SGT UNIVERSITY

VALUE ADDED COURSES

Faculty of Agricultural Sciences
2023-24

About the University

SGT University, established in 2013 and recognized by the University Grants Commission (UGC), has set its sights on fostering a culture of research, innovation, and interdisciplinary education. Nestled on a sprawling 70-acre campus on the outskirts of Gurgaon, the university boasts state-of-the-art resources and infrastructure designed to facilitate cutting-edge academic and research achievements.

Driven by a relentless pursuit of excellence, SGT University has earned the prestigious NAAC A+ accreditation, becoming one of the youngest institutions in the country to receive this honour. This recognition highlights the university's commitment to maintaining high standards in education and research.

Among its broad array of academic programs, the university offers premier medical courses through the SGT Medical College, Hospital & Research Institute, which are considered among the best in the nation. These programs are seamlessly integrated with practical training and research opportunities, ensuring that students receive a comprehensive, world-class education in the medical field.

Our Vision

To nurture individual's excellence through value based, cross-cultural, integrated and holistic education adopting the contemporary and advanced means blended with ethical values to contribute in building a peaceful and sustainable global civilization.

Our Mission

- To impart higher education at par with global standards that meets the changing needs of the society
- To provide access to quality education and to improve quality of life, both at individual and community levels with advancing knowledge in all fields through innovations and ethical research.
- To actively engage with and promote growth and welfare of the surrounding community
- through suitable extension and outreach activities
- To develop socially responsible citizens, fostering ethical values and compassion through participation in community engagement, extension and promotion activities.
- To create competitive and coordinated environment wherein the individual develops skills and a lifelong learning attitude to excel in their endeavours.

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INTRODUCTION

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In the dynamic and ever-changing global landscape, the need for lateral thinking, innovation, and entrepreneurial spirit has never been greater. Traditional educational approaches that focus solely on specific skill sets often become outdated due to the rapid pace of technological advancements. As such, no university curriculum can comprehensively address all areas of importance or relevance. To ensure that students are better equipped to meet industry demands, it is crucial for higher education institutions to supplement the core curriculum, helping students develop both their aptitudes and interests.

Objectives:

The primary objectives of the Value-Added Course (VAC) are:

1. To enhance industry understanding: Equip students with knowledge of industry expectations and requirements.
2. To improve employability: Enhance students' employability skills, making them more competitive in the job market.
3. To bridge skill gaps: Address existing gaps in skills and ensure students are industry ready.
4. To foster inter-disciplinary skills: Provide students with opportunities to develop diverse skills across various disciplines.
5. To encourage entrepreneurship: Inspire students to become job creators rather than just job seekers.

Course Design

Departments designing Value-Added Courses should begin by conducting a **Training Need Analysis** and engaging with industry experts, alumni, and employers to identify skill gaps and emerging trends. This will guide the creation of a syllabus tailored to current demands.

Conduction of Value-Added Courses

- Voluntary Participation: VAC is not a mandatory requirement for completing any academic program, and the credits earned through these courses are additional to the degree's total credit requirement.
- Learning Format: VAC is an instructor-supported learning course, available to all students without any additional fee. Classes are typically scheduled during reserved time slots, beyond regular class hours, and may also be conducted on weekends or during vacations.
- Course Registration: Students may register for only one Value-Added Course per semester, preferably offered by their own department. However, with prior permission from the Dean, they can take courses from other departments.

- Minimum Participants: A minimum of 5 students must opt for a course for it to be offered.
- Industry and Expert Involvement: Eminent industry professionals or academicians may conduct VACs. This broadens students' exposure and enhances the learning experience.

Course Duration and Structure

- Duration: Each Value-Added Course should last at least 30 hours, with a balanced structure of 18 hours (60%) theory and 12 hours (40%) practical. The exact division of theory and practical hours will be determined by the course instructor with the approval of the Dean.
- Location: The courses will be conducted within the respective schools, with classrooms assigned by the Dean based on student numbers.

REGISTRATION PROCEDURE

1. Course Listings: A list of available Value-Added Courses, along with syllabi, will be posted on the university website.
2. Registration Process: Students must complete and submit a registration form to enroll in a course. The Department Head will group students based on their choices and send them to the Dean for final approval.
3. Attendance and Assessment Records: The course instructor is responsible for maintaining attendance and assessment records, including details on assignments, seminars, and other activities. These records must be signed by both the course instructor and the Department Head and kept for future reference.
4. Attendance Requirements: Students must maintain at least 75% attendance in the Value-Added Course to be eligible for a certificate. Up to a 10% relaxation in attendance may be granted for valid reasons, such as illness or extracurricular participation.

Certification

Upon successfully completing a Value-Added Course, students will be awarded a **certificate** signed by the authorized university signatories, recognizing their accomplishment in the course.

Mushroom Production

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Course Code: VAC/FASC/001

COURSE OBJECTIVES:

- To facilitate self-employment.
- To know the nutrient value of mushroom.
- To study the morphology and types of Mushrooms.
- To know the spawn production technique.
- To aware the identification of edible and poisonous Mushrooms.
- To learn the prospects and scope of mushroom cultivation in small scale industry.
- To understand the Diseases. Post harvesting techniques of Mushrooms.

COURSE OUTCOMES:

- Students can start small scale industry of Mushroom cultivation.
- Students study the morphology and types of Mushrooms.
- They are aware of the identification of edible and poisonous Mushrooms.
- Students will be able produce spawn on their own.
- Learned the prospects and scope of mushroom cultivation in small scale industry.
- Studied the technique of Mushroom cultivation.
- Understood the Diseases. Post harvesting techniques of Mushrooms.

COURSE CONTENT:

Module I: Introduction- History of mushroom cultivation; Classification and distribution of mushroom; life cycle of mushroom. Identification of poisonous mushrooms.

Module II: Spawn preparation- Isolation of pure culture; Nutrient media for pure culture; layout of spawn preparation room; raw material of spawn; sterilization; preparation of mother spawn and multiplication.

Module III: Cultivation of mushroom, layout of mushroom shed - small scale and large scale production unit. Types of raw material – preparation and sterilization; Mushroom bed preparation, maintenance of mushroom shed; harvesting method and preservation of mushrooms.

Module IV: Nutrient values of mushroom- protein, carbohydrate, fat, fibre, vitamins and amino acids contents; short and long term storage of mushroom; preparation of various dishes from mushroom. Medicinal value of mushroom – cultivation, extraction, isolation and identification of active principle from mushroom. Pharmacological and economic values of mushroom.

Module V: Cultivation of following types of mushrooms- milky mushroom; oyster mushroom, button mushroom and any one medically valuable mushroom.

REFERENCES:

- Paul Stamets, J.S. and Chilton, J.S. 2004. Mushroom cultivation A practical guide to growing mushrooms at home, Agarikon Press.
- Tewan and Pankaj Kapoor S.C. 1993. Mushroom cultivation. Mittal Publication. Delhi
- Marimuth et al., 1991. Oyster Mushrooms. Dept. of Plant pathology, TNAU, Coimbatore.
- Nita Bahl. 1988. Hand book of Mushrooms, 2nd Edition, Vol I & II.
- Shu Fing Chang, Philip G. Miles and Chang, S.T. 2004. Mushrooms Cultivation, nutritional value, medicinal effect and environmental impact. 2nd ed., CRC press.

Principles of Organic Farming

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Course Code: VAC/FASC/002

COURSE OBJECTIVES:

- Compare and contrast organic farming with conventional farming systems.
- Understand the importance of local and indigenous knowledge in organic farming.
- Promote awareness of the role of organic farming in mitigating climate change and ensuring food security.

COURSE OUTCOMES:

Understanding Organic Farming Principles:

- Explain the fundamental principles and philosophy of organic farming, including sustainability, ecological balance, and biodiversity.

Knowledge of Organic Farming Practices:

- Identify and apply various organic farming techniques, including soil fertility management, crop rotation, composting, and natural pest control.

Sustainability in Agriculture:

- Analyze the role of organic farming in promoting environmental sustainability, reducing chemical use, and enhancing soil health.

Regulations and Standards:

- Understand the standards and certification processes for organic farming at the national and international levels.

Organic Soil and Nutrient Management:

- Develop skills to manage soil fertility through natural inputs, composting, and green manuring.

Pest and Disease Management:

- Evaluate eco-friendly pest and disease control methods, including biological control, companion planting, and traditional practices.

Economic and Social Aspects:

- Assess the economic viability and social impact of organic farming on local and global food systems.

Critical Thinking and Problem-Solving:

- Solve challenges in organic farming systems through innovative approaches and integrated farm management.

Research and Innovation in Organic Farming:

- Explore the latest research, technologies, and trends in organic agriculture to improve farming efficiency and productivity.

Hands-On Experience:

- Gain practical experience through fieldwork, case studies, or projects focused on organic farming methods.

COURSE CONTENT:

Module I: Introduction to Organic Farming

- Definition and Concept of Organic Farming.
- History and Evolution of Organic Agriculture.
- Importance of Organic Farming in Modern Agriculture.
- Principles of Organic Farming:
  - Health.
  - Ecology.
  - Fairness.
  - Care.
- Comparison with Conventional Farming.

Module II: Soil Health and Fertility Management

- Soil as a Living System.
- Organic Matter and Soil Fertility.
- Composting Techniques and Vermicomposting.
- Green Manuring and Cover Crops.
- Biofertilizers and Organic Amendments.

Module III: Crop Management in Organic Farming

- Crop Rotation and Diversification.
- Intercropping and Companion Planting.
- Selection of Crops for Organic Systems.
- Use of Organic Seeds and Propagation Materials.
- Weed Management Techniques in Organic Farming.

Module IV: Pest and Disease Management

- Integrated Pest Management (IPM).
- Biological Control Agents.
- Use of Botanicals and Natural Pesticides.
- Pest and Disease-Resistant Varieties.
- Agroecological Approaches to Pest Management.

Module V: Livestock in Organic Farming Systems

- Role of Livestock in Organic Farming.
- Organic Feed and Nutrition Management.
- Animal Health and Welfare Practices.
- Integration of Livestock and Crops.

Module VI: Organic Farming Standards and Certification

- Overview of Organic Farming Standards (e.g., NPOP, USDA Organic, EU Standards).
- Certification Processes and Agencies.
- Documentation and Record-Keeping.
- Marketing Organic Produce.

Module VII: Sustainability and Environmental Impact

- Organic Farming and Biodiversity Conservation.
- Carbon Sequestration and Climate Change Mitigation.
- Water and Energy Use in Organic Farming.
- Challenges and Opportunities in Organic Farming.

Module VIII: Economics and Social Dimensions of Organic Farming

- Cost-Benefit Analysis of Organic Farming.
- Organic Value Chains and Market Access.
- Organic Farming and Rural Development.
- Consumer Awareness and Demand for Organic Products.

Module IX: Hands-On Training and Practical Applications

- Field Visits to Organic Farms.
- Compost Preparation and Soil Testing.
- Organic Crop Management Practices.
- Case Studies on Successful Organic Farms.
- Designing an Organic Farm Plan.

Module X: Emerging Trends and Future Directions

- Advances in Organic Farming Technologies.
- Urban and Peri-Urban Organic Farming.
- Digital Tools and Precision Organic Agriculture.
- Policy Support and Incentives for Organic Farming.
- Future Prospects and Innovations in Organic Agriculture.

REFERENCES:

- "The Organic Farming Manual" by Ann Larkin Hansen
- "Organic Farming: Everything You Need to Know" by Peter V. Fossel
- "Principles of Organic Farming" by Niels Halberg and Harold W. Thrane
- Website: https://www.ifoam.bio
- Journal of Organic Agriculture (Springer)

Agri-Finance and Cooperative Development

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Course Code: VAC/FASC/003

COURSE OBJECTIVES:

- To educate the basic concept of rural credit, its structure and salient features.
- To make understand the terminology and facts about agriculture Finance and Cooperation.
- To learn apply for loan as now they are aware about lending procedure of credit institutions.
- To enable to analyze the financial statements i.e., balance sheet and income statement and use it to know the performance of an institution.
- To enable to evaluate the credit structure of different credit institutions.

COURSE OUTCOMES:

- Able to remember the rural credit structure and its salient features.
- Understand the terminology and facts about agriculture Finance and Cooperation.
- Able to apply for loan as now they are aware about lending procedure of credit institutions.
- Able to analyze the financial statements i.e., balance sheet and income statement and use it to know the performance of an institution.
- Visit to a commercial bank and cooperative bank

COURSE CONTENT:

Module I:

- Agricultural Finance- meaning, scope and significance, credit needs and its role in Indian agriculture
- Agricultural credit: meaning, definition
- Classification.Credit analysis; 4 R's, and 3 C's of credits
- Sources of agricultural finance
- UniInstitutional and non- institutional sources, commercial banks, social control and nationalization of commercial banks

Module II:

- Micro financing including KCC. Lead bank scheme, RRBs
- Scale of finance and unit cost.
- An introduction to higher financing institutions - RBI. NABARD. ADB, IMF, world
- Insurance and Credit Guarantee Corporation of India
- Cost of credit
- Recent development in agricultural credit.

Module III:

- Preparation and analysis of financial statements
- Balance Sheet and Income Statement. Basic guidelines for preparation of project reports- Bank norms - SWOT analysis
- Agricultural Cooperation - Meaning, brief history of cooperative development in India
- Objectives, principles of cooperation, significance of cooperatives in Indian agriculture.

Module IV:

- Agricultural cooperation in India- credit, marketing, consumer and multi-purpose cooperatives
- Farmers' service cooperative societies, processing cooperatives
- Farming cooperatives, cooperative warehousing
- Role of ICA, NCUI, NCDC, NAFED

REFERENCES:

Textbooks:

- An introduction to Agricultural Finance by U. K. Pandey, Kalyani Publishers, New Delhi
- Subba Reddy, S.; Raghu Ram, P; Neelakantha Sastry, V.; Bhavani Devi, I. (2009). Agricultural Economics
- Agricultural Finance and Management by S. Subba Reddy and P. Raghu Ram, Oxford & IBH Publishing Co. Pvt. Ltd, New Delhi
- Agricultural economics by S. Subba Reddy, P. Raghu Ram, and T.V. Neelakanta Sastry Second Edition, Oxford & IBH Publishing Co. Pvt. Ltd, New Delhi

POST HARVEST MANAGEMENT

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Course Code: VAC/FASC/004

COURSE OBJECTIVES:

- This course deals with overall post-harvest management of fruits and vegetables from farm to fork.
- The students are expected to gain knowledge on various management technologies on pre- harvest and post-harvest of fruits and vegetables.
- Students are also expected to gain knowledge on conventional and modern packaging methods.

COURSE OUTCOMES:

- Students will acquire knowledge on post-harvest management tools and novel packaging techniques

COURSE CONTENT:

Module I: The Post-Harvest Management portion is divided into following headings:

- The Importance of post-harvest technology of horticultural crops.
- Maturity indices, harvesting and post-harvest handling of fruits and vegetables
- Maturity and ripening process – factors affecting ripening of fruits and vegetables- chemicals used for hastening and delaying ripening of fruits and vegetables.
- Pre harvest factors affecting quality on post-harvest life of fruits and vegetables – factors responsible for deterioration of harvested fruits and vegetables.
- Methods of storage-precooling, pre storage treatments, low temperature storage, controlled atmosphere storage, hypobaric storage, irradiation and low cost storage structures.
- Various methods of packaging-packaging materials and transport – packaging technology for export. Fabrication of type of containers, cushioning material, vacuum packaging, poly shrink packaging, specific packaging for export of mango, banana, grapes, etc.