REVISED UG SYLLABUS UNDER CBCS
(Implemented from Academic Year 2020-21)

PROGRAMME: FOUR YEAR B.Sc. (Hons)

Domain Subject: **B. Sc - Horticulture**

Skill Enhancement Courses (SECs) for Semester V, from 2022-23 (Syllabus/Curriculum)

Pair Options of SECs for Semester–V

(To choose one pair from the five alternate pairs of SECs)

Univ. Code	Course NO. 6 & 7	Name of Course	Th. Hrs. / Week	IE Mar-ks	EE Mar-ks	Credits	Prac. Hrs./ Week	Mar-ks	Credits
	6A	Ornamental Horticulture	3	25	75	3	3	50	2
	7A	Commercial Floriculture	3	25	75	3	3	50	2
		OR							
	6B	Precision Farming and Protected Cultivation	3	25	75	3	3	50	2
	7B	Post-harvest Management of Horticultural Crops	3	25	75	3	3	50	2
		OR							
	6C	Water Management in Horticultural Crops	3	25	75	3	3	50	2
	7C	Soil Fertility and Nutrient Management	3	25	75	3	3	50	2
		OR							
	6D	Dryland Horticulture	3	25	75	3	3	50	2
	7D	Plantation Crops	3	25	75	3	3	50	2

Note: For Semester–V, for the domain subject History, any one of the four pairs of SECs shall bechosen as courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C or 6D & 7D. The pair shall notbe broken (ABCD allotment is random, not on any priority basis).

Among the above Skill Enhancement Cources (SEC's) the Set 6A & 7A are Selected for V Sem Bsc. Horticulture
Remaining all Same

Selected

N. [illegible] Kumar
Lec in Botany

PRINCIPAL

PRINCIPAL
SYTR Govt. Degree College
MADAKASIRA, Anantapur (Dist.)

(Dr. D. M. Rao
BOS)

Semester-wise Revised Syllabus under CBCS, 2020-21
Four Year B.Sc. (Hons) - Semester – V (from 2022-23)
Subject: **B. Sc - Horticulture**
Course-6A: **Ornamental Horticulture**
(Skill Enhancement Course (Elective), 5 credits, Max Marks: 100 + 50

Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Acquire a critical knowledge of ornamental gardening and its significance.
2. Identify and explain living and non-living components in an ornamental garden.
3. Acquire skills on propagation and planting of various ornamental plants.
4. Perform managerial skills related to ornamental gardening.
5. Demonstrate skills of designing and developing ornamental gardens in public places.

Syllabus: (Hours: Teaching: 50, Lab: 30, Training: 05, Others incl. unit tests: 05)
(*Syllabi of theory and practical together shall be completed in 80 hours*)

Unit -1: Introduction to Ornamental Horticulture (10h)

1. History, Definition, scope of gardening, aesthetic values; types of gardens in India.
2. Landscaping, basic principles and basic components.
3. Principles of gardening, garden components and adornments.
4. Lawn types, establishment and maintenance; methods of designing rockery and water garden.

Unit -2: Types of Ornamental gardens (10h)

1. Special types of gardens, trees, their design, their walk-paths, bridges, constructed features.
2. Garden structures – greenhouse, glass house, net house.
3. Values in landscaping; propagation-planting of shrubs and herbaceous perennials.

Unit-3: Plants in Ornamental gardens (10h)

1. Importance, design values, propagation, planting of following annuals, biennials and perennials:
   (a) Climbers (b) Creepers (c) Palms (d) Ferns (e) Grasses (f) Cacti (g) Succulents

Unit-4: Ornamental gardening – public utility (10h)

1. Cultural operations in ornamental gardens.
2. Bio-aesthetic planning, definition, need; round country planning; urban planning and planting - avenues, educational institutions, villages.
3. Beautifying railway stations, dam sites, hydroelectric stations, colonies, river banks, Planting material for play grounds.

Unit-5: Ornamental gardening in residences (10h)

1. Bottle garden, terrariums.
2. Vertical gardens, roof gardens.
3. Culture of bonsai, art of making bonsai.

References:

1. Chadha, K.L. and Chaudhary, B. 1986. Ornamental Horticulture in India. Publication and Information division. ICAR, New Delhi.
2. K.V.Peter. 2009.Ornamental plants. New India Publishing Agency, New Delhi.
3. Arora, J.S. 2006. Introductory Ornamental Horticulture. Kalyani Publishers, Ludhiana
4. Bimaldas Chowdhury and Balai Lal Jana. 2014. Flowering Garden trees. Pointer publishers, Jaipur. India.

Co-Curricular Activities (student field training by teacher: 05 hours)**:**

a) Mandatory:

1. **For Teacher**: Training of students by the teacher in the classroom or in the laboratory for a total of not less than 10 hours on garden operations, lawn making, art of bonsai, plant propagation methods; using CAD in landscaping.
2. **For Student**: Individual laboratory work and visit to parks in public and private places, studying the living and non-living elements of an ornamental garden – landscaping; culminating writing and submission of a hand-written Field Work Report (various plants, growth habit, propagation, design of garden) not exceeding 10 pages in the given method or format.
3. Max marks for Field Work Report: 05
4. Suggested Format for Field work Report *(not exceeding 10 pages)*: Title page with student details, index page, objective, stepwise work done, findings, conclusions and acknowledgements.
5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Training of students by related industrial experts.
2. Assignments (including technical assignments like identifying ornamental plants, types and styles of gardens, propagation of garden plants, landscaping)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on plant propagation, garden operations, ornamental gardening.
5. Collection of material/figures/photos related to gardening and landscaping in India and abroad, writing and organizing them in a systematic way in a file.
6. Visits to gardens and parks in public places and/or private firms; famous gardens in A.P. and India etc.
7. Invited lectures and presentations on related topics by field/industrial experts

Course 6A: Ornamental Horticulture – Practical syllabus

Learning Outcomes: On successful completion of this practical course, student will be able to:

1. Identify various components required for ornamental garden development.
2. Perform various skills related to establishment and maintenance of an ornamental garden.
3. Demonstrate skills of making developing a lawn and bonsai.
4. Make landscape design using CAD.

Practical (Laboratory) Syllabus: (30 hrs)

1. Identification and description of various plants grown in ornamental gardens.
2. Tools, implements and containers used in ornamental gardening.
3. Planning, designing and establishment of garden features viz. lawn, hedge and edge, rockery etc.,
4. Demonstration of types and styles of gardens using photos or videos.
5. Planning, designing and establishment of water garden, carpet bedding, shade garden, roof garden.
6. Preparation of land for lawn and planting.
7. Exposure to CAD (Computer Aided Designing)
8. Demonstration of bonsai making.
9. Study and creation of terrariums, vertical garden.

Model Question Paper Pattern for Practical Examination

Semester – V/ Horticulture Skill Enhancement Course

Ornamental Horticulture

Max. Time: 3 Hrs. Max. Marks: 50

1. Demonstration of making a lawn /creating water garden 'A'	8
2. Demonstration of making hedge and edge/ garden operations' 'B'	10
3. Demonstration of bonsai technique/ designing a landscape 'C'	12
4. Scientific observation and data analysis	4 x 3 = 12
D. Climber/creeper/ palm	
E. Fern/Cactus/succulent	
F. Garden adornments	
G. Tool/implement/container	
5. Record + Viva-voce	5+3 = 8

Semester-wise Revised Syllabus under CBCS, 2020-21
Four Year B.Sc. (Hons) - Semester – V (from 2022-23)
Subject: **B. Sc - Horticulture**
Course-7A: **Commercial Floriculture**
(Skill Enhancement Course (Elective), 5 credits, Max Marks: 100 + 50

Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Understand the significance of flowers in human life.
2. Acquire skills related to production techniques in floriculture.
3. Explain the breeding techniques of some flowering plants.
4. Demonstrate skills of protected cultivation in floriculture.
5. Perform skills in relation to post-harvest operations in floriculture.

Syllabus: (Hours: Teaching: 50, Lab: 30, Training: 05, Others incl. unit tests: 05)
(*Syllabi of theory and practical together shall be completed in 80 hours*)

Unit-1: Basic concepts of floriculture (10h)

1. Aesthetic, cultural and industrial importance of flowers; domestic and export marketing of flowers.
2. Floriculture - Importance, area and production in Andhra Pradesh and India.
3. Scope and importance of commercial floriculture in A.P., and India.

Unit-2: Production technology-1 (10h)

1. Production techniques of following flowering plants for domestic and export market:
   (a) Rose (b) *Chrysanthemum* (c) Marigold (d) Tuberose (e) *Crossandra* (f) Jasmine

Unit-3: Production technology-2 (10h)

1. Production techniques of following flowering plants for domestic and export market:
   (a) *Anthurium* (b) *Gerbera* (c) *Gladiolus* (d) *Dahlia* (e) *Heliconia* (f) Orchid

Unit-4:Plant breeding of flowering ornamentals (10h)

1. Objectives and techniques in ornamental plant breeding.
2. Introduction, selection, hybridization, mutation and biotechnological technique for improvement of following ornamental and flower crops.
   (a) Carnation (b) *Petunia* (c) *Geranium* (d) *Cosmos* (e) *Hibiscus* (f) Snapdragon

Unit-5: Post-harvest practices in floriculture (10h)

1. Growing of flowering plants under protected environments such as glass house, plastic house, net house, etc.
2. Importance of flower arrangement; Ikebana - techniques, types, suitable flowers and cut foliage.
3. Post-harvest technology of cut and loose flowers in respect of commercial flower crops.
4. Dehydration techniques for drying of flowers, scope importance and status.

References:

1. T.K. Bose, L.P. Yadav, P. Patil, P. Das and V.A. Partha Sarthy.2003. Commercial flowers. Partha Sankar Basu, Nayaudyog,206, Bidhan Sarani, Kolkata
2. S.K. Bhattacharjee and L.C. De. 2003. Advanced Commercial Floriculture. Aavishkar Publishers, Distributors, Jaipur, India.
3. V.L. Sheela, 2008. Flower for trade. New India Publishing Agency, New Delhi
4. Dewasish Choudhary and Amal Mehta. 2010. Flower crops cultivation and management. Oxford Book Company, Jaipur, India.

Co-Curricular Activities (student field training by teacher: 05 hours**):**

a) Mandatory:

1. **For Teacher**: Training of students by the teacher in the classroom or in the laboratory for a total of not less than 10 hours on intercultural operations in floriculture, propagation techniques, breeding methods, post-harvest handling of flowers; floral designs and bouquet making.
2. **For Student**: Individual laboratory work and visit to floriculture fields/floriculture department in a Horticulture University/college - studying the cultivation practices from sowing/planting to harvesting of flowers, post-harvest techniques - written Field Work Report (various flowering plants, propagation, utilization/marketing) not exceeding 10 pages in the given method or format.
3. Max marks for Field Work Report: 05
4. Suggested Format for Field work Report *(not exceeding 10 pages)*: Title page with student details, index page, objective, stepwise work done, findings, conclusions and acknowledgements.
5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Training of students by related industrial experts.
2. Assignments (including technical assignments like identifying commercially important flowering plants, cultivation practices, propagation and breeding methods, post-harvest practices)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on intercultural operations, cultivation, shelf and vase-life, commercial products from flowers.
5. Collection of material/figures/photos related to commercial floriculture in India and abroad, writing and organizing them in a systematic way in a file.
6. Visits to Floriculture fields and Horticulture University/college.
7. Invited lectures and presentations on related topics by field/industrial experts.

Course 6A: Commercial Floriculture – Practical syllabus

Learning Outcomes: On successful completion of this practical course, student will be able to:

1. Identify different flowering plants of commercial value.
2. Perform skills in propagation of flowering plants.
3. Demonstrate skills of post-harvest handling of flowers.
4. Perform skills of floral arrangements or making floral products.

Practical (Laboratory) Syllabus: (30 hrs)

1. Identification of commercially important floricultural crops.
2. Propagation technique in *Hibiscus*/Rose/*Chrysanthemum*/tuberose.
3. Propagation technique in *Gladiolus*/carnation/*Petunia*
4. Sowing of seeds and raising of seedlings of a flowering plant.
5. Training and pruning of rose/Jasminum.
6. Drying and preservation of flowers.
7. Use of chemicals and other compounds for prolonging the vase life of cut flowers.
8. Flower arrangement practices.
9. Preparation of bouquets, garland,veni and gajara.

Model Question Paper Pattern for Practical Examination

Semester – V/ Horticulture Skill Enhancement Course

Commercial Floriculture

Max. Time: 3 Hrs. Max. Marks: 50

1. Perform seed sowing and nursery raising /propagation of a flowering plant 'A' 8
2. Perform a breeding technique of a flowering plant/making floral design 'B' 10
3. Making of bouquet/ garland/veni/gajara 'C' 12
4. Scientific observation and data analysis 4 x 3 = 12
   D. Commercially important flowering plant
   E. Propagule for establishment
   F. Preservation method
   G. Product of floricuture
5. Record + Viva-voce 5+3 = 8

Semester-wise Revised Syllabus under CBCS, 2020-21
Four Year B.Sc. (Hons) - Semester – V (from 2022-23)
Subject: **B. Sc - Horticulture**
Course-6B: **Precision Farming and Protected Cultivation**
(Skill Enhancement Course (Elective), 5 credits, Max Marks: 100 + 50

Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Understand the importance of precision farming in present scenario.
2. Explain different types of green houses used for precision farming.
3. Acquire skills on construction of green houses.
4. Perform managerial skills related to precision faming under protected structures.
5. Demonstrate skills on cultivation high-value horticulture plants through precision farming.

Syllabus: (Hours: Teaching: 50, Lab: 30, Training: 05, Others incl. unit tests: 05)
(*Syllabi of theory and practical together shall be completed in 80 hours*)

Unit -1: Introduction to Precision farming (10h)

1. Precision farming – Introduction and history, Importance and Scope.
2. Laser leveling, mechanized direct seed sowing seedling and sapling transplanting.
3. Mapping of soils and plant attributes.

Unit -2: Management in Precision farming (10h)

1. Site specific input application.
2. Weed management, Insect pests and disease management.
3. Yield mapping in horticultural crops.

Unit-3: Types of Green houses (10h)

1. Green house technology – Introduction viz. Importance, scope, advantages and dis-advantages.
2. Types of Green Houses based on shape, utility, construction and cladding materials.
3. Plant response to Greenhouse environment.

Unit-4: Construction of Green house (10h)

1. Planning and design of greenhouses.
2. Design criteria of greenhouse for cooling and heating purposes.
3. Green house equipment; Materials of construction for traditional and low cost green houses.
4. Irrigation systems used in greenhouses.

Unit-5: Farming in Green house (10h)

1. Net house cultivation, Passive solar green house, Green house drying.
2. Choice of crops for cultivation under greenhouses: Capsicum, Cucumber, Broccoli, Cabbage, Spinach, Lettuce.
3. Cost estimation and economic analysis.

References:

1. Balraj Singh. 2006. Protected cultivation of vegetable crops. Kalyani Publishers, Ludhiana.
2. Brahma Singh, 2014.Advances in Protected Cultivation. New India Publishing Agency. New Delhi.
3. Jitendra Singh, 2015.Precision Farming in Horticulture. New India Publishing Agency. New Delhi.
4. Reddy, P. and Parvatha. 2011. Sustainable crop protection under Protected Cultivation. Springer Publications. USA.

Co-Curricular Activities (student field training by teacher: 05 hours):

a) **Mandatory:**

1. **For Teacher**: Training of students by the teacher in the classroom or in the laboratory for a total of not less than 10 hours on equipment and material in green house, preparation of soil and other media, irrigation systems and other practices in a green house.
2. **For Student**: Individual laboratory work and visit to green house in a Horticulture University/ college and/or private sector, studying the structure, material and equipment, growing media, farming practices, irrigation, INM and IPM; culminating writing and submission of a hand-written Field Work Report (various crop plants, yield, economics) not exceeding 10 pages in the given method or format.
3. Max marks for Field Work Report: 05
4. Suggested Format for Field work Report *(not exceeding 10 pages)*: Title page with student details, index page, objective, stepwise work done, findings, conclusions and acknowledgements.
5. Unit tests (IE).

b) **Suggested Co-Curricular Activities**

1. Training of students by related industrial experts.
2. Assignments (including technical assignments like types and styles of green houses, material and equipment, advantages and disadvantages of protected cultivation, yield-cost benefit analysis)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on precision farming; protected cultivation of high value fruit and vegetable crops.
5. Collection of material/figures/photos related to protected cultivation of horticulture crops in India and abroad, writing and organizing them in a systematic way in a file.
6. Visits to protected cultivation facilities in a Horticulture University or college and/or private firms.
7. Invited lectures and presentations on related topics by field/industrial experts