



**SGT UNIVERSITY**

**VALUE ADDED COURSES**



**Faculty of Agricultural Sciences  
2024-25**



## 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

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.

Course Code: VAC/FASC/005

## **COURSE OBJECTIVES:**

- To provide comprehensive knowledge and practical skills in landscape design, enabling students to understand landscaping principles, develop plant selection expertise, and apply modern techniques for creating sustainable outdoor spaces.

## **COURSE OUTCOMES:**

- CO1: Demonstrate understanding of landscaping principles and design elements for functional outdoor spaces
- CO2: Evaluate plant types for landscaping applications based on environmental conditions
- CO3: Understand specialized landscaping requirements for different space types
- CO4: Apply practical skills in plant propagation, selection, and landscape management
- CO5: Design and execute various garden types using appropriate materials and features
- CO6: Utilize CAD software for landscape design and presentation
- CO7: Solve landscaping challenges while considering ecological and aesthetic requirements ☒
- CO8: Integrate bio-aesthetic planning for sustainable landscape development
- CO9: Demonstrate proficiency in landscaping tools and techniques ☒
- CO10: Communicate design concepts through traditional and digital media

## **COURSE CONTENT:**

Module I: Fundamentals of Landscaping Importance and scope of landscaping, design principles, garden styles (formal/informal), terrace and vertical gardening, garden components, adornments, lawn making, rockery, water gardens, walk-paths, bridges, and gardens for special purposes.

Module II: Trees, Shrubs, and Climbing Plants Selection criteria, propagation methods, planting schemes, canopy management for trees; shrubs and herbaceous perennials selection and architecture; climbers and creepers importance, selection, and propagation techniques.

Module III: Garden Plants and Applications Annual plants selection and planting schemes; specialized plants (palms, ferns, grasses, cacti/succulents); pot plant selection, arrangement, and management; bio-aesthetic planning definition, need, and methodology

Module IV: Specialized Landscaping and Technology Urban, rural, and peri-urban landscaping; institutional landscaping (schools, hospitals, airports, industries); bonsai principles and management; lawn establishment and maintenance; CAD applications in landscape design.

# Commercial beekeeping



SGT UNIVERSITY

Course Code: VAC/FASC/006

## COURSE OBJECTIVES:

- To provide foundational knowledge of different types of honey bees, their biology, behaviour, and their ecological importance in agriculture.
- To develop awareness of seasonal bee management practices, including swarm control, feeding, queen rearing and pest and disease management.
- To introduce the methods of honey extraction, processing, and value addition for commercial purposes.
- To promote entrepreneurship by highlighting marketing strategies and business opportunities in the beekeeping sector.

## COURSE OUTCOMES:

- Knowledge & Skills: Understand honey bee biology and develop practical skills in hive management and seasonal care.
- Production & Processing: Learn techniques for honey extraction, processing, and value addition to bee products.
- Health & Management: Identify and manage pests, diseases, and improve colony strength through queen rearing and multiplication.
- Entrepreneurship & Marketing: Gain insights into the business, marketing, and pollination benefits of commercial beekeeping.

## COURSE CONTENT:

### Module I: Introduction to Beekeeping

- History and importance of beekeeping in agriculture
- Types of honey bees and their characteristics
- Understanding bee colony structure and roles (queen, worker, drone)

### Module II: Equipment and Hive Management

- Types of beehives and components (e.g., Langstroth, traditional hives)
- Tools and protective gear used in beekeeping
- Hive installation, handling, and seasonal management practices



### Module III: Bee Products and Processing

- Honey extraction methods and processing techniques
- Overview of bee products: wax, pollen, royal jelly, propolis
- Quality control, grading, and hygienic packaging of honey

### Module IV: Pests, Diseases, and Queen Rearing

- Common bee diseases and their management
- Pest control: ants, wax moth, Varroa mite, etc.
- Queen rearing methods and colony multiplication techniques

### Module V: Commercialization and Entrepreneurship

- Marketing and branding of bee products
- Beekeeping as a livelihood: cost-benefit analysis
- Pollination services and beekeeping in integrated farming systems

### REFERENCES:

- Singh, S. (2013). Beekeeping in India. Indian Council of Agricultural Research (ICAR).
- Mishra, R. C. (1995). Honeybees and Their Management in India. ICAR Publication.
- Sharma, P. L. (2005). Handbook of Beekeeping. Agrobios (India).
- Crane, E. (1990). Bees and Beekeeping: Science, Practice and World Resources. Heinemann Newnes.
- Winston, M. L. (1991). The Biology of the Honey Bee. Harvard University Press.
- FAO. (2009). Beekeeping and Sustainable Livelihoods. FAO Diversification Booklet No. 1.

Course Code: VAC/FASC/007

## **COURSE OBJECTIVES:**

- To provide students with a thorough understanding of the principles and practices involved in the production, processing, quality control, and distribution of high-quality seeds, emphasizing their crucial role in sustainable agriculture and food security.

## **COURSE OUTCOMES:**

- Explain the fundamental concepts of seed biology, development, and dormancy, and their implications for seed quality.
- Describe the various classes and types of seeds, and the regulatory framework governing seed production and certification.
- Apply appropriate agronomic practices for the production of quality seeds of different crops, including isolation, roughing, and harvesting.
- Analyse and evaluate seed quality parameters using various laboratory tests and techniques.
- Understand and implement post-harvest operations such as seed drying, processing, treatment, and storage to maintain seed viability and Vigor.
- Discuss the principles of seed marketing, distribution, and the role of seed legislation in the seed industry.
- Identify and address common challenges in seed production and quality management.

## **COURSE CONTENT:**

### Module I: Introduction to Seed Science and Technology

- Importance of Seed: Role of quality seed in agriculture, food security, and economic development.
- Definition of Seed: Botanical vs. agricultural definitions.
- Seed Structure and Development: Monocot and dicot seed structure, embryogenesis, endosperm development.
- Seed Dormancy: Types, causes, and methods of breaking dormancy.
- Seed Vigor: Definition, importance, and various Vigor tests.

### Module II: Seed Classes and Regulatory Framework

- Seed Classes: Breeder seed, foundation seed, registered seed, certified seed, truthfully labelled seed.
- Generation System of Seed Multiplication: Principles and practices.
- Seed Policy and Legislation: National and international seed policies, Seed Act, Seed Rules.
- Seed Certification: Objectives, principles, agencies involved, certification standards for different crops.
- Variety Release and Notification: Procedures for release and notification of new crop varieties.



### Module III: Agronomy of Seed Production

- General Principles of Seed Production: Site selection, land preparation, nutrient management, irrigation.
- Isolation Distance: Importance and standards for different crops (self-pollinated, cross-pollinated, often cross-pollinated).
- Rouging: Importance, timing, and methods for different crops.

### Module IV: Seed Quality Control and Testing

- Sampling of Seed Lots: Principles and methods.
- Physical Purity Analysis: Components, procedure, calculation.
- Germination Test: Methods, evaluation, and reporting.
- Moisture Content Determination: Importance and methods.
- Seed Vigor Tests: Cold test accelerated aging test, seedling vigor index.
- Seed Health Testing: Detection of seed-borne diseases and pests.
- Genetic Purity Testing: Grow-out test, molecular markers.
- Seed Adulteration and Detection: Methods to identify adulteration.

### Module V: Post-Harvest Seed Management

- Seed Harvesting: Methods and considerations for different crops.
- Seed Drying: Importance, principles, methods (natural and artificial).
- Seed Processing/Cleaning: Principles, types of cleaning equipment (cleaners, graders, specific gravity separators).
- Seed Treatment: Objectives, types of treatments (fungicides, insecticides, bio-agents), methods of application.
- Seed Packaging: Materials, methods, and labelling.
- Seed Storage: Factors affecting seed longevity, types of storage (hermetic, open), storage conditions, pest and disease management in storage.

### REFERENCES:

- Agarwal, R.L. (1997). Seed Technology. Oxford & IBH Publishing Co. Pvt. Ltd.
- Tanwar, N.S. & Singh, S.V. (1988). Indian Seed Technology. Kalyani Publishers.
- McDonald, M.B. & Copeland, L.O. (1997). Seed Production: Principles and Practices. Chapman & Hall.
- Basra, A.S. (Ed.). (1995). Seed Quality: Basic Mechanisms and Agricultural Implications. Food Products Press.
- Bewley, J.D., Bradford, K.J., Hilhorst, H.W.M., & Nonogaki, H. (2013). Seeds: Physiology of Development, Germination and Dormancy (3rd ed.). Springer.