

Milling of rice: Parboiling- merits and demerits, changes during parboiling of rice, parboiling methods, viz. traditional methods, CFTRI method, Jadavpur method, pressure parboiling; different unit operations and equipment involved in traditional and modern rice milling methods; Preparation of rice products as rice flakes and puffed rice.

Milling of wheat: Unit operations and equipment; Milling of corn: unit operations and equipment in dry and wet milling methods; Milling of pulses: pre-conditioning, dry milling and wet milling methods, CFTRI and Pantnagar methods, pulse milling machines; Milling of oilseeds: preconditioning of oilseeds, mechanical expression, screw press, hydraulic press, solvent extraction method, refining of oil, stabilization of rice bran.

Practical

Study of different types of screens and study of screen effectiveness; Study of construction and operation of different types of cleaners and separators; Measurement of moisture content: dry basis and wet basis; Study on drying characteristics of grains and determination of drying constant; Determination of EMC (static and dynamic method); Study of psychrometric chart; Study of various types of dryers; Study of different size reduction machines; Sieve analysis, determination of fineness modulus and uniformity index; Study of different unit operations and machineries in rice mills; Study of different unit operations and machineries in pulse mills; Study of different unit operations and machineries in oil mills; Study of different unit operations and machineries in wheat/ flour mills; Study of different unit operations and machineries in corn processing units; Study of extrusion process; Study of different types of conveying and elevating equipment.

Suggested Readings

1. Chakraverty, A. 1999. *Post Harvest Technology of Cereals, Pulses and Oilseeds*. Oxford & IBH publishing Co. Ltd, New Delhi.
2. Dash, S. K., Bebartta, J. P. and Kar, A. 2012. *Rice Processing and Allied Operations*. Kalyani Publishers, New Delhi.
3. Geankoplis, C. J. 2002. *Transport Processes and Unit Operations*. Prentice Hall of India Pvt. Ltd, New Delhi.
4. Mangaraj, S., Dash, S. K., Swain, S. and Ali, N. 2016. *Agricultural Process Engineering*. Vol II. Kalyani Publishers, New Delhi.
5. McCabe, W. L., Smith, J. C. and Harriott, P. 1993. *Unit Operations of Chemical Engineering*. McGraw Hill.
6. Sahay, K. M. and Singh, K. K. 1994. *Unit Operations of Agricultural Processing*. Vikas Publishing House Pvt. Ltd, New Delhi.
7. Swain, S., Dash, S. K., Mangaraj, S. and Ali, N. 2016. *Agricultural Process Engineering*. Vol I. Kalyani Publishers, New Delhi.

Entrepreneurship Development and Business Management

3 (2+1)

Objective

1. To provide the student an insight into the concept and scope of entrepreneurship
2. To expose to various aspects of establishment and management of a small business unit
3. To enable the student to develop financially viable agribusiness proposal.

Theory

Development of entrepreneurship, motivational factors, social factors, environmental factors, characteristics of entrepreneurs, entrepreneurial attributes/competencies. Concept, need for and importance of entrepreneurial development. Evolution of entrepreneurship, objectives of entrepreneurial activities, types of entrepreneurs, functions of entrepreneurs, importance of entrepreneurial development, and process of entrepreneurship development. Environment scanning and opportunity identification need for scanning–spotting of opportunity-scanning of environment– identification of product / service – starting a project; factors influencing sensing the opportunities. Infrastructure and support systems- good policies, schemes for entrepreneurship development; role of financial institutions, and other agencies in entrepreneurship development. Steps involved in functioning of an enterprise. Selection of the product / services, selection of form of ownership; registration, selection of site, capital sources, acquisition of manufacturing know how, packaging and distribution. Planning of an enterprise, project identification, selection, and formulation of project; project report preparation, Enterprise Management. Production management – product, levels of products, product mix, quality control, cost of production, production controls, Material management. Production management – raw material costing, inventory control. Personal management – manpower planning, labour turn over, wages / salaries. Financial management / accounting – funds, fixed capital and working capital, costing and pricing, long term planning and short-term planning, book keeping, journal, ledger, subsidiary books, annual financial statement, taxation. Marketing management- market, types, marketing assistance, market strategies. Crisis management- raw material, production, leadership, market, finance, natural etc.

Practical

Visit to small scale industries/agro-industries, Interaction with successful entrepreneurs/ agric-entrepreneurs. Visit to financial institutions and support agencies. Preparation of project proposal for funding by different agencies.

Suggested Readings

- Charantimath, P.M. 2009. *Entrepreneurship Development and Small Business Enterprises*. Pearson Publications, New Delhi.
- Desai, V. 2015. *Entrepreneurship: Development and Management*. Himalaya Publishing House.
- Desai, V.1997. *Small Scale Industries and Entrepreneurship*. Himalaya Publ. House
- Grover, Indu. 2008. *Handbook on Empowerment and Entrepreneurship*. Agrotech Public Academy.
- Gupta, C.B. 2001. *Management Theory and Practice*. Sultan Chand & Sons.
- Khanka, S. S. 1999. *Entrepreneurial Development*. S. Chand & Co.
- Mehra, P. 2016. *Business Communication for Managers*. Pearson India, New Delhi.
- Pandey, M. and Tewari, D. 2010. *The Agribusiness Book*. IBDC Publishers, Lucknow.
- Singh, D. 1995. *Effective Managerial Leadership*. Deep & Deep Publ.
- Singhal, R.K. 2013. *Entrepreneurship Development and Management*. Katson Books.
- Tripathi, P. C. and Reddy, P. N. 1991. *Principles of Management*. Tata McGraw Hill.