

**The Kelkar Education Trust's  
V G Vaze College of Arts, Science and Commerce  
(Autonomous)**



**The Kelkar Education Trust's  
V G Vaze College of Arts, Science and Commerce  
(Autonomous)**

**Syllabus for T.Y.B.Sc.  
(June 2020 Onwards)**

**Program: B.Sc.**

**Semester VI**

**Course Title: BOTANY**

<b>Course Code</b>	<b>Paper Title</b>	<b>Credit</b>
<b>SBO601</b>	<b>PLANT DIVERSITY VII</b>	<b>2.5</b>
<b>SBO602</b>	<b>PLANT DIVERSITY VIII</b>	<b>2.5</b>
<b>SBOP601</b>	<b>PRACTICALS (601 &amp; 602)</b>	<b>3.0</b>
<b>SBO603</b>	<b>FORM AND FUNCTIONS VI</b>	<b>2.5</b>
<b>SBO604</b>	<b>CURRENT TRENDS IN PLANT SCIENCES IV</b>	<b>2.5</b>
<b>SBOP602</b>	<b>PRACTICALS (603 &amp; 604)</b>	<b>3.0</b>

**The Kelkar Education Trust's  
V G Vaze College of Arts, Science and Commerce  
(Autonomous)**

**The Kelkar Education Trust's  
V G Vaze College of Arts, Science and Commerce  
(Autonomous)**

**1. Syllabus as per Choice Based Credit System**

<b>i) Name of the Programme</b>	<b>:</b>	<b>B.Sc. (BOTANY)</b>
<b>ii) Course Code</b>	<b>:</b>	<b>SBO601</b>
<b>iii) Course Title</b>	<b>:</b>	<b>PLANT DIVERSITY-VII</b>
<b>iv) Semester wise Course Contents</b>	<b>:</b>	<b>Copy of the syllabus Enclosed</b>
<b>v) References and additional references</b>	<b>:</b>	<b>Enclosed in the Syllabus</b>
<b>vi) Credit structure</b>	<b>:</b>	
<b>No. of Credits per Semester</b>	<b>:</b>	<b>2.5 + 1.5 = 04</b>
<b>vii) No. of lectures per Unit</b>	<b>:</b>	<b>15</b>
<b>viii) No. of lectures per week</b>	<b>:</b>	<b>04</b>
<b>ix) No. of Practicals per week</b>	<b>:</b>	<b>01 (per batch of 25 students)</b>
<b>2. Scheme of marking</b>		<b>60 Marks External assessment 40 Marks Internal Assessment</b>
<b>3. Special notes, if any</b>		<b>No</b>
<b>4. Eligibility, if any</b>		<b>As laid down in the College Admission brochure / website</b>
<b>5. Fee structure</b>		<b>As per College Fee Structure specifications</b>
<b>6. Soecial Ordinance/Resolutions, if any</b>		<b>No</b>

**The Kelkar Education Trust's  
V G Vaze College of Arts, Science and Commerce  
(Autonomous)**

**Programme: TYBSc**

**Semester: VI**

**Course PLANT DIVERSITY VII**

**Course Code : SBO601**

Teaching Scheme (Hrs/Week)				Continuous Internal Assessment (CIA) 40 marks					End Semester Examination	Total
L	T	P	C	CIA- 1	CIA- 2	CIA- 3	CIA -4	Lab	Written	
4	-	1	2.5	20	15	05		-	60	100
<b>Max. Time, End Semester Exam (Theory) -2Hrs.</b>										

**Course Objectives**

1.	To recognize and identify and understand the life cycles of bryophytes.
2.	To study in detail classification and general characters of three classes of Pteridophytes and identify as well as describe the lifecycles of one example from each class.
3.	To study evolutionary aspects and economic utilization of Byrophytes and Pteridophytes.
4.	To identify, describe and study in detail the life cycles of three Gymnosperms.

**The Kelkar Education Trust's  
V G Vaze College of Arts, Science and Commerce  
(Autonomous)**

Course (SBO601)			
Unit No.	Module No.	Content	Lectures
1		<b>Bryophyta (G. M. Smith Classification system to be followed)</b> <ul style="list-style-type: none"> <li>● Life cycle of <i>Marchantia</i></li> <li>● Life cycle of <i>Pelia</i></li> </ul>	15
2		<b>Pteridophyta (G. M. Smith Classification System to be followed)</b> <ul style="list-style-type: none"> <li>● Calamophyta – Classification, general characters; Life cycle of <i>Equisetum</i></li> <li>● Pterophyta - Classification, general characters; Life cycle of <i>Marselia</i></li> </ul>	15
3		<b>Bryophytes and Pteridophytes: Applied aspects</b> <ul style="list-style-type: none"> <li>● Economic importance of Bryophytes.</li> <li>● Evolution of Sporophyte and Gametophyte in Bryophytes.</li> <li>● Economic importance of Pteridophytes</li> <li>● Types of Sori and Evolution of Sori in Pteridophytes.</li> </ul>	15
4		<b>Gymnosperms (Chamberlain's Classification System to be followed)</b> <ul style="list-style-type: none"> <li>● Life cycle of <i>Gnetum</i></li> <li>● Life cycle of <i>Ephedra</i></li> <li>● Distribution of Gymnosperms in India</li> </ul>	15
<b>Total No. of Lectures</b>			<b>60</b>

**The Kelkar Education Trust's  
V G Vaze College of Arts, Science and Commerce  
(Autonomous)**

**The Kelkar Education Trust's  
V G Vaze College of Arts, Science and Commerce  
(Autonomous)**

**1. Syllabus as per Choice Based Credit System**

**2.**

<b>i) Name of the Programme</b>	<b>:</b>	<b>BSc (BOTANY)</b>
<b>ii) Course Code</b>	<b>:</b>	<b>SBO602</b>
<b>iii) Course Title</b>	<b>:</b>	<b>PLANT DIVERSITY-VIII</b>
<b>iv) Semester wise Course Contents</b>	<b>:</b>	<b>Copy of the syllabus Enclosed</b>
<b>v) References and additional references</b>	<b>:</b>	<b>Enclosed in the Syllabus</b>
<b>vi) Credit structure</b>	<b>:</b>	
<b>No. of Credits per Semester</b>	<b>:</b>	<b>2.5 + 1.5 = 04</b>
<b>vii) No. of lectures per Unit</b>	<b>:</b>	<b>15</b>
<b>viii) No. of lectures per week</b>	<b>:</b>	<b>04</b>
<b>ix) No. of Practicals per week</b>	<b>:</b>	<b>02 (per batch of 25 students)</b>
<b>2.Scheme of marking</b>		<b>60 Marks External assessment 40 Marks Internal Assessment</b>
<b>3.Special notes, if any</b>		<b>No</b>
<b>4.Eligibility, if any</b>		<b>As laid down in the College Admission brochure / website</b>
<b>5.Fee structure</b>		<b>As per College Fee Structure specifications</b>
<b>6.Social Ordinance/Resolutions, if any</b>		<b>No</b>

**The Kelkar Education Trust's**  
**V G Vaze College of Arts, Science and Commerce**  
**(Autonomous)**

**Programme: TYBSc**

**Semester: VI**

**Course : PLANT DIVERSITY – VIII**

**Course Code : SBO602**

Teaching Scheme (Hrs/Week)				Continuous Internal Assessment (CIA) 40 marks					End Semester Examination	Total
L	T	P	C	CIA-1	CIA-2	CIA-3	CIA-4	Lab	Written	
4	-	1	2.5	20	15	05		-	60	100
<b>Max. Time, End Semester Exam (Theory) -2Hrs.</b>										

**Course Objectives**

1.	To study contribution of Botanical gardens, BSI to Angiosperm study and provide plant description, describe the morphological and reproductive structures of seven families.
2.	To gain exposure to a phylogenetic system of classification.
3.	To gain insight into the anatomical adaptations of different ecological plant groups.
4.	To understand development plant of male and female gametophytes, embryonic structure and development.
5.	To understand the different aspects and importance of Biodiversity and utilize them for conservation of species so as to prevent further loss or extinction of Biodiversity and preserve the existing for future generations.

Course (SBO602)			
Unit No.	Module No.	Content	Lectures
1		<b>Angiosperms II</b> <ul style="list-style-type: none"> <li>• Bentham and Hooker's system of classification for flowering plants up to family with respect to the following prescribed families and economic importance, medicinal importance and fruit morphology for members of the families</li> <li>1. Rhamnaceae</li> <li>2. Combretaceae</li> <li>3. Asteraceae</li> <li>4. Asclepiadaceae</li> <li>5. Labiatae</li> <li>6. Euphorbiaceae</li> </ul>	15



**The Kelkar Education Trust's**  
**V G Vaze College of Arts, Science and Commerce**  
**(Autonomous)**

		<p>7. Graminae (Poaceae)</p> <ul style="list-style-type: none"> <li>● Hutchinson's classification system of Angiosperms. Brief Introduction, Merits and Demerits</li> </ul>	
<b>2</b>		<p><b>Anatomy II</b></p> <ul style="list-style-type: none"> <li>● <b>Ecological anatomy (with one example each)</b> <ol style="list-style-type: none"> <li>1. Hydrophytes – submerged, floating, rooted</li> <li>2. Mesophytes</li> <li>3. Sciophytes</li> <li>4. Halophytes</li> <li>5. Epiphytes</li> <li>6. Xerophytes</li> </ol> </li> </ul>	<b>15</b>
<b>3</b>		<p><b>Embryology of Angiosperms</b></p> <ul style="list-style-type: none"> <li>● Microsporangium, Microsporogenesis, Development of male gametophyte</li> <li>● Megasporangium, Types of ovules,</li> <li>● Megasporogenesis- Development of <i>Polygonum</i> type of embryo sac</li> <li>● Double fertilization : Process and Significance</li> <li>● Development of Dicot embryo –<i>Capsella</i></li> </ul>	<b>15</b>
<b>4</b>		<p><b>Plant Geography</b></p> <ul style="list-style-type: none"> <li>● Phytogeographical regions of India.</li> <li>● <b>Biodiversity:</b> <ol style="list-style-type: none"> <li>1. Levels of biodiversity</li> <li>2. Importance and status of biodiversity</li> <li>3. Loss of biodiversity</li> <li>4. Conservation of biodiversity</li> <li>5. Genetic diversity- Molecular characteristics</li> </ol> </li> </ul>	<b>15</b>
<b>Total No. of Lectures</b>			<b>60</b>

**The Kelkar Education Trust's**  
**V G Vaze College of Arts, Science and Commerce**  
**(Autonomous)**

SBOP601		PRACTICAL I & II	
PRACTICAL-I		PLANT DIVERSITY VII	
Credits 1.5			
Sr. No.	Description		
1	<b>Bryophyta (G.M. Smith Classification System to be followed)</b> <ul style="list-style-type: none"> <li>● Study of stages in the life cycle of the following Bryophyta from fresh / preserved material and permanent slides               <ol style="list-style-type: none"> <li>1. <i>Marchantia</i></li> <li>2. <i>Pelia</i></li> </ol> </li> </ul>		
2	<b>Pteridophyta (G.M. Smith Classification System to be followed)</b> <ul style="list-style-type: none"> <li>● Study of stages in the life cycles of the following Pteridophytes from fresh / preserved material and permanent slides               <ol style="list-style-type: none"> <li>1. <i>Equisetum</i></li> <li>2. <i>Marselia</i></li> </ol> </li> </ul>		
3	<b>Bryophytes and Pteridophytes: Applied aspects</b> <ul style="list-style-type: none"> <li>● Economic importance of Bryophyta</li> <li>● Economic importance of Pteridophyta</li> <li>● Types of Sporophytes in Bryophyta (from Permanent slides)</li> <li>● Types of Sori and Soral Arrangement in Pteridophytes</li> </ul>		
4	<b>Gymnosperms (Chamberlain's Classification System to be followed)</b> <ul style="list-style-type: none"> <li>● Study of stages in the life cycles of the following Gymnosperms from fresh / preserved material and permanent slides.               <ol style="list-style-type: none"> <li>1. <i>Gnetum</i></li> <li>2. <i>Ephedra</i></li> </ol> </li> </ul>		

**The Kelkar Education Trust's**  
**V G Vaze College of Arts, Science and Commerce**  
**(Autonomous)**

SBOP601		PRACTICAL I & II	
PRACTICAL-II		PLANT DIVERSITY VIII	Credits 1.5
Sr. No.	Description		
1	<p><b>Angiosperms II</b></p> <ul style="list-style-type: none"> <li>● Study of one plant from each of the following Angiosperm families as per Bentham and Hooker's system of classification.               <ol style="list-style-type: none"> <li>1. Rhamnaceae</li> <li>2. Combretaceae</li> <li>3. Asteraceae</li> <li>4. Asclepiadaceae</li> <li>5. Labiatae</li> <li>6. Euphorbiaceae</li> <li>7. Graminae (Poaceae)</li> </ol> </li> <li>● Morphological peculiarities and economic importance of the members of the above-mentioned Angiosperm families</li> <li>● Identify the genus and species with the help of flora</li> </ul>		
2	<p><b>Anatomy II</b></p> <ul style="list-style-type: none"> <li>● Study of Ecological Anatomy of               <ol style="list-style-type: none"> <li>1. Hydrophytes: <i>Hydrilla</i> stem, <i>Nymphaea</i> petiole, <i>Eichhornia</i> offset</li> <li>2. Epiphytes: Orchid root</li> <li>3. Sciophytes: <i>Peperomia</i> leaf</li> <li>4. Xerophytes: <i>Nerium</i> leaf, <i>Opuntia</i> phylloclade</li> <li>5. Halophytes: <i>Avicennia</i> leaf and pneumatophore,</li> <li>6. Mesophytes: <i>Vinca</i> leaf</li> </ol> </li> </ul>		
3	<p><b>Embryology</b></p> <ul style="list-style-type: none"> <li>● Study of various stages of Microsporogenesis, Megasporogenesis and Embryo Development with the help of permanent slides / photomicrographs</li> <li>● Mounting of Monocot (Maize) and Dicot (Castor and Gram) embryo</li> <li>● <i>In vivo</i> growth of pollen tube in <i>Portulaca / Vinca</i></li> </ul>		
4	<p><b>Plant Geography</b></p> <ul style="list-style-type: none"> <li>● Study of phytogeographic regions of India</li> <li>● Problems based on Simpson's diversity Index</li> </ul>		

**The Kelkar Education Trust's  
V G Vaze College of Arts, Science and Commerce  
(Autonomous)**

**1. Syllabus as per Choice Based Credit System**

<b>i) Name of the Programme</b>	<b>:</b>	<b>B. Sc (BOTANY)</b>
<b>ii) Course Code</b>	<b>:</b>	<b>SBO603</b>
<b>iii) Course Title</b>	<b>:</b>	<b>FORM AND FUNCTIONS - VI</b>
<b>iv) Semester wise Course Contents</b>	<b>:</b>	<b>Copy of the syllabus Enclosed</b>
<b>v) References and additional references</b>	<b>:</b>	<b>Enclosed in the Syllabus</b>
<b>vi) Credit structure</b>	<b>:</b>	
<b>No. of Credits per Semester</b>	<b>:</b>	<b>2.5 + 1.5 = 04</b>
<b>vii) No. of lectures per Unit</b>	<b>:</b>	<b>15</b>
<b>viii) No. of lectures per week</b>	<b>:</b>	<b>04</b>
<b>ix) No. of Practicals per week</b>	<b>:</b>	<b>01 (per batch of 25 students)</b>
<b>2. Scheme of marking</b>		<b>60 Marks External assessment 40 Marks Internal Assessment</b>
<b>3. Special notes, if any</b>		<b>No</b>
<b>4. Eligibility, if any</b>		<b>As laid down in the College Admission brochure / website</b>
<b>5. Fee structure</b>		<b>As per College Fee Structure specifications</b>
<b>6. Soecial Ordinance/Resolutions, if any</b>		<b>No</b>

**The Kelkar Education Trust's**  
**V G Vaze College of Arts, Science and Commerce**  
**(Autonomous)**

Programme: TYBSc

Semester: VI

Course FORMS AND FUNCTION – VI

Course Code : SBO603

Teaching Scheme (Hrs/Week)				Continuous Internal Assessment (CIA) 40 marks					End Semester Examination	Total
L	T	P	C	CIA-1	CIA-2	CIA-3	CIA-4	Lab	Written	
4	-	1	2.5	15	15	10		-	60	100

Max. Time, End Semester Exam (Theory) -2Hrs.

**Course Objectives**

1.	To study various plant biomolecular structures and appreciate the structures, role, functions and applications of enzymes.
2.	To gain insight into the Nitrogen and plant hormone metabolism with applications of the same in agriculture and horticulture.
3.	To understand principles of genetic mapping , mutations and solve problems based on them, gain knowledge of various metabolic disorders and their implications.
4.	To generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context, using suitable statistical techniques.

Course (SBO603)			
Unit No.	Module No.	Content	Lectures
1		<b>Plant Biochemistry</b> <ul style="list-style-type: none"> <li><b>Structure of biomolecules:</b> Carbohydrates (sugars, starch, cellulose, pectin, lipids (fatty acids and glycerol), proteins (primary, secondary and tertiary proteins with examples of each)</li> <li><b>Enzymes:</b> Nomenclature, classification, mode of action, properties of enzymes.</li> </ul>	15
2		<b>Plant Physiology II</b> <ul style="list-style-type: none"> <li><b>Nitrogen Metabolism:</b> Nitrogen cycle, root nodule formation, and leghaemoglobin, nitrogenase activity, assimilation of nitrates, (NR, NiR activity), assimilation of ammonia, (amination and transamination reactions), nitrogen assimilation and carbohydrate utilization.</li> </ul>	15

**The Kelkar Education Trust's  
V G Vaze College of Arts, Science and Commerce  
(Autonomous)**

		<ul style="list-style-type: none"> <li>Physiological effects and commercial applications of Auxins, Gibberillins, Cytokinins and Abscisic acid.</li> </ul>	
<b>3</b>		<p><b>Genetics</b></p> <ul style="list-style-type: none"> <li><b>Genetic mapping in eukaryotes:</b> discovery of genetic linkage, gene recombination, construction of genetic maps, three- point crosses and mapping chromosomes, problems based on the same</li> <li><b>Gene mutations:</b> definition, types of mutations, causes of mutations, induced mutations, the Ame's test</li> <li><b>Metabolic disorders</b>– enzymatic and non-enzymatic: Gene control of enzyme structure Garrod's hypothesis of inborn errors of metabolism, Phenyl ketone urea.</li> </ul>	<b>15</b>
<b>4</b>		<p><b>Biostatistics</b></p> <ul style="list-style-type: none"> <li>Test of significance student's <i>t</i>-test – Paired and Unpaired.</li> <li>Regression.</li> </ul>	<b>15</b>
		<b>Total No. of Lectures</b>	<b>60</b>

**The Kelkar Education Trust's  
V G Vaze College of Arts, Science and Commerce  
(Autonomous)**

**1. Syllabus as per Choice Based Credit System**

<b>i) Name of the Programme</b>	<b>:</b>	<b>B.Sc. (BOTANY)</b>
<b>ii) Course Code</b>	<b>:</b>	<b>SBO604</b>
<b>iii) Course Title</b>	<b>:</b>	<b>CURRENT TRENDS IN PLANT SCIENCE – IV</b>
<b>iv) Semester wise Course Contents</b>	<b>:</b>	<b>Copy of the syllabus Enclosed</b>
<b>v) References and additional references</b>	<b>:</b>	<b>Enclosed in the Syllabus</b>
<b>vi) Credit structure</b>	<b>:</b>	
<b>No. of Credits per Semester</b>	<b>:</b>	<b>2.5 + 1.5 = 04</b>
<b>vii) No. of lectures per Unit</b>	<b>:</b>	<b>15</b>
<b>viii) No. of lectures per week</b>	<b>:</b>	<b>04</b>
<b>ix) No. of Practicals per week</b>	<b>:</b>	<b>01 (per batch of 25 students)</b>
<b>2. Scheme of marking</b>		<b>60 Marks External assessment 40 Marks Internal Assessment</b>
<b>3. Special notes, if any</b>		<b>No</b>
<b>4. Eligibility, if any</b>		<b>As laid down in the College Admission brochure / website</b>
<b>5. Fee structure</b>		<b>As per College Fee Structure specifications</b>
<b>6. Social Ordinance/Resolutions, if any</b>		<b>No</b>

**The Kelkar Education Trust's**  
**V G Vaze College of Arts, Science and Commerce**  
**(Autonomous)**

**Programme: TYBSc**

**Semester: VI**

**Course CURRENT TRENDS IN PLANT SCIENCE – IV**

**Course Code : SBO604**

Teaching Scheme (Hrs/Week)				Continuous Internal Assessment (CIA) 40 marks					End Semester Examination	Total
L	T	P	C	CIA-1	CIA-2	CIA-3	CIA-4	Lab	Written	
4	-	1	2.5	15	15	10		-	60	100

**Max. Time, End Semester Exam (Theory) -2Hrs.**

**Course Objectives**

1.	To gain insight into recent molecular biology techniques for DNA analysis, amplification and Barcoding techniques and applications therein.
2.	To understand and apply tools of Bioinformatics for data retrieval and phylogenetic analysis.
3.	To learn about the sources of economically important plants in the field of fats and oils and apply it for extraction, dealing with entrepreneurship in the field
4.	To gain knowledge and proficiency in preservation of post harvest produce and explore the possibility of entrepreneurship in the field..

Course (SBO604)			
Unit No.	Module No.	Content	Lectures
1		<b>Plant Biotechnology II and Molecular biology</b> <ul style="list-style-type: none"> <li>• DNA sequence analysis– Maxam – Gilbert Method and Sanger's method, Pyro Sequencing.</li> <li>• Polymerase Chain Reaction (PCR) : Principles, working and applications. Types of PCR, Designing of Primers</li> </ul> <b>Molecular Biology:</b> <ul style="list-style-type: none"> <li>• The genetic code: Characteristics of the genetic code</li> </ul>	15



**The Kelkar Education Trust's**  
**V G Vaze College of Arts, Science and Commerce**  
**(Autonomous)**

		<ul style="list-style-type: none"> <li>● Translation in Prokaryotes and eukaryotes.</li> </ul>	
2		<b>Bioinformatics</b> <ul style="list-style-type: none"> <li>● Organization of biological data, Types of Biological databases</li> <li>● Exploration of data bases, retrieval of desired data, BLAST (Types of BLAST, Applications).</li> <li>● Molecule visualization tools – RASMOL, SPDBV,</li> </ul>	15
3		<b>Economic Botany</b> <ul style="list-style-type: none"> <li>● <b>Essential Oils:</b> Extraction, perfumes, perfume oils, oil of Rose, <i>Patchouli</i>, Sandalwood, grass oils: <i>Citronella</i>, Vetiver.</li> <li>● <b>Fatty oils:</b> Drying oil (Soybean oil), semidrying oils (Cotton seed) and non-drying oils (Peanut oil),</li> <li>● <b>Vegetable Fats:</b> Coconut oil</li> </ul>	15
4		<b>Post Harvest Technology</b> <ul style="list-style-type: none"> <li>● <b>Storage of Plant Produce</b> –Preservation of Fruits and Vegetables <ol style="list-style-type: none"> <li>1. Drying (Dehydration) – Natural conditions – Sun drying, Artificial Drying – Hot Air Drying, Vacuum Drying, Osmotically Dried Fruits, Crystallized or Candied Fruits, Fruit Leather, Freeze Drying)</li> <li>2. Freezing (Cold Air Blast System, Liquid Immersion method, Plate Freezers, Cryogenic Freezing, Dehydro-Freezing, Freeze Drying),</li> <li>3. Canning</li> <li>4. Pickling (in Brine, in Vinegar, Indian Pickles)</li> <li>5. Sugar Concentrates (Jams, Jellies, Fruit juices)</li> <li>6. Food Preservatives</li> <li>7. Use of Antioxidants in Preservation</li> </ol> </li> </ul>	15
		<b>Total No. of Lectures</b>	<b>60</b>

**The Kelkar Education Trust's**  
**V G Vaze College of Arts, Science and Commerce**  
**(Autonomous)**

SBOP602		PRACTICAL-III & IV	
PRACTICAL-III		FORM AND FUNCTION VI	Credits 1
Sr. No.	Description		
1	<b>Plant Biochemistry</b> <ul style="list-style-type: none"> <li>● Estimation of proteins by Biuret method</li> <li>● Effect of temperature on the activity of amylase</li> <li>● Effect of pH on the activity of amylase</li> <li>● Effect of substrate variation on the activity of amylase</li> </ul>		
2	<b>Plant Physiology II</b> <ul style="list-style-type: none"> <li>● Determination of alpha-amino nitrogen</li> <li>● Estimation of reducing sugars by DNSA method</li> </ul>		
3	<b>Genetics</b> <ul style="list-style-type: none"> <li>● Problems based on three-point crosses, construction of chromosome maps</li> <li>● Identification of types of mutations from given DNA sequences</li> <li>● Study of mitosis using pre-treated root tips of <i>Allium</i></li> </ul>		
4	<b>Biostatistics</b> <ul style="list-style-type: none"> <li>● <i>t</i>-test (paired and unpaired)</li> <li>● Problems based on regression analysis</li> </ul>		
SBOP602		PRACTICAL-III & IV	
PRACTICAL-IV		CURRENT TRENDS IN PLANT SCIENCES IV	Credits 1
Sr. No.	Description		
1	<b>Plant Biotechnology II</b> <ul style="list-style-type: none"> <li>● DNA sequencing by Sanger's Method and Pyro Sequencing Method</li> <li>● DNA barcoding of plant material by using MEGA Software</li> </ul>		
2	<b>Bioinformatics</b> <ul style="list-style-type: none"> <li>● BLAST: nBLAST, pBLAST</li> </ul>		

**The Kelkar Education Trust's**  
**V G Vaze College of Arts, Science and Commerce**  
**(Autonomous)**

	<ul style="list-style-type: none"><li>● Multiple sequence alignment</li><li>● Phylogenetic analysis</li><li>● RASMOL/SPDBV</li></ul>
<b>3</b>	<b>Economic Botany</b> <ul style="list-style-type: none"><li>● Demonstration: Extraction of essential oil using Clevenger</li><li>● Thin layer chromatography of essential oil of <i>Patchouli</i> and <i>Citronella</i></li><li>● Saponification value of Coconut oil</li><li>● Rancidity of peanut oil</li></ul>
<b>4</b>	<b>Post-Harvest Technology</b> <ul style="list-style-type: none"><li>● Preparation of Squash</li></ul>

**The Kelkar Education Trust's**  
**V G Vaze College of Arts, Science and Commerce**  
**(Autonomous)**

**Semester End Theory Assessment - 60 marks**

- i. Duration - These examinations shall be of 2 hours duration.
- ii. Paper Pattern:
  - 1. There shall be 05 questions each of 12 marks. On each unit there will be one question & last question will be based on all the 04 units.
  - 2. All questions shall be compulsory with internal choice within the questions.

**Questions Options Marks Questions on**

Q.1) Any 2 out of 4	12 Marks	Unit I
Q.2) Any 2 out of 4	12 Marks	Unit II
Q.3) Any 2 out of 4	12 Marks	Unit III
Q.4) Any 2 out of 4	12 Marks	Unit IV
Q.5) Any 4 out of 5	12 Marks	All Units

**The Kelkar Education Trust's**  
**V G Vaze College of Arts, Science and Commerce**  
**(Autonomous)**

**Syllabus Prepared by:**

- 1. Prof. (Dr.) Ajit Kengar: Member, Syllabus Committee**  
Head, Dept. of Botany,  
KET's V.G.Vaze College (Autonomous), Mulund (East), Mumbai.
- 2. Dr. Supriya Thale: Member, Syllabus Committee**  
Assistant. Professor,  
KET's V.G.Vaze College (Autonomous), Mulund (East), Mumbai.
- 3. Mr. Jatin Vaity: Member, Syllabus Committee**  
Assistant Professor,  
KET's V.G.Vaze College (Autonomous), Mulund (East), Mumbai.
- 4. Dr. Rajni Shirsat: Member, Syllabus Committee**  
Assistant. Professor,  
KET's V.G.Vaze College (Autonomous), Mulund (East), Mumbai.
- 5. Ms. Siddhi Baskaware: Member, Syllabus Committee**  
Assistant Professor,  
KET's V.G.Vaze College (Autonomous), Mulund (East), Mumbai.
- 6. Ms. Nupoor Telawane: Member, Syllabus Committee**  
Assistant Professor,  
KET's V.G.Vaze College (Autonomous), Mulund (East), Mumbai.
- 7. Dr. Jayshri Jagtap: Member, Syllabus Committee**  
Assistant Professor, Department of Botany  
KET's V. G. Vaze College (Autonomous), Mulund (East), Mumbai.