

**Theory Content:**

- Explain the concept of processed food and importance of value-addition in cereal grains.
- Describe the processing of cereal grains (extrusion, puffing, flaking, fermentation, roasting, etc.) to food products.
- Explain the preparation of rice products (parched rice, popped rice, flattened rice, baby food, breakfast cereals, noodles, etc.).
- Discuss the preparation of wheat products (bread, biscuit, etc.).
- Explain the preparation of maize-based products (popcorn, cornflakes, etc.).

**Practical Content:**

- Demonstrate the process of cereal grains through techniques of milling.
- Demonstrate the process of cereal grains (Extrusion, puffing, flaking, fermentation and roasting)
- Prepare rice products (Parched rice, popped rice, flattened rice, baby food, breakfast cereals and noodles).
- Demonstrate the preparation of wheat products (Bread and biscuits)
- Prepare maize based products (Popcorn, cornflakes)
- Maintain a processing register to record daily operations and observations.
- Perform cleaning, periodic checking and primary servicing of processing machines.

**Module 6: Market Linkage and Economics**

**Outcome:** Monitor market trends and enhance sales, profitability and promotion of cereal-based products.

**Theory Content:**

- Explain the significance of value addition in agriculture
- Identify different market channels for cereal products including local markets, wholesalers and online platforms.
- Explain the factors involved, supply-chain, demand forecast, price competitiveness, etc.
- Explore digital marketing as a way to promote food products online
- Analyze customer feedback and online reviews to improve products and services
- Identify the importance of packaging.
- Selects appropriate packaging materials based on product type

**Practical Content:**

- Create a list of local and online platforms for selling cereal products.
- Develop a pricing strategy based on cost analysis and competitor pricing
- Identify sales data regularly and demand for specific products

- Review customer purchase patterns
- Monitor the price changes of these products during different seasons
- Report the findings in demand and pricing to identify peak seasons
- Calculate the cost of production for each cereal product
- Evaluate profit margins by comparing costs with sales prices.
- Develop a digital marketing campaign to promote cereal-based products.
- Select appropriate packaging materials as per needs of the products
- Identify the impact of packaging design on consumer appeal
- Check the product materials durability during product storage and transportation.

## **Module 7: Entrepreneurship Development**

**Outcome:** Plan and prepare a project report to set up a small business unit.

### **Theory Content:**

#### **Basics of Entrepreneurship:**

- Define entrepreneurship as the process of starting and managing a business.
- Explain the meaning and types of entrepreneurs.
- Describe the roles and functions of entrepreneurs.
- Identify the traits of successful entrepreneurs.
- List essential entrepreneurial skills and abilities.
- Distinguish between continuous (gradual improvements) and disruptive (radical changes) innovation.

#### **Forms of Organizations:**

- Describe a sole proprietorship, including its advantages, limitations and suitability.
- Describe the process of setting up a partnership firm.
- Summarize the key features of Limited Liability Partnerships (LLP).
- Explain the concept of a company and its types (Public and Private Limited).
- Discuss the characteristics, advantages, limitations and suitability of private limited companies.
- Define franchising and explain its types, benefits and challenge.
- Describe self-help groups and their role in entrepreneurship.

#### **Entrepreneurial Support and Legal Compliances:**

- Define startups, including challenges and reasons for failure.
- Discuss government policies, incentives and schemes for startups.
- Summarize the role of business clusters in entrepreneurship.
- List the legal compliances for businesses must adhere to, such as Income Tax, GST, Profession Tax, Company Law (with reference to private limited companies), Import-Export (FEMA), Labour Laws, and

#### **Entrepreneurial Finance:**

- Discuss the financial requirements for enterprises, including fixed capital, working capital and working capital cycle.
- Differentiate between equity and debt financing with its advantages and disadvantages.
- Explore sources of finance for new ventures, such as seed financing, bootstrapping and angel investors.
- Discuss financing business growth through venture capital and private equities.
- Identify government schemes and support for startups viz.
  1. Swami Vivekananda Sahakar Karmasanthan Prakalpa (SVSKP).
  2. West Bengal Sahakar Sahayak Prakalpa (WBSSP)
  3. Bhavishya Credit Card.
  4. WBMDFC Schemes.

#### **Managerial Aspects of Entrepreneurship:**

- Establish the vision, mission, goals and objectives of an organization.
- Differentiate between strategic, tactical and operational plans.
- Outline the steps in decision-making processes.
- Describe the role and significance of marketing within organizations.
- Identify the components of a marketing strategy, such as market segmentation and targeting.
- Make key marketing decisions regarding product (consumer goods vs. business goods), product development and testing.
- Provide an overview of distribution and promotion strategies (advertising, sales promotion, personal selling).
- Apply the 4Ps framework (Product, Price, Place, Promotion) to marketing decisions.

**Practical Content:**

- Identify a potential business idea and assess its viability.
- Analyze technical feasibility (availability of technology, infrastructure and skilled labor).
- Evaluate commercial feasibility (market demand, competition, pricing strategies).
- Assess financial feasibility (estimated capital investment, operating costs, profitability).

1. Write a Project Report with indicative content as given below:

**Applicant related Information:**

- Name, gender, marital status, any special categoryStatus,
- Residential address, date of birth, contact number and email address
- Educational Qualifications,
- Membership to professional bodies (if any)
- Special/vocational training (if any)
- Prior Career Antecedents: previous businessesventures, jobs held, professional/vocational bio-sketch

**Enterprise related information:**

- Name of the proposed enterprise
- Business address
- Category of Enterprise (Micro, Medium or Small)
- Form of ownership (Sole proprietorship, partnership,
- LLP, private company, Self-help group, etc.)
- Industry/Sector (Agri-based, Manufacturing, Trading,Services, etc.)

**Project related information:**

- Proposed Product(s) or Services
- Product/service description with USP (Unique SellingProposition)
- Competition and available substitutes
- Present and forecasted future demand
- Target market – Geographic and demographicspecification of target market and estimated target market size
- Distribution strategy – Direct selling, agents, resellers,franchisees, etc.

**Operational Details relating to the Project:**

- Machinery, equipment and instruments

- Other Fixed Assets (Land and Building, Furniture and Fixtures, etc.)
- Intellectual Property Registered (if any) – Patents, Trademarks, Copyrights
- Working Capital Requirements – Components (Raw materials, semi-finished goods, Finished Inventory, Accounts Receivable, Cash reserves, etc.)
- Utilities (Motive power and electricity, water, telephone, fuel, internal/broadband, transportation, etc.)
- Worker/Personnel (Factory/Operations – Unskilled, semi-skilled, skilled, Technical/Professional staff, Office staff)
- Revenue, cost and cash flow projections – Break even analysis
- Description and location of plant
- Plant layout

2. Visit the owner of a small business in your locality. Collect data/information from the business person with regard to the following points -

- Type of business
- Type of customers (e.g. for business dealing with educational stationery, customers are mainly school and college students etc.)
- Sources of raw materials
- Monthly / annual sales (approximate figures)
- Monthly / annual profit (approximate figures)
- Threats to the business (like funding, nearest competitor, obsolescence of the product etc.)
- Opportunities to the business
- Future plans

## **Module 8: OJT**

**Outcome: Work experience in real job situation**

### **Practical Content:**

Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 60 Hours.)

## ***Module 9: Employability Skills***

***Mapped to DGT/VSQ/N0/101***

**Detail of Employability Skills Syllabus: 30 hours**

**Key Learning Outcomes:**

**Introduction to Employability Skills Duration: 1 Hour**

After completing this programme, participants will be able to:

1. Discuss the importance of Employability Skills in meeting the job requirements

**Constitutional values - Citizenship Duration: 1 Hour**

2. Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen.
3. Show how to practice different environmentally sustainable practices

**Becoming a Professional in the 21st Century Duration: 1 Hours**

4. Discuss 21st century skills.
5. Display positive attitude, self-motivation, problem solving, time management skills and continuous learning mindset in different situations.

**Basic English Skills Duration: 2 Hours**

6. Use appropriate basic English sentences/phrases while speaking

**Communication Skills Duration: 4 Hour**

7. Demonstrate how to communicate in a well-mannered way with others.
8. Demonstrate working with others in a team

**Diversity & Inclusion Duration: 1 Hour**

9. Show how to conduct oneself appropriately with all genders and PwD
10. Discuss the significance of reporting sexual harassment issues in time

**Financial and Legal Literacy Duration: 4 Hours**

11. Discuss the significance of using financial products and services safely and securely.
12. Explain the importance of managing expenses, income, and savings.
13. Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws

**Essential Digital Skills Duration: 3 Hours**

14. Show how to operate digital devices and use the associated applications and features, safely and securely
15. Discuss the significance of using internet for browsing, accessing social media platforms, safely and securely

**Entrepreneurship Duration: 7 Hours**

16. Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges

**Customer Service Duration: 4 Hours**

17. Differentiate between types of customers
18. Explain the significance of identifying customer needs and addressing them
19. Discuss the significance of maintaining hygiene and dressing appropriately

**Getting ready for apprenticeship & Jobs Duration: 2 Hours**

20. Create a biodata
21. Use various sources to search and apply for jobs
22. Discuss the significance of dressing up neatly and maintaining hygiene for an interview
23. Discuss how to search and register for apprenticeship opportunities

**Learning Outcome – Assessment Criteria**

Module No.	Outcome	Assessment Criteria
------------	---------	---------------------



Module No.	Outcome	AssessmentCriteria
1	Identify cereal crops along with their geographical production statistics	<b>After completion of this module students will be able to:</b> <ol style="list-style-type: none"> <li>1.1 Identify different types of rice, wheat and maize.</li> <li>1.2 Explain grain structure of rice, wheat and maize.</li> <li>1.3 Discuss on area and production status of rice, wheat and maize in India.</li> <li>1.4 Explain the production statistics of cereal crops in India</li> <li>1.5 Discuss the post-production storage practices</li> </ol>
2	Identify shape and size of cereal grains along with their inherent properties	<b>After completion of this module students will be able to:</b> <ol style="list-style-type: none"> <li>2.1 identify the physical properties of cereal grains.</li> <li>2.2 Explain composition of cereal grains.</li> <li>2.3 Measure the moisture content of cereal grains.</li> <li>2.4 Measure the shape and size of cereal grains</li> <li>2.5 Assess the roundness and sphericity by grain images and compare with standard reference shapes</li> <li>2.6 Record the density, volume and porosity of cereal grains</li> <li>2.7 Explain the thermal properties</li> </ol>
3	Demonstrate post-harvest activities and storage of cereal grains	<b>After completion of this module students will be able to:</b> <ol style="list-style-type: none"> <li>3.1 Describe fundamental concepts and purpose of post-harvest processing and storage.</li> <li>3.2 Perform the operation of sorting, grading, grain sizing Machines.</li> <li>3.3 Describe the procedure of maintenance of grain properties in varied storage structures.</li> <li>3.4 Explain the importance of size reduction</li> </ol>
4	Exhibit the milling of cereal grains	<b>After completion of this module students will be able to:</b> <ol style="list-style-type: none"> <li>4.1 Explain the steps in milling of cereal grains and draw milling work chart.</li> <li>4.2 Identify and operate different milling machines.</li> <li>4.3 Demonstrate grading and bagging.</li> <li>4.4 Describe fundamental principles of safety, hygiene and sanitation related to milling.</li> <li>4.5 Demonstrate basic servicing and maintenance of milling equipment</li> <li>4.6 Explain the maintenance of milling register</li> </ol>
5	Prepare cereal based processed food	<b>After completion of this module students will be able to:</b> <ol style="list-style-type: none"> <li>5.1 Discuss on types of value added cereal based products.</li> <li>5.2 Discuss on puffing, flaking, roasting, etc.</li> <li>5.3 Explain the methods of preparation of rice based products (parched rice, popped rice, flattened rice, etc.).</li> <li>5.4 Describe the methods of preparation of wheat based bakery products (bread, biscuits, etc.).</li> <li>5.5 Explain the steps in preparation of maize based products.</li> <li>5.6 Prepare maize based products</li> <li>5.7 Demonstrate the preparation of wheat products.</li> </ol>
6	Monitor market trends and enhance sales, profitability and	<b>After completion of this module students will be able to:</b> <ol style="list-style-type: none"> <li>6.1 Describe the principles of supply and demand and its impact on cereal crop prices.</li> <li>6.2 Track the demand for different processed food products.</li> </ol>

Module No.	Outcome	AssessmentCriteria
	promotion of cereal-based products.	6.3 Monitor the price changes of these products during different seasons 6.4 Report the findings in demand and pricing to identify peak seasons 6.5 Keep accurate records of all transactions related to cereal based products 6.6 Calculate the cost of production for each cereal product 6.7 Evaluate profit margins by comparing costs with sales prices.
7	Plan and prepare a project report to set up a small business unit.	<b>After completion of this module students will be able to:</b> 7.1 Define key concepts related to entrepreneurship 7.2 Explain the different types of entrepreneurs and their respective roles 7.3 Identify traits and essential skills of successful entrepreneurs 7.4 Describe the various forms of business organizations 7.5 Explain legal compliances required for businesses. Including tax obligations and labor laws 7.6 Explore various sources of finance for new ventures and assess the benefits 7.7 Illustrate the vision, mission, goals and objectives of an organization 7.8 Apply 4Ps framework to develop a comprehensive marketing strategy.
8	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor).
9	Employability Skills (30 Hrs)	As per guided curriculum

#### Equipments/ Tools:

Sl. No.	Name of the equipment	Specification	No. / Quantity
1	Moisture meter	-	1
2	Testing dryer / Solar Grain Dryer / Oven	Lab based	1
2	Manual Grain Cleaner	Lab based	1
3	Manual or Small Electric Grain Mill	Lab based	1
4	Handheld Dehuller / husker	Lab based	1
5	Mini colour grader and shape analyzer	-	1
6	Hand-Powered Mortar and Pestle	Lab based	1
7	Manual Puffed Cereal Machine	Lab based	1
8	Portable Rice Cooker	-	1
9	Cereal Mixing Bowl with Manual Mixer / Dough Mixer	-	1
10	Small Manual Packaging Machine	-	1
11	Microwave Popping Machine	-	1
12	Manual Oat Flaker	-	1
13	Wheat mill	Lab based	1
14	Microwave	Home scale	1
15	Cake Oven	Home scale	1

16	Puffing / Flaking Machine	Lab scale	1
17	Microscope		1
18	Grain grader		1
19	Hand sorting trays		2
20	Vibratory separator		1
21	Aspirators		1

### Marks Distribution

Outcomes	Outcomes Code	Total Th marks	Total Pr marks	Total OJT marks
Identify cereal crops with geographical production statistics	AGR/0281/OC1	20	70	0
Identify shape and size of cereal grains along with their inherent properties	AGR/0281/OC2	20	80	0
Demonstrate post-harvest activities and storage of cereal grains	AGR/0281/OC3	20	80	0
Exhibit the milling of cereal grains	AGR/0281/OC4	20	130	0
Prepare cereal based processed food	AGR/0281/OC5	20	130	0
Monitor market trends and enhance sales, profitability and promotion of cereal-based products.	AGR/0281/OC6	20	80	0
Plan and prepare a project report to set up a small business unit.	AGR/0281/OC7	30	80	0
Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	AGR/0281/OC8	0	0	150
Employability Skills – 30 Hrs	DGT/VSQ/N0101	50	0	0