VIVEKANANDA COLLEGE
College with Potential for Excellence
(Residential & Autonomous – A Gurukula Institute of Life-Training)
(Affiliated to Madurai Kamaraj University)
Reaccredited with ‘A’ Grade (CGPA of 3.59 out of 4.00) by NAAC

TIRUVEDAKAM WEST
MADURAI DISTRICT – 625 234

DEPARTMENT OF BOTANY

B.Sc. BOTANY
SYLLABUS

Choice Based Credit System

(For those who join in June 2015 and after)
(2017-2020 Batch)
ABOUT THE COLLEGE

Vivekananda College was started by Founder-President Swamiji Chidhbhavanandhaji Maharaj of Sri Ramakrishna Tapovanam, Tirupparaithurai, Trichy in 1971 on the banks of the river Vaigai which is blissfully free from the noise and hurry, the crowds and distraction of the city.

Vivekananda College is a residential college functioning under Gurukula pattern. It is Man-making education, that is imparted in this institution, Culture, character and curriculam are the three facets of ideal education that make man a better man. This is possible only when the teacher and taught live together, The Gurukula system of Training is therefore a humble and systematic attempt in reviving the age old GURUGRIHAVASA for wholesome education, Attention to physical culture, devotion to duty, obedience to teachers, hospitality to guests, zest for life, love for the nation, and above all, humility and faith in the presence of God etc. are the values sought to be inculcated. All steps are taken to ensure the required atmosphere for the ideal life training.

Vivekananda College, Tiruvedakam West, Madurai District-625 234 is an aided college established in 1971 and offers UG and PG courses. This College is affiliated to the Madurai Kamaraj University, Madurai. The College was reaccredited with ‘A’ grade (CGPA 3.59 out of 4.00) by NAAC IN September 2015.

VISION AND MISSION

Our Vision: To raise an army of neo-graduates steeped in the hoary culture of the motherland and dedicated to serving her as potential leaders in the manifold spheres of national effort.

Our Mission: A harmonious enrichment of physical, emotional and intellectual facets of a student’s personality to bring out his inherent PERFECTION.

OBJECTIVES OF THE INSTITUTION
1. To inculcate spiritual, ethical, moral and social values in all disciplines of study.
2. Simultaneous education of the Hand, Heart and Head. Only a sound body can hold a sound mind.
3. Provide opportunities for all round development of the students and excellence in higher education, research and extension in different disciplines.
4. Disseminate the findings of research to the community to facilitate its development.
5. To provide society citizens of sterling character.
6. To cater to the needs of the educationally backward people – the most backward, scheduled caste and tribe.
I Eligibility For Admission

Admission to B.Sc. – Botany Programme is open to candidates with +2 pass with Maths, Physics, Chemistry, Biology, Botany and Zoology as major subjects.

For B.Sc. - Botany course offered in the college, a pass in the Higher Secondary Examination conducted by the Government of Tamil Nadu or an examination accepted as equivalent there to by the Syndicate of the MKU, subject to such conditions as may be prescribed therefore.

II Duration

The course is for a period of three years. Each academic year shall comprise of two semesters viz. Odd and Even semesters. Odd semesters shall be from June to November and Even Semesters shall be from December to April. There shall be not less than 90 working days which shall comprise 450 teaching clock hours for each semester (Exclusive of the days for the conduct of university end-semester examinations) for each semester.

III CBCS System

All Programmes offered in the college are run on Choice Based Credit System (CBCS). It is an instructional package developed to suit the needs of students to keep pace with developments in higher education and the quality assurance expected of it in the light of liberalization and globalization in higher education.

IV Semesters:

An academic year is divided into two semesters. In each semester, courses are offered in 15 teaching weeks. Each week has 30 working hours spread over 6 days a week.

V Credits:

The term 'Credit' refers to the weightage given to a course, usually in relation to the instructional hours assigned to it. The total minimum credits, required for completing the B.Sc. Programme is 140. The details of credits for individual components and individual courses are given in the above table.

VI Course:

Each Course is to be designed variously under lectures / laboratory / seminar / practical training / assignments to meet effective teaching and learning needs.

VII Examinations:

i). There shall be examinations at the end of each semester, for odd semesters in the month of October / November; for even semesters in April/May. A candidate who does not pass the examination in any course(s) shall be permitted to appear in such failed course (s) in the subsequent examinations to be held in October / November or April/May.

ii). A candidate should get registered for the first semester examination. If registration is not possible owing to shortage of attendance beyond condonation limit / regulations prescribed or belated joining or on medical grounds, the candidates are permitted to move to the next semester. Such candidates shall re-do the missed semester after the completion of the programme.

VIII Condonation

Students must have 75% of attendance in each paper for appearing the examination. Students who have 65% to 74% of attendance shall apply for condonation in the prescribed form with the prescribed fee. Students who have 50% to
64% of attendance shall apply for condonation in prescribed form with the prescribed fee along with the Medical Certificate. Students who have below 50% of attendance are not eligible to appear for the examination. They shall compensate the shortage after the completion of the programme.

**IX Question Paper Pattern**

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<th>Time: 3 Hours</th>
<th>Maximum Marks: 75</th>
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**SECTION-A (10 X 1 =10 Marks)**

**Answer All Questions**

(1-5) Multiple Choice
(6-10) Fill in the blanks
Two questions from each unit

**SECTION-B (5 X 7 = 35 Marks)**

**Answer All Questions**

(11-15) Questions shall be in the format of either (a) or (b)
One question from each unit

**SECTION-C (3 X 10 = 30 Marks)**

**Answer any THREE Questions**

(16-20) One question from each unit.

**X Evaluation:**

Performance of the students are evaluated objectively. Evaluation is done both internally and externally. They will be assessed continuously through Internal Assessment System and finally through summative (end) semester examination. To assess internally, there will be three examinations conducted centrally with a duration of two hours for each paper. In addition to continuous evaluation, the summative semester examination, which will be a written examination of three hours duration, would also form an integral component of the evaluation. The ratio of marks to be allotted to continuous internal assessment and to end semester examination is 25 : 75.

The pattern of internal valuation shall be:

- Test: 20 Marks (the average of best two tests out of three tests)
- Assignment: 5 marks
- Total: 25 marks.

In respect of practical papers, the ratio of marks to be allotted to internal assessment and to summative (end) semester examination is 20 : 30. The internal marks will be calculated on the basis of marks secured at the model examination and marks awarded for the preparation of practical note book. The external marks will be calculated on the basis of the marks awarded by the internal examiner and the external examiner at the summative semester examination.

**XI Passing Minimum:**

There is no passing minimum for Internal Assessment. The passing minimum for external Examinations shall be 27 out of 75 marks and passing minimum for a paper is 40%.

**XII Classification of Students:**

Candidates who have secured not less than 40% of marks in each paper shall be declared to have passed in that paper. Candidates who obtain 40% and above but below 50% shall be declared to have passed in Third Class. Candidates who obtain 50% and above but below 60% of the aggregate marks in Part-III shall be declared to
have passed in Second Class and those who obtain 60% of marks and above shall be placed in the First Class. Candidates who obtain 75% and above shall be declared to have passed in Distinction provided he has not re-appeared for any paper during the course of the study.

**XIII Failed Candidates:**
A candidate who has arrears in any paper in a semester examination will be permitted to proceed to the next semester classes. A candidate who has arrears may appear again in these failed papers at the November/April examinations. The internal assessment marks already obtained by him shall be carried over for the subsequent appearance also.

**XIV Improvement of Internal Marks:**
The student desirous of improving the internal assessment marks may request the Head of the Department. After obtaining permission from the Staff Council Meeting by the Head, the student may write improvement examinations in consultation with the course teacher. The marks obtained (when it is more than the previous marks) will be submitted to the Controller of Examinations for further adoption.

**XV Study Tour**
Students are expected to participate in the field visit and the study tours organized by the department. Though study tour/field trip carries no credit, it is compulsory for the students to attend whereby the students can get an opportunity to gain practical knowledge. As such, observational visit to selected social welfare organizations, industries, trade centres, exhibitions, places of historical importance and the like will be considered as extra-curricular activities.

**VISION**
To meet the growing global needs by educating students to excel in botany with a human touch.

**MISSION**
The mission is to give very good learning experience in understanding basics of botany and lab techniques with professional excellence and also produce academically proficient, professionally competent and socially responsible graduates in Botany.

**OBJECTIVES**
On doing the course Students will be able to:
- Know about the core concepts in the subject namely the plant kingdom.
- Exhibit proficiency in selected laboratory skills
- Make use of knowledge in the field of horticultural, Mushroom, and Medicinal botany in their day today life.
- Acquire Skills on Microbiology, Biotechnology and Bioinformatics techniques.
- Get involved in activities through which serve society for its welfare.
- Apply their skills in government, academic or industrial organizations and research institutions.
- Giving basic degree to become teaching professionals.
- Preparing them for various competitive examinations.
BRIEF HISTORY OF THE DEPARTMENT

The Botany Department was started in the year 1982 with UG & Allied Botany. The department has four sanctioned teaching staff and 2 academic support staff (technical) and administrative staff. Currently there are 4 faculty members in the department, 2 are aided & 2 as management appointee in the permanent vacancy. All the four faculty members are doctorates.

The department library has nearly 2000 books of national & international standard, and also has well equipped laboratories with enough chemicals and instruments. Totally 80 students are studying in our department.

Students are studying zoology and chemistry as allied subjects. Non Major Elective courses are conducted for our college undergraduate students.

Apart from the core curriculum the Department also offers a number of extra-Departmental courses such as Horticulture, Energy Resources, Mushroom Cultivation and Medicinal Botany etc.

Prof S. RAJARAM Served the dept as founder HOD for the longest term (35 years) and retired in the year 2013. Prof G.SENTHILKUMAR rendered his service as Associate Professor for nearly 30 dedicated years and retired in the year 2014. Dr P.T. MANOHARAN elected to Madurai Kamaraj University as Academic Council, Senate and Syndicate Member earned name and fame to our Department and College. Both Dr P.T. MANOHARAN and Dr. N. LAKSHMANAN are recognised supervisors for guiding Ph.D students. Dr.V.RAMESH Published a paper in an international journal. M.Sc Botany was started during the Academic year 2017-2018.
## B.Sc. Botany Syllabus

**SCHEME OF EXAMINATION**

(For those who join in June 2015 and After)

### FIRST SEMESTER

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<td>08EP51</td>
<td>Elective-1: Medicinal Botany</td>
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<td>IV</td>
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### SIXTH SEMESTER

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<td>Elective-3: Remote Sensing and GIS</td>
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<td>Skill Based Subject-V: Biodiversity Conservation and Management</td>
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TOTAL 140
PART-I: Language Tamil Subject

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காந்திகை

1. காந்திகை செலுத்துகள்
   1. காந்திகை (சி. பாரஸ்தம்)
   2. மொழிபெயர் செலுத்துகள் (சி. பாரஸ்தம்)

2. பாந்திகை செலுத்துகள்
   1. பாந்திகை (சி. பாரஸ்தம்)
   2. பாந்திகை வகைப்பாட்டுகள் (சி. பாரஸ்தம்)

3. குருதிகை எளிதாக்கப்பட்டு
   பாந்திகை செலுத்துகளை விளக்குகிறது

4. விளக்கம் அளிப்பு
   சிற்றை பெயரில் விளக்கம் விளக்கு

5. முக்கோண விளக்கம்
   பெருநோட்டாட்டக் கூறுகள்

ஆண்டு: 2 குறிப்பிட்டுப்பட்டத் சொல்லங்கள்:

6. குறிப்பிட்டுப்பட்ட சொல்லங்கள்
7. குறிப்பிட்டு விளக்கங்கள்
8. குறிப்பிட்டு விளக்கங்கள்
9. குறிப்பிட்டு விளக்கங்கள்
10. குறிப்பிட்டு விளக்கங்கள்
11. குறிப்பிட்டு விளக்கங்கள்
12. குறிப்பிட்டு விளக்கங்கள்
அண்ட: 3 குறிப்பிட்டு மாற்றும் திட்டம் - கட்டளை திறனமற்றுக்கூடாது
திறந்தகாலம் (மலரிபொட்டு சதுர்ப்பு)

அண்ட: 4 குறிப்பிட்டு திட்டக்களம் - சூழ்ந்த
1. பதிவு திறன்களங்கள்
2. பார்வைப்பலட்சங்கள்
3. தெருக்கு பதிவு திறன்களங்கள்
4. தெரு திறன்களங்கள்
5. மேலும் பந்து நிறுவனக்கள்
6. மேலும் பந்து நிறுவனக்கள்

அண்ட: 5 குறிப்பிட்டு திட்டக்களம் செய்யப்பட்டுக்கூடாது திறந்த
(a) 1. மறுபடினமுறையில் தீர்யுக்கு வழிகாட்டும்
2. புகழ்பெற்றுமறையில் தீர்யுக்கு வழிகாட்டும்

(b) மறுபடினம் திறன்கள் - புகழ்பெற்று திறன்களால் திறன்கள் - பின்னர் இது பற்றிய வெளிப்படை - தெளிவு மாற்றங்கள் மாற்றங்கள் - தெய்வ பற்றிய வெளிப்படை - தெய்வ மாற்றங்கள் - தெய்வ மாற்றங்கள் - தெய்வ மாற்றங்கள் -

பாடை நூற்றல்
1. குறிப்பிட்டு முன்ப் யுகான (மலரிபொட்டு சதுர்ப்பு)
2. கட்டளை திறனமற்றுக்கூடாது திறந்தகாலம் (மலரிபொட்டு சதுர்ப்பு)

பாடை நூற்றல்
1. பாடையில் பலகுறைக்குரிய (யமா புத்தமலம்)
2. பாடையில் கல்லுறைக்குரிய (கல்லாகக் புத்தமலம்)
3. குறிப்பிட்டு திட்டக் கூறுக - பதமார். மார்க்காதர
4. குறிப்பிட்டு திட்டக் கூறுக - ப.கல்லாபாசாதர
DEPARTMENT OF SANSKRIT
B.A. / B.Sc. PART-I – LANGUAGE SANSKRIT SYLLABUS: SEMESTER – I:
PAPER – I
(For those who join in June 2017 and After)

<table>
<thead>
<tr>
<th>PART - I Sanskrit Paper I</th>
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<tbody>
<tr>
<td>Subject</td>
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<tr>
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</tr>
<tr>
<td>PILS11</td>
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<tr>
<td>Sessional Marks: 25</td>
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FUNDAMENTAL GRAMMAR & HISTORY OF SANSKRIT LITERATURE -I

Following portions for Grammar:
Declension of the following nouns and pronouns:
UNIT-I Akārānta Mascul, Ākārānta Faminine & Akārānta Neuter.
Asmad and Yuşmad šabdadas
Conjugation of the following verbs in present, past & future tense
Bhav, paṭh, Vad, Gacch, Vas, Driś (Paś), Krīḍ Dhāv
UNIT-II & III History of Sanskrit Literature:

a) Vedas and Purāṇas
b) Itihāsa
c) Court Epics – Mahākāvyas

UNIT –IV
Translation:

a) From Sanskrit to English:
Passages exercises 2, 3 and 4 from the prescribed texts.

b) From English to Sanskrit:
Passages exercises 1, 2 and 3 from the prescribed texts.
UNIT – V. Transliteration
a) Devanaagari to IPS. b) IPS to Devanaagari

Prescribed text: “SĀHITYA RASAKANĀĪ”
(Published by A.M.G. Publications, Madurai – 625 016)

A short history of Sanskrit Literature (Published by A.M.G. Publications, Madurai – 625 016) year of publication- 1996
B.Sc. Botany Part-II English CBCS Syllabus - SEMESTER - I
(For those who joined in June 2017 and after)

PART II – Paper I

<table>
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<th>Subject Code: P2LE11</th>
<th>Hours per week: 6</th>
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<td>Sessional Marks: 25</td>
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<td>Total Marks: 100</td>
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Objectives:

- To develop listening and speaking skills
- To increase the vocabulary of students
- To improve reading skills
- To develop competency in grammar
- To develop continuous writing

Total number of hours per semester: 75 Hrs

Unit – I - Listening, Speaking and Reading Components

15 Hrs

1. Rabindranath Tagore – Cabuliwallah
2. Khushwant Singh – Karma
3. R.K. Narayan – Sweets for Angels
4. K.A. Abbas – Sparrows

Unit – II

15 Hrs

- Sentences, Clauses, and Phrases
- Pronouns
- Adjectives
- Some Common Adjectives and Adverbs
- Parts of Speech
- Determiners
- Verbs
- Nouns
- Articles
- Adverbs

Unit – III Composition

15 Hrs

- Letter writing – Formal Letters & Informal Letters
- Descriptive Writing – General topics (Paragraph)

Unit – IV - Extensive Reading: Short Stories

15 Hrs

- Young Naren - by Brahamachari Amal. [From “A Simple life of Swami Vivekananda” Advaita Ashrama, Kolkata]
- A Story of Initiation - by Sri Aurobindo Society. From “Stories and Anecdotes from the Mother” Pondicherry.
- Glory At Twilight - Bhabani Bhattacharya
- The Martyr’s Corner - R.K. Narayan

Unit – V - Translation

15 Hrs

Translation of Sentences and Stories from Tamil to English / English to Tamil (Passages will be supplied)

Reference Book:

B.Sc. Botany CBCS Syllabus - SEMESTER - I
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>PART – III : Core Subject Theory</th>
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<tbody>
<tr>
<td><strong>Subject Title</strong>: Algae and Bryophytes</td>
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<tr>
<td><strong>Subject Code</strong>: 08CT11</td>
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<tr>
<td><strong>Hours per week</strong>: 4+2</td>
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<td><strong>Summative Marks</strong>: 75</td>
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<td><strong>Total Marks</strong>: 100</td>
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</tbody>
</table>

Objectives:
- To acquire the basic knowledge of primitive plants kingdom
- To understand the evolution plant kingdom
- To know the importance of algae and bryophytes

ALGAE

UNIT I: General Characteristics and Classification based on Fritsch (Class level only),
Economic importance of Algae – Beneficial - Agriculture, Environment, Medicine and Industries

UNIT II: Structure and reproduction of
  a. Chlorophyceae - Oedogonium
  b. Xanthophyceae - Vaucheria
  c. Bacillariophyceae - Diatoms

UNIT III: Structure and reproduction of the following
  a. Phaeophyceae - Sargassum
  b. Rhodophyceae - Polysiphonia
  c. Cyanophyceae - Nostoc

BRYOPHYTES

UNIT IV: Classification of Bryophytes based on Smith – Structure and reproduction of Hepaticae - Marchantia and Anthoceros

UNIT V: Structure and reproduction of Musci - Funaria

Text Books:

Reference Books:
3. An introduction to Embryophyta –Bryophytes - N.S. Parihar, Surjeet Publications, Delhi, 2014 Ed.
PART - III : Core Subject Theory

Subject Title: FUNGI AND PLANT PATHOLOGY

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Sessional Marks: 25  Summative Marks: 75  Total Marks: 100

Objectives:
- To acquire the basic knowledge about primitive plants kingdom
- To understand the symptomology of diseases thereby gaining knowledge on prevention of diseases
- To recognize the beneficial and harmful fungi for human life

FUNGI

UNIT I: Classification of Fungi based on Alexopoulos and Mims – Economic importance of Fungi – Beneficial – Industries, Pharmaceuticals, Agriculture, Genetical Studies – Harmful – Plant diseases, Human Diseases, Food Spoilages

UNIT II: Structure and reproduction of the following
a. Myxomycetes : Stemonites
b. Oomycetes : Albugo
c. Ascomycetes : Penicillium

UNIT III: Structure and Reproduction of the following:
a. Basidiomycetes : Puccinia and Agaricus
b. Deuteromycetes : Cercospora

UNIT IV: General Characteristics, Structure & Reproduction of Lichens – Crustose, Foliose & Fruticose, Economic importance of Lichens

PLANT PATHOLOGY

UNIT V: Symptoms, causes and control of the following diseases
a. Viral disease : Bunchy top of Banana
b. Bacterial disease : Citrus Canker
C. Fungal disease : Blast disease in Rice
d. Mycoplasma : Little leaf of Brinjal

Text Books:
1. Fungi - B.R. Vashista, S.Chand & Company Ltd, Delhi, 2014 Ed.
2. Botany for Degree Students Fungi - P.C. Vashishta, S.Chand & Company Ltd, Delhi, 2014 Ed.
3. Plant pathology - B.P. Pandey, Chand & Company Ltd, Delhi, 2014 Ed.

Reference Books:
PART III – Allied Course Theory

Subject Title: Inorganic, Organic and Physical Chemistry

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Objectives:

To enable the students
- To become familiar in to the basic Principles Of Titrimetry
- To gain basic knowledge about Organic basic principles
- To have gain the basic concept of intermediates
- To be familiar with catalysis

UNIT I: GENERAL PRINCIPLES OF TITRIMETRY 12 Hrs


UNIT II: ORGANIC BASIC PRINCIPLES I 12 Hrs


UNIT III: ORGANIC BASIC PRINCIPLES II 12 Hrs


UNIT IV: ORGANIC INTERMEDIATES 12 Hrs

UNIT V: CATALYSIS AND PHOTOCHEMISTRY 12 Hrs

**Catalysis:** Definition – different types of catalysis – acid base catalysis – surface catalytic reactions – definition and examples – autocatalyst –catalytic poisoning – promoters.

**Photochemistry:** Definition of photochemical reactions – comparison of thermal and photochemical reactions – Jablonski diagram - Chemiluminescence – Bioluminescence – Photosynthesis – Radioactivity – Applications of radioactive isotopes in biology and medicine.

**Text Book:**

1. Ancillary chemistry Dr. K.Ratinamuthu (Study material will be provided) Semester – I and II

**Reference Books:**

B.Sc. Botany CBCS Syllabus - SEMESTER - I
(For those who joined in June 2015 and after)

<table>
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<th>PART - III : – Core Subject Practical – I</th>
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<tr>
<td>Subject Title: Algae, Bryophytes, Fungi and Plant Pathology</td>
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<tr>
<td>Subject Code: 08CP13</td>
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1. Making suitable micro preparations of types prescribed in Algae, Bryophytes, Fungi and plant pathology.

2. Identifying the plant diseases.

3. Making Observations of permanent slides on algae and fungal structures.

4. Observing and identifying the specimens at sight and writing explanatory notes on them.

5. Observing and identifying the bryophytes slides included in the syllabus.
B.Sc. Botany CBCS Syllabus - SEMESTER - I
(For those who join in June 2015 and after)

PART – IV : Non Major Elective

<table>
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<td>Total Marks: 100</td>
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Objectives:
- To know the various kinds of renewable and nonrenewable energy sources
- To acquire the importance of energy resources to prevent the extinction of energy resources
- To know the alternative energy resources

UNIT I
Sources of energy – conventional and non conventional-Present world Energy scenario.

UNIT II
Conventional energy- coal, oil, gas, thermal power and nuclear energy.

UNIT III
Non-Conventional - Solar energy-advantages-solar gadgets, available Solar energy utilization in India and Hydro power.

UNIT IV
Wind energy – advantages and disadvantages-wind mills and Tidal energy.

UNIT V
Biomass energy – Biogas production, bioethanol, biodiesel (from plant lipids and from hydrocarbons)

Text Books:
2. Environmental science engineering - C.P. Venugobal Rao, PHI Learning New Delhi, 2010 Ed.

Reference Books:
2. Environmental studies – SK.Grarg, Khanna Pub Delhi, 2012 Ed.
PART-I: Language Tamil Subject

Subject Title: இறங்கல் கல்வி தமிழ்நாட்டு படை கல்வியியல் - வருங்கால: 2
Subject Code: PILT21 Hours per week: 6 Credit: 3
Seasonal Marks: 25 Summative marks: 75 Total Marks: 100

பாட்டகயறி

அதா: 1 தமிழ் இறங்கல் தினசரியம்
அதா: 2 தமிழ் கல்வி தினசரியம்
அதா: 3 படை கல்வியியல்
அதா: 4 தமிழ் இறங்கல் - வருங்கால
அதா: 5 தமிழ் இறங்கல் அகராதி முழுமையியல்

பாட்டகயறி எளியறக்கும்

அதா : 1 தமிழ் இறங்கல் தினசரியம் - படை கல்வி வருங்கால (தூதைணர்)
அதா : 2 தமிழ் கல்வி தினசரியம் - வருங்கால பொறு பொடி (ஏ.பெரிய வீரி)
அதா : 3 படை கல்வியியல் - பாட்டகயறி
1. மொழிகள் தொழில்கல்வி அறிவியல்
2. மொழிகள் தொழில்கல்வி அறிவியல்
3. மொழிகள் தொழில்கல்வி
4. மொழிகள் தொழில்கல்வி

அதா : 4 தமிழ் இறங்கல் - வருங்கால
1. படை கல்வி பொறு பொடி
2. படை தயாரிப்பு
3. ஐதர்க்காளன்
4. ஐதர்க்காளன் (தொழில்கல்வி தொழில்கல்வி, பொறு பொழிகள், தொழில்கல்வி, ஐதர்க்காளன் தொழில்கல்வி, ஐதர்க்காளன் தொழில்கல்வி)

அதா : 5 தமிழ் இறங்கல் அகராதி முழுமையியல்

1. மொழிகள் தொழில்கல்வி அறிவியல்
2. மொழிகள் தொழில்கல்வி அறிவியல்

பாட்டகயறி

1. தமிழ்கல்வி - படை கல்வி வருங்கால (தூதைணர்)
2. படை கல்வி - பொறு பொழிகள் (ஏ.பெரிய வீரி)
3. மொழிகள் தொழில் (பாரால் பாராகர்நின)
4. தமிழ் இறங்கல் அரசுக் (பாரால் பாராகர்நின)

பாட்டகயறி எளியறக்கும்

1. படை கல்வி தொழில்கல்வி அறிவியல் (பாரால் எம். சீனா)
2. மொழிகள் (ஏ.பெரிய வீரி)
3. பாதை பாடல் (பாதை பாடல் பாடல்)
4. பாதை பாடல் பாடல் (பாதை பாடல் பாடல்)
5. பாதை பாடல் பாடல் (பாதை பாடல்)

DEPARTMENT OF SANSKRIT
B.A. / B.Sc. PART-I –LANGUAGE SANSKRIT SYLLABUS: SEMESTER – II:
PAPER – II
(For those who join in June 2017 and After)

<table>
<thead>
<tr>
<th>PART – I Sanskrit Paper II</th>
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</thead>
<tbody>
<tr>
<td>Subject Title: Poetry Grammar &amp; History of Sanskrit Literature – II</td>
</tr>
<tr>
<td>Subject Code: PILS21</td>
</tr>
<tr>
<td>Sessional Marks: 25</td>
</tr>
</tbody>
</table>

POETRY

Selected portions from the prescribed text: Kaliviṣṭambanam & Sabhāraṇjanaśatakam
- Published by SADGUNA PUBLICATIONS

Kaliviṣṭambanam
Cidambaram (TN)

Unit I. scholars and Teachers Verse No. 1-10,

Unit II. Astrologers & Physicians V. 14-30

Unit III. Relatives & Pseudo monks Vv. 41-50, 84-93.

Sabhāraṇjanaśatakam

Unit IV Wisdom and it’s acquisition Vv. 1-12


Prescribed text:
LYRICS & CHAMPU KAVYAS
A short history of Sanskrit Literature
(Published by A.M.G. Publications, Madurai – 625 016 Page No. 51 – 60, 42 – 45) year of publication- 1996

Kaliviṣṭambanam & Sabhāraṇjanaśatakam
Published by SADGUNA PUBLICATIONS

21
Objectives:                           Total number of hours per semester: **75 Hrs**

- To develop listening, speaking and reading skills
- To develop Information and Communication Technology (ICT) skills
- To develop presentation skills
- To develop competency in grammar

Unit – I Listening, Speaking and Reading Components                          **15 Hrs**

Prose

1. **MY VISIONS FOR INDIA** - A.P.J. ABDUL KALAM
2. Mahatma Gandhi - V.S. Srinivasa Sastri
3. The Secret of Work - Swami Vivekananda
4. The Golden Age of Cricket - Neville Cardus
5. Tree Speaks - C. Rajagopalachari

Unit – II Language Study                                                      **15 Hrs**

- Tenses and Their Uses
- Concord or Agreement
- Conditional Sentences
- Active and Passive Voice
- Preposition

Book: *A Textbook of English Grammar and Usage* by K.V. Joseph

Unit – III Composition                                                         **15 Hrs**

- Letter writing – Informal Letters
- Hints Development
- Descriptive Writing

Unit – IV Extensive Reading: Short Stories                                      **15 Hrs**

*Extensive Reading*

1. Upper Division Love - Manohar Malgonkar
2. The Tiger in the Tunnel - Ruskin Bond
3. A Devoted Son - Anitha Desai
5. The Cask of Amantilado - Edgar Allan Poe
Unit – V Translation

- Translation of Sentences and Stories from Tamil to English/English to Tamil
  (Passages will be supplied)

B.Sc. Botany CBCS Syllabus - SEMESTER - II
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>Subject Code: 08CT21</th>
<th>Hours per week: 4+2</th>
<th>Credit: 4</th>
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<tbody>
<tr>
<td>Sessional Marks: 25</td>
<td>Summative Marks: 75</td>
<td>Total Marks: 100</td>
</tr>
</tbody>
</table>

PART - III : Core Subject Theory
Subject Title: Pteridophytes, Gymnosperms & Paleo Botany

Objectives:
- To acquire the basic knowledge about primitive terrestrial plants
- After studying this paper Students will be able to identify in the field the forms prescribed in the syllabus and appreciate their ecological importance
- Students will be able to understand the chronological events that have taken place in the earth

PTERIDOPHYTES

UNIT I: General classification based on Sporne - Structure and reproduction of the following
  a. Psilotales : Psilotum
  b. Lycopodiales : Lycopodium

UNIT II: Structure and reproduction of the following
  a. Equisetales : Equisetum
  b. Filicales : Marselia

GYMNOSPERMS

UNIT III: Classification according to Chamberlain (1935) - Structure and reproduction of the following
  a. Cycadales : Cycas
  b. Gnetales : Gnetum

PALEOBOTANY

UNIT IV: Geological era - Formation of fossils – types of fossils

UNIT V: Detailed study of the following
  a. Psilopsida : Rhynia
  b. Sphenopsida : Calamites
  c. Cycadofilicales : Lyginopterus

Text Books:

Reference Books:

B.Sc. Botany CBCS Syllabus - SEMESTER - II
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>Plant Anatomy and Microtechniques</th>
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<tbody>
<tr>
<td>Subject Code</td>
<td>08CT22</td>
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<tr>
<td>Hours per week</td>
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<tr>
<td>Credit</td>
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<td>Sessional Marks</td>
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<tr>
<td>Summative Marks</td>
<td>75</td>
</tr>
<tr>
<td>Total Marks</td>
<td>100</td>
</tr>
</tbody>
</table>

Objectives:
- To acquire the basic knowledge about internal tissues of plant
- To train the students in handling microscopes
- Training the students in various staining techniques

PLANT ANATOMY

UNIT I
A. Cell wall – Chemical nature of cell wall- Ultra structure of cell wall – Plasmodesmata and pits.
B. Tissue system – Meristems, Simple tissues, Complex tissues, Secretary Tissues and Trichomes.

UNIT II
Primary structures of dicot stem, monocot stem, dicot root, and Monocot root

UNIT III
a. Normal secondary thickening in dicot stem and dicot root
b. Anomalous secondary growth in Boerhaavia and Dracaena

UNIT IV
Internal structure of Dicot leaf - Nodal anatomy of Justicia, Azadirachta and Aralia – Lateral roots formation.

UNIT V - MICROTECHNIQUES
Fixation of plant materials sectioning of plant materials (Hand section only) – staining, mounting and whole mount preparation.

Text Books:
1. Plant anatomy - P.C.Vashista, S.Chand & Company Ltd, Delhi, 2012 Ed.

Reference books
1. Introduction to Plant anatomy - Eames & Mac Daniels, Tata McGraw Hill Education in India, 2010 Ed.
B.Sc. Botany CBCS Syllabus - SEMESTER - II
(For those who joined in June 2015 and after)

<table>
<thead>
<tr>
<th>PART - III : – Core Subject Practical – I</th>
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<tbody>
<tr>
<td>Subject Title: Algae, Bryophytes, Fungi and Plant Pathology, Pteridophytes, Gymnosperms, Paleo Botany and Plant Anatomy</td>
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<tr>
<td>Subject Code: <strong>08CP23</strong></td>
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<td>Sessional Marks: <strong>40</strong></td>
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</tbody>
</table>

1. Making suitable micropreparation of types prescribed in Pteridophytes and Gymnosperms and plant anatomy
2. Identifying the specimens studied
4. Observing and identifying the specimens at sight and writing explanatory notes on them.
5. Observing and identifying the fossil slides included in the syllabus
6. Micro techniques – demonstration only.
B.Sc. Botany Allied Chemistry CBCS Syllabus - SEMESTER II  
(For those who joined in June 2015 and after)

PART III – Allied Course Theory – II

<table>
<thead>
<tr>
<th>Subject Title: Inorganic, Organic and Physical Chemistry – II</th>
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<tr>
<td>Subject Code: 07AT02</td>
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<td>Sessional Marks: 25</td>
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</table>

Objectives:

To enable the students

- To learn the basic Principles Of Titrimetry
- To gain basic knowledge about pesticides
- To have gain the basic concept of amino acids
- To be basic concept of chemical bonding
- To know about the pollution and the effect.

UNIT I: ACIDS AND BASES 12 Hrs


UNIT II: PESTICIDES, AND FUNGICIDES 12 Hrs


UNIT III: AMINOACIDS, PROTEINS AND VITAMINS 12 Hrs

2. Vitamins Classification and biological functions of vitamins A, B\textsubscript{6}, B\textsubscript{12}, C, D, E and K(Structural elucidation not required).

UNIT IV: CHEMICAL BONDING 12 Hrs


UNIT V: POLLUTIONS 12 Hrs
**Air pollution:** Definition – Composition of air – Chemical reactions occurring in air due to sunlight– Sources of air pollution – Classification and effects of air pollutants – Effects of CFC – Ozone layer- Green house effect.


**Text Book:**
1. Ancillary chemistry K.Ratinamuthu (Study material will be provided)

**Reference Books:**
PART – IV : Non Major Elective

<table>
<thead>
<tr>
<th>Subject Title: GARDENING</th>
</tr>
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<tbody>
<tr>
<td>Subject Code: 08NE21</td>
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</tr>
<tr>
<td>Credit: 2</td>
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<td>Sessional Marks: 25</td>
</tr>
<tr>
<td>Summative Marks: 75</td>
</tr>
<tr>
<td>Total Marks: 100</td>
</tr>
</tbody>
</table>

Objectives:

- To acquire the basic knowledge about the improvement of hybrids of plant
- To know the various types of ecofriendly environment in front of homes
- To know the simple practice for the improvement of innovative garden

UNIT I:
Introduction to gardening – types of garden - Advantages of gardening

UNIT II
Propagation methods like Cutting, Layering, Grafting, Budding, division and separation

UNIT III
Garden operations: Transplanting methods (Bare rooted, shifting and balling and burlapping) - irrigation (surface, spray and drip) - manuring

UNIT IV
Ornamental gardening, Indoor gardening, Rockery, Bonsai and Lawn making, Terrarium, Aquarium, Terrace garden, Veranda garden and Hanging baskets

UNIT V
Kitchen gardening – importance, layout, suitable plants and advantages

Text Books:

Reference Books:
PART-I: Language Tamil Subject

<table>
<thead>
<tr>
<th>Subject Title</th>
<th>கட்டியம் மக்மி இளையமதது - தமிழ்:3</th>
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<tbody>
<tr>
<td>Subject Code</td>
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<tr>
<td>Hours per week</td>
<td>6</td>
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<td>Credit</td>
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<tr>
<td>Seasonal Marks</td>
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<tr>
<td>Summative marks</td>
<td>75</td>
</tr>
<tr>
<td>Total Marks</td>
<td>100</td>
</tr>
</tbody>
</table>

பாட்பாடத்தில்

அதாவது: 1. காயல் காணப்பட்டியம்

1. சிறைப்பொருளாட் - முக்கியம் காட்சி
2. பாழுக்காட்சி - அருகில் குறிப்பிட்டியம் காட்சி
3. பாழுக்காட்சி - உயர் பாயிற்றுல காட்சி
4. குற்றுப்பொருளாட் பார்வை - குற்றுக் காட்சி
5. சுருக்க பார்வை - அடுக்கு தியாயம் பார்வை

அதாவது: 2. குற்று காணப்பட்டியம்

1. பொட்டைவை - பொட்டைக்காட்சி (பொட்டைவை பார்வை)
2. பொட்டைக்காட்சி - பொட்டைக்காட்சி (பொட்டை பார்வை)
3. பொட்டைக்காட்சி - பொட்டைக்காட்சி (10 பார்வைகள்)
4. பொட்டைக்காட்சி - பொட்டைக்காட்சி (10 பார்வைகள் தொகை பார்வைத்தொகை)
5. பொட்டைக்காட்சி - பொட்டைக்காட்சி (10 பார்வைகள் தொகை பார்வைத்தொகை)

அதாவது: 3. குற்றுமுனை குற்றுக் காட்சி

அதாவது: 4. குற்று குற்றுக் காட்சி - அடுக்கு

1. அடுக்குகள் (1) குற்றுக் காட்சி, 2. குற்றுக் காட்சி, இழையமதது அடுக்கு, பொட்டை பார்வைப் பார்வை, குறுத்தியம் அடுக்கு
2. பாட்டிகள் (வெளிப்புற, வெளிப்புறம்)
3. சுருக்க பாயிற்று - குற்றுக் காட்சி (பார்வைகள் காட்சி - பார்வைகள் காட்சி)

அதாவது: 5. குற்று குற்றுக் காட்சி முந்தியாள் பார்வைத்தொகை.
1. குறிப்பிட்டும் திறக்கும் அறங்க
2. மேற்குத் திறக்கும் அறங்க
அ) புரியும் பங்கு அறங்கும் - முதலாந்துள்ள அறங்கும் - முன்னாட்சியாக அறங்கும்

பாதுகாப்புக்கான
1. குறிப்பிட்டும் திறக்கும் அறங்கு (திறக்குதல் வைத்திருப்பது)
2. குறிப்பிட்டும் திறக்கும் அறங்கு (பாதுகாப்பு விளக்கம்).

முன்னாட்சிக்கான
1. குறிப்பிட்டும் திறக்கும் அறங்கு (பாதுகாப்பு விளக்கம்)
2. குறிப்பிட்டும் திறக்கும் அறங்கு (பாதுகாப்பு விளக்கம்)
PROSE

Following portions from the prescribed text: ‘SAHITYA RASA KANA’
- Published by J.M. Publications, Madurai.

UNIT I & II
1. Gurubhakti
2. Mātaṅgacaritam
3. Samsargajādosaguṇā bhavanti
4. Akarnahrudayo gardabhaḥ
5. Śukanāsopadeśaḥ

POETICS

UNIT III & IV

ALAṆKĀRA (POETICS) FROM THE TEXT BOOK: SĀHITYA RASAKANĀḤ:-

UPAMĀ, ANANVAYA, UTPREKṢĀ, ATIṢAYOKTI, ULLEKHĀ, VYATIREKA, SAMĀSOKTI, ŚLEṢA, ARTHĀNTARANYĀSA.

HISTORY OF LITERATURE

UNIT V
Prose Romance,
Historical Kavyas, Popular Tales.

Prescribed text:
A short history of Sanskrit Literature
(Published by A.M.G. Publications, Madurai – 625 016, Page No. 35 – 40, 40 – 44, 45 - 50) year of publication- 1996

B.Sc. Botany Part-II English CBCS Syllabus - SEMESTER III
(For those who join in June 2017 and after)

### Objectives:

- To make students read and appreciate English Plays
- To make students appreciate English poetry
- To motivate students to face Competitive Examinations
- To develop continuous writing in English
- To make students read extensively

### Unit I – One Act Plays

<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>The First and the Last</td>
<td>John Galsworthy</td>
</tr>
<tr>
<td>Remember Caesar</td>
<td>G. Devoit</td>
</tr>
<tr>
<td>The Sheriff’s Kitchen</td>
<td>Ronald Gow</td>
</tr>
<tr>
<td>The Boatswain’s Mate</td>
<td>W.W. Jacobs and H.C. Sargent</td>
</tr>
</tbody>
</table>

15 Hrs

### Unit II – Poems

<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>Githanjali (Poem 50)</td>
<td>Rabindranath Tagore</td>
</tr>
<tr>
<td>The Earthen Goblet</td>
<td>Harindranath Chattopadhyaya</td>
</tr>
<tr>
<td>La Belle Dame sans Mercy</td>
<td>John Keats</td>
</tr>
<tr>
<td>Fidelity</td>
<td>William Wordsworth</td>
</tr>
<tr>
<td>The Tiger and the Deer</td>
<td>Sri Aurobindo</td>
</tr>
</tbody>
</table>

15 Hrs

### Unit III – Objective English

- Comprehension
- Spotting the Errors
- Sentence rearrangement
- Sentence Fillers
- Cloze test or Numbered Gaps

10 Hrs

### Text Book:


### Unit IV Composition

- Dialogue Writing
- Paragraph Writing

10 Hrs

### Unit V Intensive Reading (Great Speeches)

10 Hrs

Swami Vivekananda – Addresses at the Parliament of Religions

1. Response to Welcome,
2. Why We Disagree,
3. Religion Not the Crying Need of India,
4. Paper on Hinduism,
5. Address at the Final Session

Text: Swami Vivekananda’s Chicago Address, Ramakrishna Tapovanam Printing School.

B.Sc. Botany CBCS Syllabus – SEMESTER – III
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>PART – III : Core Subject Theory</th>
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<tbody>
<tr>
<td>Subject Title: Biochemistry, Biophysics and Biometrics</td>
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<tr>
<td>Subject Code: 08CT31</td>
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<td>Hours per week: 4+2</td>
</tr>
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<td>Credit: 4</td>
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<tr>
<td>Sessional Marks: 25</td>
</tr>
<tr>
<td>Summative Marks: 75</td>
</tr>
<tr>
<td>Total Marks: 100</td>
</tr>
</tbody>
</table>

Objectives:
- To learn the structure, classification and properties of macro molecules
- To understand the principles of energy production of biological systems
- To train the students in basic statistical methods used in interpreting scientific data

UNIT I Biomolecules
Carbohydrates: Classification, Structure and Properties of Monosaccharides only, Lipids – Types and properties only – Nucleic acids – Structure of DNA and types of RNA.

UNIT II Proteins
Structure and functions of Proteins only. Amino acids – Types and Properties only – Enzymes – Classification, properties and enzyme action.

UNIT III – Biophysics

UNIT IV – Photobiology

UNIT V Biostatistics
Collection, tabulation and interpretation of data, Measures of central tendencies (Mean, Median, Mode) Measures of dispersion (Standard deviation and standard error)

Text Books:

Reference Books:
   B.Sc. Botany CBCS Syllabus – SEMESTER – III
(For those who join in June 2015 and after)

PART – III : Core Subject Theory

<table>
<thead>
<tr>
<th>Subject Title: Bioinformatics</th>
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<tbody>
<tr>
<td>Subject Code: 08CT32</td>
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<tr>
<td>Hours per week: 5</td>
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<tr>
<td>Summative Marks: 75</td>
</tr>
<tr>
<td>Total Marks: 100</td>
</tr>
</tbody>
</table>

Objectives:

- To understand the basics, needs and applications of Bioinformatics
- To enable the students to use this course for their future research programs
- To know various websites connected with Bioinformatics

UNIT I

UNIT II

UNIT III
Sequence analysis – Pairwise sequence alignment and multiple sequence alignment – similarity search tools-BLAST and FASTA and Phylogenetic tree Constructions

UNIT IV
Genomics – History and perspectives in genomic sciences – Prokaryotic and Eukaryotic genomics – Techniques for genomic studies (PCR) – Introduction to RAPD & RFLP

UNIT V
Proteomics – Introduction – Terminologies used in proteomics – Proteome analysis.

Text Books:
2. Introduction to Computers – Alexix Leond Mathew, Leon Techniques, 2010 Ed.

Reference Books:

B.Sc. Botany CBCS Syllabus - SEMESTER - III
## PART – III : Core Subject Practical – II

<table>
<thead>
<tr>
<th>Subject Title: Biochemistry, Biophysics, Biometrics &amp; Bioinformatics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Code: 08CP33</td>
</tr>
<tr>
<td>Sessional Marks:</td>
</tr>
</tbody>
</table>

1. Determination of Complementary colours
2. Verification of Beer’s Law
3. Measurement of pH
4. Preparation of Buffers
5. Titration curve of weak acid
6. Titration curve of Strong acid
7. Preparation of standard graph for starch
8. Estimation of starch in a given material
9. Circular paper chromatography – Dyes
10. Ascending paper chromatography – Aminoacids
11. Calculate the standard deviation of the given material
12. Making suitable graphs for the data using chart wizard
13. Observing and identifying the spotters at sight and writing explanatory notes on them.
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>Part – III : Allied Subject Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Title: Animal Organisation</td>
</tr>
</tbody>
</table>

Subject Code: **09AT01**  
Hours per week: **4**  
Credit: **4**  
Sessional Marks: **25**  
Summative Marks: **75**  
Total Marks: **100**

Objectives:

To enable the students to

- *Fundamental course that provides basic understanding of biology of invertebrate and chordate.*
- *Study of salient features of invertebrates and chordates*

Unit-I

b. Outline classification of Invertebrates and the salient features of the Phyla with examples  
c. Outline classification of Chordates up to classes giving examples

Unit – II

a. Feeding and digestion in Amoeba, Hydra and Frog  
b. Respiration in Amoeba, Cockroach  
c. Gills in Fish and Lungs in bird

Unit – III

a. Circulatory system in *Paramecium*, Earthworm and *Calotes*.  
b. Locomotion in Amoeba, *Paramecium* and Earthworm  
c. Flight mechanism in Pigeon

Unit – IV

a. Nervous system of Earthworm  
b. Human brain and ear  
c. Receptors – photoreceptors of Euglena, insects and man

Unit – V

a. Excretion in Amoeba and Earthworm  
b. Excretion in Man-Structure of kidney and urine formation  
c. Reproductive system of Rabbit

Text books:


Reference Books:


B.Sc. Botany CBCS Syllabus – **SEMESTER – III**
For those who join in June 2015 and after

PART – IV : Skill Based Subject

<table>
<thead>
<tr>
<th>Subject Code:</th>
<th>Hours per week:</th>
<th>Credit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>08SB31</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Sessional Marks: 25  Summative Marks: 75  Total Marks: 100

Objectives:

- To acquire practical knowledge of using various instruments and carry out experiments with them
- To know the principles of instruments used in biology
- To know the importance of bioinstruments

UNIT I
Microscopy – The working principles of microscope-comparison of phase contrast and fluorescence microscopes-Electron microscope TEM and SEM
Micrometry – ocular and stage

UNIT II
Colorimetry and pH metry, Basic principles and application of Colorimeter and pH meter

UNIT III
Centrifugation – Basic principles and types of centrifuges, Application of analytical ultra centrifuge

UNIT IV
Chromatographic techniques – Basic principles and Types (Paper, TLC and Column chromatography)

UNIT V
Electrophoretic methods – Principles and types – Agarose gel and PAGE

Text Books:

Reference Books:
2. A biologist’s guide to principles and techniques of Practical Biochemistry – Goulding & Wilson, ELBS, 2010 Ed.
3. Instrumental analysis for science and technology – Weferren, Agrobios India, 2010 Ed.
**PART-I: Language Tamil Subject**

<table>
<thead>
<tr>
<th>Subject Title: தமிழ் தமிழ்ச் சொல்லியல் - நிறுவ:4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Code: PILT41</td>
</tr>
<tr>
<td>Hours per week: 6</td>
</tr>
<tr>
<td>Credit: 3</td>
</tr>
<tr>
<td>Seasonal Marks: 25</td>
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<tr>
<td>Summative marks: 75</td>
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<tr>
<td>Total Marks: 100</td>
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</tbody>
</table>

### பாடப்பணிகள்

<table>
<thead>
<tr>
<th>அட்சம்</th>
<th>பாடப்பணிகள்</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>நுழைவுரை திறக்கவும் (பொறுப்பு)</td>
</tr>
<tr>
<td>2</td>
<td>நுழைவுரை திறக்கவும் (அலகு)</td>
</tr>
<tr>
<td>3</td>
<td>நுழைவுரை</td>
</tr>
<tr>
<td>4</td>
<td>தொகுப்புநேரங்கள்</td>
</tr>
<tr>
<td>5</td>
<td>புள்ளியானானாள்</td>
</tr>
</tbody>
</table>

### பாடப்பணிகள் நடப்பினங்கள்

<table>
<thead>
<tr>
<th>அட்சம்</th>
<th>பாடப்பணிகள்</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>நுழைவுரை திறக்கவும் (பொறுப்பு) (பொறுப்பு- அலகு)</td>
</tr>
<tr>
<td>2</td>
<td>நுழைவுரை திறக்கவும்</td>
</tr>
</tbody>
</table>
1. குடிகாட்டை |
2. சூடுக்காட்டை |
3. சூடுக்காட்டை |
4. அமற்றுக்காட்டை |
5. புள்ளியானானாள் |

<table>
<thead>
<tr>
<th>அட்சம்</th>
<th>பாடப்பணிகள்</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>நுழைவுரை</td>
</tr>
</tbody>
</table>
1. குடிகாட்டை : நூற்றாண்டுப் பொறுப்பு (அலகு - 11) சூடுக்காட்டை (அலகு - 49) சண்முதலியாள் (அலகு - 71) |
2. புள்ளியானானாள் (கொங்கள் அலகு) (பொறுப்பு)|
1 சூடுக்காட்டை (பொறுப்பு 10 பாடகள்) |
2 சூடுக்காட்டை (பொறுப்பு 10 பாடகள்) |

<table>
<thead>
<tr>
<th>அட்சம்</th>
<th>பாடப்பணிகள்</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>நுழைவுரை ெ (பொறுப்பு)</td>
</tr>
</tbody>
</table>
1. அமற்றுக்காட்டை - நூற்றாண்டுப் பனிகள் (பொறுப்பு குறிக் குறிப்பிட்டியது)|
2. புள்ளியானானாள் - நூற்றாண்டுப் பனிகள் (பொறுப்பு) நூற்றாண்டுப் பனிகள் எழுதும் (பாடகள் 2 குறித்து)
12 பாடகள் |
3. புள்ளியானானாள் - பண்பாடு பண்பாடு - கொங்கள் - கொங்கள் - பண்பாடு பண்பாடு |

<table>
<thead>
<tr>
<th>அட்சம்</th>
<th>பாடப்பணிகள்</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>நுழைவுரை (சிறுபொறுப்பு) பாடல்பையாக்கியும்.</td>
</tr>
</tbody>
</table>
1. குடிகாட்டை நூற்றாண்டு |
2. சூடுக்காட்டை |

### மாதோ நேரங்கள்

1. நுழைவுரை திறக்கவும் (தமிழ் தமிழ்ச் சொல்லியல்)

### மாதோ பாடகள்

1. நுழைவுரை திறக்கவும் (சிறுபொறுப்பு பொறுப்பு)|
2. நுழைவுரை திறக்கவும் (அலகு பொறுப்பு |

38
DEPARTMENT OF SANSKRIT
B.A. / B.Sc. PART-I –LANGUAGE SANSKRIT SYLLABUS: SEMESTER – IV:
PAPER – IV
(For those who join in June 2017 and After)

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Title</th>
<th>Hours per week</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>PILS41</td>
<td>Drama And History of Sanskrit Literature – IV</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Sessional Marks</td>
<td>Summative Marks</td>
<td>Total Marks</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>75</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

60 hours to Drama, 30 hours to Spoken Sanskrit.

DRAMA

Following portions from the prescribed text: ‘SĀHITYA RASAKANĀ[1]’
- Published by J.M. Publications, Madurai.

Unit I, II, III
1. Karṇabhāra of Bhāsa

Unit IV
History of Drama Literature
A short history of Sanskrit Literature

(Published by A.M.G. Publications, Madurai – 625 016
Page No. 59 – 75) year of publication- 1996

Unit V
30 HOURS OF ORAL TRAINING DEVELOPING THE
COMMUNICATION SKILLS THROUGH THE SANSKRIT LANGUAGE.
B.Sc. Botany Part-II English CBCS Syllabus – SEMESTER – IV
(For those who join in June 2015 onwards)

<table>
<thead>
<tr>
<th>PART II – Paper I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Title:</td>
</tr>
<tr>
<td>Subject Code:</td>
</tr>
<tr>
<td>Hours per week:</td>
</tr>
<tr>
<td>Credit:</td>
</tr>
<tr>
<td>Sessional Marks:</td>
</tr>
<tr>
<td>Summative Marks:</td>
</tr>
<tr>
<td>Total Marks:</td>
</tr>
</tbody>
</table>

Objectives: Total number of hours per semester: 60 hours

- To motivate students to read and understand English prose
- To make students appreciate English poetry
- To enable students to face Competitive Examinations in English
- To develop continuous writing of the students
- To make students read extensively.

Unit I – Prose
1. Building Self Confidence - by Norman Vincent Peale (Personality Development)
   From, English for Enrichment, Edited by Prof. K. Chellappan.
2. Sport- A Modern Hunting Ritual - by Desmond Morris (Essay),
   From, English for Enrichment, Edited by Prof. K. Chellappan.
3. The Soft Thunder of Lumbini - by Hugh and Colleen,
   (A travelogue Feature in a Newspaper)
   From, English for Enrichment, Edited by Prof. K. Chellappan.
4. She is Dancing Back in Life - by Deborah Cowley (A True Life Story)
   From, English for Enrichment, Edited by Prof. K. Chellappan.
5. Within Without - Rabindranath Tagore.

Unit II – Poems
2. Kali the Mother - Swami Vivekananda
3. Lochinvar - Walter Scott
4. Yossouf - James Russell Lowell
5. The Daffodils - William Wordsworth
6. Much Madness - Emily Dickinson
7. The Woman Who is ……(XCII) - Kabir Das
8. Stopping by Woods on a Snowy Evening - Robert Frost
Unit III – Objective English
- Sentence Completion
- Synonyms
- Antonyms
- Idioms and Phrases
- Substitution


Unit IV – Composition
- Descriptive writing – Topics on Personal Experience
- Resume Preparation
- SMS and E-Mail Preparation and sending.

Unit V Extensive Reading: Four Scenes from Shakespeare’s plays.
1. The Merchant of Venice. Act IV – Scene I – Portia’s Speech.
B.Sc. Botany CBCS Syllabus – SEMESTER – IV
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>PART – III : Core Subject Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Title: <strong>Cell Biology and Embryology</strong></td>
</tr>
<tr>
<td>Subject Code: <strong>08CT41</strong></td>
</tr>
<tr>
<td>Sessional Marks: <strong>25</strong></td>
</tr>
</tbody>
</table>

**Objectives:**
- To understand the modern concept of cell structure, components and function
- To apply knowledge from cell biology in biotechnology
- To acquire knowledge on the development of embryo in plant

**UNIT I**

**UNIT II**
Cell cycle, Cell division types – Mitosis and Meiosis and their significance.

**UNIT III**
Structure of microsporangium, microsporogenesis and development male gametophytes.

**UNIT IV**
Structure of megasporanigium, megasporogenesis, formation of female gametophytes (*Polygonum, Allium, Peperomia*) and Fertilization.

**UNIT V**

**Text Books:**

**Reference Books:**
PART – III : Core Subject Theory

Subject Title: Plant Ecology

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Hours per week</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>08CT42</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Sessional Marks: 25, Summative Marks: 75, Total Marks: 100

Objectives:
- To create an awareness among the students on environmental problems and conservation.
- To help the learners to understand the hazards of pesticides.
- To understand the principles of Phytogeography – various ways of plant distribution.

UNIT I: Ecological Factors
- a) Climatic factors – Light, Temperature and wind.
- b) Biotic factors – interaction among plants, interaction between plants and animals.

UNIT II: Ecological Groups and Succession
- a) Ecological groups – Xerophytes, Hydrophytes and Halophytes
- b) Succession – Kinds of succession – Process of succession – Types of succession – Xerosere and Hydrosere

UNIT III: Studying Vegetation
- a) Methods of studying vegetation – Quadrat method only
- b) Vegetation of India and Tamil Nadu.

UNIT IV: Eco Toxicology
Hazards of pesticides – Effects of pesticides on animal life – effects on plants – effects on human life.

UNIT V: Phytogeography
Distribution of plants – continuous and discontinuous distribution – Continental drift – Endemism – Age and Area hypothesis.

Text Books:
2. Environmental science and engineering – P. Venugobal Rao, PHI Learning, New Delhi, 2010 Ed.

Reference Books:
B.Sc. Botany CBCS Syllabus – SEMESTER – IV  
(For those who joined in June 2015 and after)

<table>
<thead>
<tr>
<th>PART – III : Core Subject</th>
<th>Practical – III</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subject</strong> Title: <strong>Biochemistry, Biophysics, Biometrics &amp; Bioinformatics, Cell Biology, Embryology &amp; Plant Ecology</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Subject Code:</strong> 08CP43</td>
<td>Hours per week:</td>
</tr>
<tr>
<td><strong>Sessional Marks:</strong> 40</td>
<td><strong>Credit:</strong> 4</td>
</tr>
<tr>
<td><strong>Summative Marks:</strong> 60</td>
<td><strong>Total Marks:</strong> 100</td>
</tr>
</tbody>
</table>

1. Onion Root tip squash to observe mitosis cell division  
2. Rheo Flower bud squash to study meiosis  
3. Non-living inclusion – Raphides & cystolith  
4. Electron microphotographs – showing the ultra structure of cell organelles.  
5. T.S. of anther to study various stages of microsporogenesis  
6. Types of ovules (slides)  
7. Embryo mounting – *Cucumis*  
8. Study of xerophytes, hydrophytes and halophytes  
B.Sc. Botany Allied Zoology CBCS Syllabus - SEMESTER - IV
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>Part – III : Allied Subject Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Title: Biology and Human welfare</td>
</tr>
</tbody>
</table>

Subject Code: **09AT02**
Hours per week: **4**
Credit: **4**
Sessional Marks: **25**
Summative Marks: **75**
Total Marks: **100**

Objectives:

To enable the students to

- Knowledge on viral, bacterial, fungal, protozoan and helminthes disease and their control.
- Entrepreneurial avenues in Sericulture, Fish culture, Vermiculture, Mushroom and Apiculture.

Unit I

- a. Structure of a typical virus
- b. Brief account on Viral diseases
- c. Polio, Rabies and AIDS.

Unit-II

- a. Structure of typical Bacteria
- b. Brief account on Bacterial diseases
- c. Cholera, Tuberculosis and Tetanus.

Unit III

- a. Fungal diseases – Ringworm and Black piedra
- b. Protozoan diseases – Amoebic dysentery and Malaria
- c. Helminth parasites – *Ancylostoma* and *Wucheraria*

Unit IV

- b. Fish culture – Scope and Importance – Types of culture – Identification of common edible fishes - Induced breeding - common diseases and control – maintenance of fish pond.

Unit V

b. Mushroom culture – nutritive and medicinal value – Morphology of Indian oyster mushroom – cultivation of paddy straw mushroom - Advantages


Text Book:


Reference Books:

2. Gupta 2003. Vermicomposting for sustainable agriculture, Agrobios (India), Jodhpur
Objectives:
To enable the students to

- Identification of all classes of invertebrates and vertebrates.
- Unrevealing anatomical features of invertebrate and chordate

1. Observation of the following -Spotters
   - *Paramecium*- conjugation
   - *Obelia* (entire)
   - *Hydra* (entire)
   - *Taenia* (entire)
   - Scolex of *Taenia*
   - *Ascaris* male and female
   - *Nerties* (entire)
   - *Peneaus*
   - *Pila* (entire) and shell of Fresh water mussel)
   - Starfish (entire)
   - *Amphioxus, Balanoglossus, Scoliodon*
   - *Cobra, Viper, Pigeon*
   - Skull of Pigeon dorsal and ventral view
   - Pectoral girdle of pigeon
   - Fore and hind limb of Frog
   - Synsacrum of bird

2. Simple staining of Bacteria from milk and sewage water.
3. Mounting of mouth parts of Mosquito, Housefly and Honey bee.
4. Identification of *Ascaris* (male & female) and Tapeworm.
5. Identification of egg, larva, pupa and adult of silk moth.
6. Dissection to show silk glands.
7. Common appliances used in silkworm rearing and apiculture.
8. Visit to Biogas production, Mushroom culture and Fish culture centres.

ANCILLARY SUMMATIVE PRACTICAL EXAMINATIONS
QUESTION PAPER PATTERN

Practical – I Animal Organisation, Biology and Human Welfare (09AP03)

Time: 3 hrs

<table>
<thead>
<tr>
<th></th>
<th>Maximum Marks: 60</th>
</tr>
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<tbody>
<tr>
<td>1. Major Practical</td>
<td>20</td>
</tr>
<tr>
<td>2. Minor Practical</td>
<td>15</td>
</tr>
<tr>
<td>3. Spotters</td>
<td>(5 x 4) 20</td>
</tr>
<tr>
<td>4. Record</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

47
B.Sc. Botany CBCS Syllabus - SEMESTER - IV
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>PART – IV : Skill Based Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Title: <strong>Horticulture</strong></td>
</tr>
<tr>
<td>Subject Code: <strong>08SB41</strong></td>
</tr>
<tr>
<td>Hours per week: <strong>2</strong></td>
</tr>
<tr>
<td>Credit: <strong>2</strong></td>
</tr>
<tr>
<td>Sessional Marks: <strong>25</strong></td>
</tr>
<tr>
<td>Summative Marks: <strong>75</strong></td>
</tr>
<tr>
<td>Total Marks: <strong>100</strong></td>
</tr>
</tbody>
</table>

**Objectives:**
- To provide theoretical and practical aspects of gardening to enable the students to be self reliant knowledge and self employment
- To know the various types of ecofriendly environment in front of homes
- To know the simple practice for the improvement of innovative garden

**UNIT I**
Introduction to Horticulture-types of gardening-indoor, public and dam gardens

**UNIT II**
Propagation techniques-methods of cutting, layering, grafting and budding

**UNIT III**
cultural practices: Transplanting methods (bare rooted, shifting and balling, burlapping, potting and repotting) irrigation and manuring

**UNIT IV**
Horticultural techniques- disbudding, ringing, notching, smudging and pruning

**UNIT V**
Kitchen gardening-layout and maintenance, indoor gardening, rockery, Bonsai and Lawn

**Text Books:**

**Reference Books:**
B.Sc. Botany Part-II English CBCS Syllabus - SEMESTER – V
(For those who join in June 2015 and After)

<table>
<thead>
<tr>
<th>PART II – Paper I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Title: English for Career Development</td>
</tr>
<tr>
<td>Subject Code: P2LE51 / P2CE51</td>
</tr>
<tr>
<td>Sessional Marks: 100</td>
</tr>
</tbody>
</table>

Total number of hours: 15 hours

Objectives:
- To make students face Competitive Examinations with confidence
- To train students in writing book reviews
- To make them write reports, resolutions, minutes
- To make them prepare agenda for meeting.
- To make students read books on Personality Development

Unit I
- Comprehension

Unit II
- Spotting the Errors
- Sentence Improvement
- Voice
- Preposition
- Cloze Test or Numbered Gaps

Text Book:
Objective English for Competitive Examinations, Hari Mohan Prasad

Unit III
- Book Reviews

Unit IV
- Report-Writing
- Preparation of Agenda, Resolutions, Minutes

Unit V
Extensive Reading – Self study – How to win Friends and Influence People – Dale Carnagie, Vermilian, London

49
PART – III : Core Subject Theory

<table>
<thead>
<tr>
<th>Subject Title: Taxonomy of Angiosperms &amp; Economic Botany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Code: 08CT51</td>
</tr>
<tr>
<td>Hours per week: 5+2</td>
</tr>
<tr>
<td>Credit: 4</td>
</tr>
<tr>
<td>Sessional Marks: 25</td>
</tr>
<tr>
<td>Summative Marks: 75</td>
</tr>
<tr>
<td>Total Marks: 100</td>
</tr>
</tbody>
</table>

Objectives:
- To study the floral characters with an aim to identify the taxa authentically
- To prepare taxonomic keys with the help of morphological and floral characters
- To acquire knowledge on useful plant products and its proper application to wellbeing of human

UNIT I

UNIT II
Field and herbarium techniques, Modern trends in taxonomy (Chemo & Numerical)

UNIT III
Distinguishing features and economic importance of the following families: Annonaceae, Capparidaceae, Sterculiaceae, Meliaceae, Rutaceae, Caesalpinaceae, Mimosaceae, Cucurbitaceae and Apiaceae

UNIT IV
Distinguishing features and economic importance of the following families: Rubiaceae, Asteraceae, Asclepiadaceae, Solanaceae, Scrophulariaceae, Lamiaceae, Amaranthaceae, Euphorbiaceae, Orchidaceae, Arecaceae & Poaceae.

ECONOMIC BOTANY:

UNIT V: Fibres and fibre yielding plants
Spices and condiments
Resins and gums
Processing and extraction of Sugar & Tea

Text Books:
1. Taxonomy of Angiosperms- B.P. Pandey, S.Chand & Company Ltd, Delhi, 2014 Ed.

Reference Books:
1. Economic Botany-B.P. Pandey, S.Chand & Company Ltd, Delhi, 2014 Ed.
B.Sc. Botany CBCS Syllabus - SEMESTER - V
(For those who join in June 2015 and after)

**PART – III : Core Subject Theory**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Code</th>
<th>Hours per week</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Genetics</td>
<td>08CT52</td>
<td>5+2</td>
<td>3</td>
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</table>

**Sessional Marks:** 25  
**Summative Marks:** 75  
**Total Marks:** 100

**Objectives:**
- To acquire knowledge on Genetics (classical to Modern)
- To understand the Gene regulation in prokaryotes
- To know the significance of mutations

**UNIT I**
**Classical Genetics**
- a) Mendel’s laws of heredity with reference to mono and dihybrid crosses – incomplete dominance.
- b) Modification of 9:3:3:1 due to
  - i) Complementary genes
  - ii) Dominant epistasis
  - iii) Recessive epistasis

**UNIT II**
- i. Multiple alleles with reference to A, B, O blood groups in man
- ii. Linkage and Cross over – theories of crossing over – significance of crossing over
- iii. Mechanism of sex determination in plants.

**UNIT III**
- i) Sex linked inheritance
- ii) Extrachromosomal inheritance – Male sterility in Maize – plastid inheritance

**UNIT IV**
Chromosomal aberrations types (intrachromosomal-deletion, addition & inversion; interchromosomal translocation) genetic significance of mutations-mutagens

**UNIT V**
Human genome project  
Gene regulation in prokaryotes.

**Text Books:**

**Reference Books:**
Objective:

- To acquire basic knowledge on microbes
- To know the importance of microbes in day today life.
- To know the value of immune system immunity

Unit I
Introduction to Microbiology – Microbial diversity – General features and structure of Bacteria – Staining of Bacteria, Viruses, Yeast and Cyanobacteria.

Unit II
Control of Microorganisms – Use of Physical and Chemical agents in sterilization process - Role of Antibiotics and Chemotherapeutic agents.

Unit III

Unit IV
Microbial Metabolism – Photosynthesis – Light reactions of Purple Sulfur bacteria, Purple Non - Sulfur bacteria, Green Sulfur bacteria, Green Non- Sulfur bacteria – Dark reaction Reverse TCA Cycle Fermentation – Lactic acid and Ethanol fermentation.

Unit V
Immunology- Brief account of Immune system (Lymphoid organs, Lymphocytes, Phagocytes), Types of Antigen, Antibody Structure, Types and Function – Brief account of Antigen – Antibody reaction.

Text Books:
1. Microbiology and immunology – Ajit Kumar Banerjee, New Central Book Agency Delhi, 2012 Ed.

Reference Books:
B.Sc. Botany CBCS Syllabus - SEMESTER - V
(For those who joined in June 2015 and after)

PART – III : Core Subject  Practical - III

<table>
<thead>
<tr>
<th>Subject Title: Taxonomy Of Angiosperms, Economic Botany, Genetics &amp; Microbiology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Code: 08CP54</td>
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<tr>
<td>Hours per week:</td>
</tr>
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<td>Credit:</td>
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<td>Sessional Marks:</td>
</tr>
<tr>
<td>Summative Marks:</td>
</tr>
<tr>
<td>Total Marks:</td>
</tr>
</tbody>
</table>

1. Identifying, observing and sketching the floral parts of the plants belonging to the families included in the syllabus
2. Spotters may be given for practical from economic Botany
3. Field study – plant collection – herbarium preparation – submission of 10 herbarium sheets (valued internally)
4. Working on genetics problems in Mono, Dihybrid ratios and interaction of genes
5. Sterilization, Media preparation, Serial dilution, Staining of Bacteria – simple and gram staining
PART – III : Elective Subject

Subject Title: Medicinal Botany

Subject Code: 08EP51

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Sessional Marks: 25
Summative Marks: 75
Total Marks: 100

Objectives:
- To acquire knowledge on botanical diagnosis of fragmentary crude drugs
- To help the students to know preliminary photochemistry of plant organs
- To identify medicinal taxa

UNIT I
Pharmacognosy – definition, scope, History, Indigenous system of medicine (Ayurveda, Unani & Siddha) –Classification of crude drugs (Alphabetical, Taxonomical, Morphological, Pharmacological, Chemical and Chemotaxonomical).

UNIT II
Products derived from plants (Secondary metabolites) pharmaceutically important products, their classification, properties, isolation and medicinal uses of the Alkaloids, Tannins, Phenols, Resins and gums.

UNIT III
Collection and processing of crude drugs- harvesting, drying, garbling, packing and storage of crude drugs, Drugs adulteration- types of adulterants –methods of drug evaluation (Physical, chemical, biological and organoleptic), Evaluation and Pharmacopoeia standards.

UNIT IV
Medicinal uses of lower plants – Botanical names, common and vernacular names, morphology of the useful parts and medicinal uses of the following:

- Stem & Tuber: Zingiber officinale
- Bark & wood: Cinnamomum zeylanicum, Santalum album
- Leaves: Cassia senna
- Buds & flowers: Eugenia caryophyllota
- Fruits: Aegle marmelos
- Seeds: Myristica fragrans
- Resins and Gums: Ferula asafoetida

UNIT V
Botanical name, common name, family, chemical constituents, cultivation, Processing, harvesting and uses of the following
Withania somnifera, Aloe vera, Emblica officinalis and Carthamus tinctorius.

Text Books:

Reference Books:
2. Medicinal Plants-Anil Kumar, Inter. Sci. Publishing Academy, New Delhi,2014 Ed.
B.Sc. Botany CBCS Syllabus - SEMESTER - V
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>Subject Code: 08SB51</th>
<th>Hours per week: 2</th>
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<tbody>
<tr>
<td>Sessional Marks: 25</td>
<td>Summative Marks: 75</td>
<td>Total Marks: 100</td>
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</table>

Objectives:
- To acquire basic knowledge on mushrooms
- To know the importance of mushrooms
- To know the value of mushrooms in day today life

UNIT I
Introduction, Types of mushroom, edible and poisonous mushroom.

UNIT II
Life Cycle of *Pleurotus* sp. *Agaricus* sp, improvement of mushroom strains

UNIT III
Cultivation – isolates, spawn production, growth media, spawn running and harvesting of mushrooms.

UNIT IV
Post harvest technology, pests and diseases in mushrooms.

UNIT V
Harvesting, Freezing, Drying, Packaging and Marketing. Mushroom recipes and Nutritional value of mushrooms.

Text Books:
2. Mushroom Cultivation, 2005 - Singh

Reference Books:
1. Mushroom a manual of cultivation – Biswal Subrata, PHI Learning Pvt Ltd, Delhi, 2012 Ed.
2. Mushroom Cultivation, 2005 – Suman
Course: B.Sc. Botany - CBCS Syllabus – SEMESTER – V  
(For those who joined in June 2015 and After)

<table>
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<tr>
<th>Part – IV : Common Subject Theory</th>
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<tbody>
<tr>
<td>Subject Title: Environmental studies</td>
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<tr>
<td>Subject Code: ESUG51</td>
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<tr>
<td>Sessional Marks: 25</td>
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</table>

2hrs/week 24hrs

Objectives

- Disseminate information of Environment of national and international issues
- Environmental consciousness creation among the students
- Facilitation of environmental leadership among students

Unit-I  
5 hrs
Introduction – Nature, scope and importance of Environmental studies – Natural Resources and conservation – forest, water and energy.

Unit-II  
5 hrs
Ecosystem – concept – structure and function, energy flow, food chain, food web and ecological pyramids

Unit-III  
5 hrs
Biodiversity – definition, types – values – India, a mega diversity zone – Hotspots – Endangered and endemic species – threat to biodiversity and conservation

Unit-IV  
5 hrs

Unit-V  
4hrs

Text book

R.Murugesan, Environment studies – (2009), Milleneum Pub. Madurai-16
B.Sc. Botany Part-II English CBCS Syllabus - SEMESTER – VI
(For those who join in June 2015 and after)

Total number of hours: 15 hours

Objectives:

- To make students face Competitive Examinations with confidence
- To prepare students to face interviews
- To make students familiar with books and authors in English literature
- To make students prepare resume
- To motivate students to participate in Group Discussion
- To make students read books on Personality Development

Unit – I

- Sentence Completion
- Sentence Fillers
- Synonym
- Antonym
- Idioms and Phrases
- Substitution

Unit – II

- Sentence Arrangement
- Jumbled sentences
- Paragraph Reconstruction
- Analogy

Text Book:
Objective English for Competitive Examinations, Hari Mohan Prasad

Unit III

- Interview Skills – mock – interview.
- Debate, Group Discussion, Resume Writing

Unit IV

- Books and authors in English literature
B.Sc. Botany CBCS Syllabus - SEMESTER - VI
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>PART – III : Core Subject Theory</th>
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<tbody>
<tr>
<td>Subject Title: Plant Physiology</td>
</tr>
</tbody>
</table>

Subject Code: 08CT61  | Hours per week: 5+3  | Credit: 3  |
Sessional Marks: 25  | Summative Marks: 75  | Total Marks: 100  |

Objectives:
- To study the organization and physiology of plants
- To acquire the basic knowledge of cellular basis of physiological functions.
- To know the mechanism in plant metabolic activities such as photosynthesis, respiration and transpiration

UNIT I: Plants and water Relations
a) Diffusion – osmosis – water potential concept – plasmolysis
b) Mechanism of absorption of water – factors affecting absorption
d) Ascent of Sap: Mechanism of water movement.


b) Lipid metabolism - Synthesis of glycerol and fatty acids – condensation of glycerol and fatty acids – β oxidation of fatty acids.

UNIT IV: Mineral Nutrition
a) Role of macro and micro elements – mechanism of absorption of minerals.
b) Enzymes – Classification, properties – enzyme action – enzyme inhibitors.
c) Mechanism of translocation of solutes.

UNIT V: Growth and Development
a) Growth – definition – Physiological effects of Growth hormones (Auxins, Gibberellins, Cytokinins and Ethylene)
b) Physiology of flowering – Photoperiodism and Vernalization.
c) Seed dormancy.

Text Books:
1. Plant Physiology – Suraj Mandal, Campus Books, New Delhi, 2014 Ed.
3. Plant Physiology - Jain, V.K, S.Chand & Company Ltd, Delhi, 2013 Ed.

Reference Books:
B.Sc. Botany CBCS Syllabus - SEMESTER - VI
(For those who join in June 2015 and after)

<table>
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<td>Subject Title: <strong>Biotechnology</strong></td>
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<tr>
<td>Subject Code: <strong>08CT62</strong></td>
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<tr>
<td>Hours per week: <strong>5</strong></td>
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<td>Credit: <strong>3</strong></td>
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<td>Summative Marks: <strong>75</strong></td>
</tr>
<tr>
<td>Total Marks: <strong>100</strong></td>
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</tbody>
</table>

**Objectives:**
- To keep the students abreast of all the latest developments in Biotechnology
- To provide insights into advanced aspects of Agriculture, Environment and Medicine
- To expand the knowledge of the students in Biotechnology.

**UNIT I - DNA Biotechnology**

**UNIT II Industrial Biotechnology**
Industrial production of ethyl alcohol, citric acid and penicillin. Immobilization of enzymes and single cell proteins.

**UNIT III Agricultural Biotechnology**
Types of Potential Biofertilizers – mechanism of Nitrogen Fixation with reference to *Rhizobium* – root nodulation – nif genes – regulation of nif genes - Brief account of Biopesticides

**UNIT IV Environmental Biotechnology**
Biological treatment of sewage – Biogas and methanogenesis – biofuels Bioremediation of contaminated soil and brief account of Phytoremediation.

**UNIT V Medical Biotechnology**
Diagnostic procedure- ELISA & DNA based diagnostics, Brief account of Gene therapy – definition and types (nonclassical gene therapy-somatic cell therapy, germ line therapy and stem cell therapy ; classical gene therapy) DNA finger printing Production of health care products – insulin, Human growth Hormone and monoclonal antibodies.

**Text Books:**
3. A text Book of Biotechnology – R.C. Dubey, S.Chand & Company Ltd, Delhi, 2014

**Reference Books:**
Experiments carried out by the students
1. Measurement of OP by Chardakov’s method
2. Measurement of OP by Gravimetric method
3. Measurement of rate of Transpiration – Ganong’s Potometer
4. Transpiration equals absorption
5. Effect of light on Photosynthesis
6. Effect of CO₂ concentration on Photosynthesis
7. Separation of Leaf Pigments – Paper Chromotography
8. Find out the Respiration Quotient of the given material- Ganong’s Respirometer.

Experiments for demonstration only
1. Four leaf experiment
2. Foliar transpiration
3. Ganong’s Light screen
4. Ganong’s Respiroscope
5. Mohl’s half-leaf experiment
6. Evolution O₂ during Photosynthesis
7. Arc Auxanometer
8. Clinostat
9. Phototropism
10. Kuhen’s fermentation vessel
11. Demonstration of Tissue culture experiment using an explant.
12. Photographs – Callus, Plasmids, Biogas, Phytohormones.
13. Visit to tissue culture and microbiology divisions of an industry
B.Sc. Botany CBCS Syllabus - SEMESTER - VI
(For those who join in June 2015 and after)

PART – III : Elective Subject

<table>
<thead>
<tr>
<th>Subject Code: 08EP61</th>
<th>Hours per week: 4</th>
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<tbody>
<tr>
<td>Sessional Marks: 25</td>
<td>Summative Marks: 75</td>
<td>Total Marks: 100</td>
</tr>
</tbody>
</table>

Objectives:
- To accommodate the recent developments in Plant Biotechnology
- To acquire knowledge in tissue culture
- To acquire practical knowledge in tissue culture techniques

UNIT I
Introduction - Milestones in plant tissue culture – tools required for tissue culture lab – Media preparation, sterilization techniques.

UNIT II
Explants - Initiation and maintenance of callus – organogenesis (Auxillary Bud culture, Nodal culture) Somatic embryogenesis – meristem culture – Artificial seeds – Germplasm preservation.

UNIT III
Isolation and purification of protoplast-Protoplast fusion and Somatic hybridization - Anther culture and haploid generation – use of haploids in plant breeding.

UNIT IV
Suspension culture – Production of secondary metabolites-some pharmaceutically important secondary metabolites and their plant sources (Alkaloids, Tannins, Phenols and Resins with examples.

UNIT V

Text Books:

Reference Books:
1. Plant cell and tissue culture – S. Narayanasamy, Tata McGraw Hill Company, Delhi, 2012 Ed
2. Introduction to plant cell, tissue and organ culture – D. Prohit Sunil, PHI Learning Private Ltd, Delhi, 2013 Ed.
B.Sc. Botany CBCS Syllabus - SEMESTER - VI
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>PART – III : Elective Subject</th>
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<tbody>
<tr>
<td>Subject Title: Remote Sensing and GIS</td>
</tr>
<tr>
<td>Subject Code: 08EP62</td>
</tr>
<tr>
<td>Sessional Marks: 25</td>
</tr>
</tbody>
</table>

Objectives:
- To know the instruments employed in remote sensing
- To study the satellite data products; forest mapping
- To know the importance of remote sensing in forest management.

UNIT I: Introduction to Remote Sensing
Physical basis, EM Radiation, Sensor types, platforms.

UNIT II: Remote sensing instruments
Active and Passive instruments, Derivation of Information.

UNIT III: Remote Sensing Applications
Thematic applications, Integrated applications, NRSA and NNRMS, IRS and future mission.

UNIT IV: Geographical information system
Introduction, Definition, Components of GIS

UNIT V :GIS Application:
Introduction, Problem identification, Designing a model, Project Management and implementation.

Text Books:
3. Applications of Remote Sensing & GIS - Rajeev Sharma, 2005

Reference Books:
1. Principles of remote sensing an introductory textbook –Wim H. Bakker et al., the inter institute of aerospace survey and earth sciences, Netherlands 2010 Ed.
3. Physical basis of RS - George Joseph, 2005
PART – IV : Skill Based Subject

<table>
<thead>
<tr>
<th>Subject Code: 08SB61</th>
<th>Hours per week: 2</th>
<th>Credit: 2</th>
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<tbody>
<tr>
<td>Sessional Marks: 25</td>
<td>Summative Marks: 75</td>
<td>Total Marks: 100</td>
</tr>
</tbody>
</table>

Objectives:
- To know the varieties released through the various methods of plant breeding
- To know the various types of ecofriendly environment hybrids production
- To know the simple practice for the improvement of innovative hybrids

UNIT I: Plant introduction:

UNIT II: Selection:

UNIT III: Hybridization:

UNIT IV: Heterosis
Definition – causes of heterosis – effects of heterosis – achievements in heterosis.

UNIT V: Polyploid
Role of polyploids in plant breeding – Role of mutations in Crop improvement.

Text Books:

Reference Books:
B.Sc. Botany CBCS Syllabus - SEMESTER - VI
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>PART - IV : Skill Based Subject</th>
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<tbody>
<tr>
<td><strong>Subject Title:</strong> Biodiversity Conservation and Management</td>
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<tr>
<td><strong>Subject Code:</strong> 08SB62</td>
</tr>
<tr>
<td><strong>Sessional Marks:</strong> 25</td>
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</tbody>
</table>

**Objectives:**
- To introduce the various aspects of biodiversity to the students
- To spread across the message of preventing widespread biodiversity loss.
- To highlight the uses and values of biodiversity

**UNIT I : Biodiversity**
Definition – Levels of Biodiversity [Genetic, Species and Community and Eco System diversity] why biodiversity is rich in tropics?

**UNIT II: Loss of Biodiversity**

**UNIT III : Uses of biodiversity**
Consumptive values, Product values, social values, ethical, aesthetic, optimal and ecosystem service values.

**UNIT IV : Conservation of biodiversity**
Strategies followed in conservation – In-situ conservation – Protected areas net work [sacred groves, biosphere reserves, National parks and wild life sanctuaries. Ex-situ conservation: Zoos, botanical gardens, seed banks, pollen storage, tissue culture and genetic engineering.

**UNIT V : Brief account of global diversity**
Hot spots found in India – biodiversity conservation of India - Role of IUCN, WWF and MAB programmers. Environmental Protection Act – Forest conservation act & Biodiversity act.

**Text Books:**
1. An advanced Text Book on Biodiversity - Krishnamurthy, K.V.
2. Biodiversity – K.C. Agarwal

**References Books:**
B.Sc. Botany CBCS Syllabus - SEMESTER - VI
(For those who join in June 2015 and after)

PART – IV : Skill Based Subject

<table>
<thead>
<tr>
<th>Subject Title: Nanobiology</th>
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<tbody>
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<td>Subject Code: 08SB63</td>
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<tr>
<td>Hours per week: 2</td>
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<td>Credit: 2</td>
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<tr>
<td>Sessional Marks: 25</td>
</tr>
<tr>
<td>Summative Marks: 75</td>
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<tr>
<td>Total Marks: 100</td>
</tr>
</tbody>
</table>

Objectives:

- To acquire knowledge in nano biology
- To obtain various skills in nanotechnology
- To learn the newer technologies for competency.

Unit I: Nanotechnology

Introduction – types – basic principles – areas of applications.

Unit II: Cellular Machines

Nanomaterial’s (Nano- tubes, Nano-wires, Nano- crystals, Nano- particles – Biomacromolecules (DNA and Protein structure).

Unit III: Biosensors

Enzymes and protein based sensing – DNA amplification, DNA probes and assays – Liposomes, Fluidics, Biomembranes and Biochips.

Unit IV: Nanomedicine

Importance in diagnostics – Biocompatibility – diseases and Therapeutics.

Unit V: Nanotechnology and Agriculture


Text Books:


Reference Books:

B.Sc. Zoology Allied Botany CBCS Syllabus - SEMESTER - III
(For those who joined in June 2015 and after)

<table>
<thead>
<tr>
<th>PART – III : Allied Subject Theory</th>
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<tbody>
<tr>
<td>Subject Code: <strong>08AT01</strong></td>
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<tr>
<td>Sessional Marks: <strong>25</strong></td>
</tr>
</tbody>
</table>

Objectives:
- To understand the life history of cryptogams
- To understand the evolution of plants
- To learn to identify the different groups studied

UNIT I: ALGAE
General characters – Structure and reproduction of the following.
a) Cyanophyceae – *Nostoc*
b) Chlorophyceae – *Oedogonium*
c) Phaeophyceae – *Sargassum*

UNIT II: FUNGI
General characters – Structure and reproduction of the following.
a) Ascomycetes – *Penicillium*
b) Basidiomycetes – *Puccinia*
c) Lichens – Nature of association – habit and habitat - classification and morphology of lichen thallus. (Reproduction need not be discussed)

UNIT III: BRYOPHYTES
General characters – structure and life cycle of *Funaria*.

UNIT IV: PTERIDOPHYTES
General characters – structure and life cycle of *Lycopodium*.

UNIT V: GYMNOSPERMS
General characters – structure and life cycle of *Cycas*.

Text Books:

Reference Books:
2. Botany for Degree Students Algae – P.C. Vashishta, S.Chand & Company Ltd, Delhi, 2014 Ed.
B.Sc. Zoology Allied Botany CBCS Syllabus - SEMESTER - IV
(For those who joined in June 2015 and after)

<table>
<thead>
<tr>
<th>PART – III: Allied Subject Theory</th>
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<tbody>
<tr>
<td>Subject Title: <strong>Taxonomy of Angiosperms &amp; Plant Physiology</strong></td>
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<tr>
<td>Subject Code: <strong>08AT02</strong></td>
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<tr>
<td>Sessional Marks: <strong>25</strong></td>
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</table>

**Objectives:**
- To understand the life history of angiosperms
- To understand the mechanism of water movement in plants
- To know the various kinds of hormones involved in plants growth

**UNIT I: Classification**
Natural classification – Benthem and Hooker’s classification.

**UNIT II: Studying the following families:**
- Annonaceae, Caesalpiniaaceae, Asclepiadaceae, Lamiaceae, Euphurbiaceae, Poaceae.

**UNIT III: Plants and water relations**
- Osmosis – water potential concept – Plasmolysis – Mechanism of Absorption of water and Transpiration, Guttation.

**UNIT IV: Photosynthesis**
- Structure of chloroplast – Light reaction – Dark reaction – C₃ and C₄ cycles only.

**UNIT V: Growth and development**
a) Growth hormones – Auxins, Gibberellins and cytokinins.
b) Physiology of flowering – Photoperiodism and Vernalization.

**Text Books:**
1. Taxonomy of Angiosperms- B.P. Pandey, S.Chand & Company Ltd, Delhi, 2014 Ed.

**Reference Books:**
1. Plant Physiology – Suraj Mandal, Campus Books, New Delhi, 2014 Ed.
3. Plant Physiology - Jain, V.K, S.Chand & Company Ltd, Delhi, 2013 Ed.
B.Sc. Zoology Allied Botany CBCS Syllabus - SEMESTER – III & IV  
(For those who join in June 2015 and after)

<table>
<thead>
<tr>
<th>PART – III : Allied Subject Practical</th>
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<tbody>
<tr>
<td><strong>Subject Title:</strong> Algae, Fungi, Bryophytes, Pteridophytes, Gymnosperms, Taxonomy and Plant Physiology</td>
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<tr>
<td><strong>Subject Code:</strong> 08CP03</td>
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<td><strong>Hours per week:</strong> 2</td>
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<td><strong>Credit:</strong> 2</td>
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<td><strong>Sessional Marks:</strong> 40</td>
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<td><strong>Summative Marks:</strong> 60</td>
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</table>

1. Make suitable micropreparations of types prescribed in Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperm.
2. Identifying, observing and sketching the floral parts of the plants belonging to the families prescribed in the syllabus.
3. Demonstrating the following physiology experiments
   1. Four leaf experiment
   2. Foliar Transpiration
   3. Ganong’s Light screen
   4. Ganong’s Potometer
   5. Mohl’s half leaf experiment
   6. Evolution of O₂ during photosynthesis
   7. Arc Auxanometer
   8. Clinostat
   9. Phototropism
   10. Kuhne’s fermentation vessel
Course: B.Sc. Botany - CBCS Syllabus – SEMESTER – VI
(For those who joined in June 2014 and After)

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<th>PART – IV : Common Subject Theory</th>
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<tbody>
<tr>
<td>Subject Title : Value Education</td>
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<td>Subject Code: VEUG61</td>
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UNIT I:  
The heart of Education:  
[6 hours]


UNIT II:  
The Value of Body and Life Energy  
[6 hours]

Introduction – what are the causes for paid, Disease and death? Three Basic needs for all living Beings – Personal Hygiene Five Factors of Balance in Life – The need and benefits of physical Exercise – The value and Base of Life energy – The value and Base of Bio-magnetism - You are your own best caretaker.

The Marvelous nature of mind


UNIT III:  
Analysis of Thought  
[6 hours]


Effects of good vibrations – Make Blessing a Daily Habit

UNIT IV:  
Moralisation of Derive  
[6 hours]

Introduction – moralization of desire - Analyse your desires – Summary of practice.

Neutralisation of Anger:

Introduction – meaning – characteristics of Anger – Anger is a Destructive emotion – Anger spoils our relationship with others – Some common misconception about anger – will power and method success through awareness – method of neutralisation of anger.

UNIT V:  
Eradication of Worries  
[6 hours]

Worry is a mental disease – Nature’s Law of cause and effect – factors beyond our control – How to deal with problems – analyse your problem and eradicate worry

Harmonious Relationships

Introduction – Three angles of life – The value of harmony in personal relations – Love and Compassion – pleasant face and loving words – appreciation and gratitude to parents and teachers – Bringing needed reforms in educational institutions Why should we serve others? Brotherhood – A scientific Basis for Universal Brotherhood protection of the environment – non-violence and the five fold moral culture.

Text Book: Value Education for Health, Happiness and Harmony

Based on the Philosophy and Teachings of Swami Vethanthiri Maharishi) Published By: Brain Trust, Aliyar A Wing of World Community Service Centre

69
PART – V : Common Subject Theory

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UNIT-I:

UNIT – II:

UNIT – III:

UNIT – IV:

UNIT – V:

(OR)
Civil Defence – Aid to civil authorities – Disaster management – Leadership – Man management – Adventure activities – Social service

Reference:
National Service Scheme Manual (Revised), Ministry of Human Resources Development, government of India.