36. Determination of moisture content of sample using moisture balance method; Determination of microscopic characters
37. Estimation of Rutin

Syllabus Prescribed for 2022 Year	**PG. Programme**
Programme	**M.Sc. Botany**
Semester II	
Code of the Course Subject	**Title of the Couse/ Subject** **No. of periods/ week**
BOEC I	**Floriculture and nursery Management** **04**

Cos :

Upon the satisfactory completion of class assignments and the classroom experiences provided in the course, the student would be able to:

1. List and describe procedural steps necessary during floriculture crop production from propagation to marketing.
2. Identify and define environmental factors that regulate growth and flowering of floriculture crops.
3. Develop production schedules for floriculture crops.
4. Grow several crops in the greenhouse through nursery management.
5. Identify and name some floriculture crops and classify them as potted, cut and/or garden crops.
6. Develop methodology for production of horticultural crops through seeds.

Unit-I	Floriculture: Concept, Scope and importance of Floriculture, Scope of Floriculture in India, Study of Floricultural tools.
Unit-II	Common Garden operation using different implements, commercial floriculture, soil selection, preparation of soil nursery beds, system of plating, water and nutrient management, bed management, propagation by cutting, budding, grafting.
Unit-III	Harvesting & Processing of Flowers: Harvesting technique, Postharvest handling and grading, packing and storage, transportation & marketing commerce.
Unit-IV	Nursery Site: Types of Nursery, Factors to be consider for Nursery establishment, Size of Nursery, Soil type, Production area, Germination section, Transplanting area.
Unit-V	Horticultural crop management: Seeds handling, seed procurement and storage, viability, Germination process, time of sowing, soil of sowing, media for growing plants, Soil, Sand, Peat, Sphagnum Moss, Vermiculture, Cockpit, plant protect in Nursery Management.

Suggested Reading:

1. Hartmann, H.T., Kester D.E., Davis, F.T and R.L Geneve (2010) Plant Propagation: Principles and practices (8th Edition).
2. Sharma, R.R and Srivastav M (2004): Plant propagation and nursery management (First Edition) International Book Distributing Co.
3. K.K.Nanda and V.K. Kochhar (1985). Vegetative propagation of plants. Kalyani Publisher- New Delhi-Ludhiana.
4. Bose,T.K.Sanyal, D and Sandhu, M.L.(1998) Propagation of Horticultural crops. Naya Prakash Publishers, Kolkatta.
5. Hartman, H.T. and Beutel, A (1979). Propagation of temperate zone fruit plants. Leaflet, California, Agri. Expt. Sta. California.
6. Website URL: http//www.wikipedia.org/wiki/plant propagation

Learning Outcome:

Upon completion of this course successfully, students would be able to

1. learn management practices for wholesale container and field production nurseries.
2. Understand Business development, management, site selection and financial aspects.
3. Acquire knowledge of harvesting and processing of nursery plants.

Scheme of Teaching, Learning & Examination leading to the Degree in Master of Science in the Programme Botany
(Two year- Four Semester Degree Programme- C.B.C.S.)
(M.Sc. Part II) Semester III

S. No.	Subject	Subject Code	Teaching & Learning Scheme							Duration of Exam Hours	Examination & Evaluation Scheme						
			Teaching Periods Per Week				Credits				Theory		Practical		Total Marks	Minimum Passing	
			L	T	P	Total	L/T	Practical	Total		Theory + MCQ External	Theory Internal	Internal	External		Marks	Grade
1	DSC-IX Systematics and Taxonomy of Angiosperms	**BOT 301**	**4**	**-**	**-**	**4**	**4**	**-**	**4**	**4**	**80**	**20**	**-**	**-**	**100**	**40**	**P**
2	DSC-X Paleobotany, Evolution and Diversity of Gymnosperms.	**BOT 302**	**4**	**-**	**-**	**4**	**4**	**-**	**4**	**3**	**80**	**20**	**-**	**-**	**100**	**40**	**P**
3	DSE- I	**BOTE-I 301 to 308**	**4**	**-**	**-**	**4**	**4**	**-**	**4**	**3**	**80**	**20**	**-**	**-**	**100**	**40**	**P**
4	DSE -II	**BOTE-II 301 to 308**	**4**	**-**	**-**	**4**	**4**	**-**	**4**	**3**	**80**	**20**	**-**	**-**	**100**	**40**	**P**
5	Lab- 5 Practical Based on DSC IX & X	BOL 301	**-**	**-**	**6**	**6**	**-**	**3**	**3**	*	**-**	**-**	**-**	**100**	**100**	**50**	**P**
6	Lab- 6 Practical Based on DSE I & DSE- II	BOL 302-309	**-**	**-**	**6**	**6**	**-**	**3**	**3**	*	**-**	**-**	**-**	**100**	**100**	**50**	**P**
7	# Internship/ Field Work/ Work Experience @																
8	**Open elective/ GIC/ Open skill/ MOOC* Post-harvest Technology**	**OEC I 303**	**4**	**-**	**-**	**4**	**4**	**-**	**4**	**3**	**80**	**20**	**-**	**-**	**100**	**40**	**P**
Total						**28**			**26**						**600**		

L: Lecture, T: Tutorial, P: Practical

Student may complete their Internship/ Field Work/ Work experience in First or Second or Third semester of Master of Science in the Programme, according to their convenience; @ denotes Non-Examination credits.

Note: Internship/ Apprenticeship/ Field Work Experience (during vacations of semester I to III. This will carry 2 credits for learning of 60 hours or 3 Credits for learning of 90 hours. Its credits and grades will be reflected in final semester IV credit grade report.

-OEC (Optional) can be studied during semester I to IV

Sr. No.	Course	Code
1	DSC-IX Systematics and Taxonomy of Angiosperms	**BOT 301**
2	DSC-X Paleobotany, Evolution and Diversity of Gymnosperms.	**BOT 302**
3	DSE- I 1. PLANT TISSUE CULTURE-I (Elective) 2. BIOINFORMATICS-I (Elective) 3. Angiosperm Taxonomy, Phytochemistry and Pharmacognosy-I (Elective) 4. Molecular Systematics I (Elective) 5. ADVANCED PLANT PHYSIOLOGY – I (Elective) 6. MOLECULAR BIOLOGY, BIOTECHNOLOGY AND PLANT BREEDING-I (Elective) 7. REPRODUCTIVE BIOLOGY OF ANGIOSPERMS-I (Elective) 8. PLANT PATHOLOGY-I (Elective)	**BOTE-I** **301 to 308**
4	DSE -II 1. PLANT TISSUE CULTURE-II (Elective) 2. BIOINFORMATICS-II (Elective) 3. Angiosperm Taxonomy, Phytochemistry and Pharmacognosy-II (Elective) 4. Molecular Systematics II (Elective) 5. ADVANCED PLANT PHYSIOLOGY –II (Elective) 6. MOLECULAR BIOLOGY, BIOTECHNOLOGY AND PLANT BREEDING-II (Elective) 7. REPRODUCTIVE BIOLOGY OF ANGIOSPERMS-II (Elective) 8. PLANT PATHOLOGY-II (Elective)	**BOTE-II** **301 to 308**
5	Lab- 5 Practical Based on DSC IX & X	**BOL 301**
6	Lab- 6 Practical Based on DSE I & DSE- II	**BOL 302-309**
7	Open elective/ GIC/ Open skill/ MOOC* Post-harvest Technology	**OEC I 303**

Scheme of Teaching, Learning & Examination leading to the Degree in Master of Science in the Programme Botany
(Two year- Four Semester Degree Programme- C.B.C.S.)
(M.Sc. Part II) Semester IV

S. No.	Subject	Subject Code	Teaching & Learning Scheme							Duration of Exam Hours	Examination & Evaluation Scheme						
			Teaching Periods Per Week				Credits				Theory		Practical		Total Marks	Minimum Passing	
			L	T	P	Total	L/T	Practical	Total		Theory+ MCQ External	Theory Internal	Internal	External		Marks	Grade
1	DSC-XI Applied Botany	BOT 401	4	-	-	4	4	-	4	3	80	20	-	-	100	40	P
2	DSC-XII Plant Ecology	BOT 402	4	-	-	4	4	-	4	3	80	20	-	-	100	40	P
3	DSC -XIII Environmental Ecology	BOT 403	4	-	-	4	4	-	4	3	80	20	-	-	100	40	P
4	SEC- I Plant Biotechnology and Genetic Engineering	BOTS 401	4	-	-	4	4	-	4	3	80	20	-	-	100	40	P
5	Lab- 7 Practical Based on DSC XI, XII, XIII & SEC-I	BOL 401	-	-	6	6	-	3	3	*	-	-	-	100	100	50	P
6	Lab-8 Practical Based on Project	BOL 402	-	-	6	6	-	3	3	*	-	-	-	100	100	50	P
7	# Internship/ Field Work/ Work Experience @																
8	**Open elective/ GIC/ Open skill/ MOOC* Gardening and Landscaping**	OEC 401	4	-	-	4	4	-	4	3	80	20	-	-	100	40	P
Total						28			26						600		

L: Lecture, T: Tutorial, P: Practical

Student may complete their Internship/ Field Work/ Work experience in First or Second or Third semester of Master of Science in the Programme, according to their convenience; @ denotes Non-Examination credits.

Note: Internship/ Apprenticeship/ Field Work Experience (during vacations of semester I to III. This will carry 2 credits for learning of 60 hours or 3 Credits for learning of 90 hours. Its credits and grades will be reflected in final semester IV credit grade report.

-OEC (Optional) can be studied during semester I to IV.

Sr. No.	Course	Code
1	DSC-XI Applied Botany	BOT 401
2	DSC-XII Plant Ecology	BOT 402
3	DSC -XIII Environmental Ecology	BOT 403
4	SEC- I Plant Biotechnology and Genetic Engineering	BOTS 401
5	Lab- 7 Practical Based on DSC XI, XII, XIII & SEC-I	BOL 401
6	Lab-8 Practical Based on Project	BOL 402
7	Open elective/ GIC/ Open skill/ MOOC* Gardening and Landscaping	OEC 401