VIVEKANANDA COLLEGE

(Residential & Autonomous – A Gurukula Institute of Life-Training)

(Affiliated to Madurai Kamaraj University)

Reaccredited with 'A' Grade (CGPA of 3.57 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)

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 3.57 out of 4.00) by NAAC IN March 2010.

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 inculate 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.

GURUKULA ADMINISTRATIVE SET UP

Secretary	**Swami Niyamananda Maharaj**
Principal	**Dr. B. Ramamoorthy**
Vice-Principal & NAAC Coordinator	**Dr. S. Raja**
Academic Affairs	**Dr. M. Ganesan**
Controller of Examinations	**Dr. E. Jayakumar**
IQAC Coordinator	**Dr. S. Raja**
IGNOU Coordinator	**Sri. V. Parthasarathy**
ICT Coordinator	**Dr. N.Nagendran**
Grievence Cell Coordinator	**Dr. T. Kaliappan**
Director, Certificate Courses	**Dr. N. Nattuthurai**
Sessional Examination	**Sri. P.Muthukumaran, HOD of Maths**
	Sri. P.Natarajan
	Sri. G.Sanjeevi
	Sri. C. Rajan
	Sri. P. Madasamy

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

Time: 3 Hours
Maximum Marks: 75

SECTION-A (10 X 1 =10 Marks)

Answer All Questions
(1-5) Multiple Choice
(6-10) Short Answer Questions
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 40 : 60. 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 under graduates 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.

Department of Botany
TIME TABLE
SEMESTER-I

DAY /PERIOD	**I**	**II**	**III**	**IV**	**V**
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

SEMESTER-II

DAY /PERIOD	**I**	**II**	**III**	**IV**	**V**
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

SEMESTER-III

DAY /PERIOD	**I**	**II**	**III**	**IV**	**V**
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

SEMESTER-IV

DAY /PERIOD	**I**	**II**	**III**	**IV**	**V**
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

SEMESTER-V

DAY /PERIOD	I	II	III	IV	V
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

SEMESTER-VI

DAY /PERIOD	I	II	III	IV	V
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

SCHEME OF EXAMINIATION
(For those who join in June 2015 and After)
FIRST SEMESTER

Part	Study Component	Subject Code	Title Of The Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
I	Tamil	P1LT11	Tamil: Ikkalak Kavithaiyum Urainadaium	6	3	25	75	100
	Sanskrit	P1LS11	Fundamental Grammer & History of Sanskrit Literature – I					
II	English	P2LE11	Communicative English Spoken English – I	5 1	2	25	75	100
III	Core	08CT11	Algae & Bryophytes	4+2	4	25	75	100
	Core	08CT12	Fungi, Plant Pathology	4	4	25	75	100
	Core	08CP13	Practical I: Algae, Bryophytes, Fungi & Plant Pathology		2	40	60	100
	Allied	07AT01	Inorganic, Organic and Physical Chemistry-I	4	4	25	75	100
	Allied		Allied: Practical	2	-	-	-	-
IV	Nan Major	08NE11	Energy Resources	2	2	25	75	100
			TOTAL	**30**	**21**			

SECOND SEMESTER

Part	Study Component	Subject Code	Title Of The Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
I	Tamil	P1LT11	Tamil: Ikala Ilakkiyamum Makkal Thagavaliyalum.	6	3	25	75	100
	Sanskrit	P1LS11	Poetry, Grammar & History of Sanskrit Literature – II					
II	English	P2LE21	Functional English	5	2	25	75	100
	English	P2LE22	Spoken English – I	1	1	100	--	100
III	Core	08CT21	Pteridophytes, Gymnosperms and Paleo Botany	4+2	4	25	75	100
	Core	08CT22	Plant Anatomy & Microtechniques	4	4	25	75	100
	Core	08CP23	Practical II: Pteridophytes, Gymnosperms, Paleo Botany and Plant Anatomy		2	40	60	100
	Allied	08AT02	Inorganic, Organic and Physical Chemistry-II	4	4	25	75	100
	Allied	08AP03	Practical	2	2	40	60	100
IV	Nan Major	08NE21	Gardening	2	2	25	75	100
			TOTAL	**30**	**24**			

THIRD SEMESTER

Part	Study Component	Subject Code	Title Of The Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
I	Tamil	P1LT31	Kappiyamum Pakthi Ilakiyamum Nadakamum	6	3	25	75	100
I	Sanskrit	P1LS31	Prose, Poetics and History of Sanskrit Literature – III					
II	English	P2LE31	English through Drama & Poetry Spoken English – II	4 1	2	25	75	100
III	Core	08CT31	Biochemistry, Biophysics & Biometrics	4+2	4	25	75	100
	Core	08CT32	Bioinformatics	5	4	25	75	100
	Core	08CP33	Practical III: Biochemistry, Biophysics, Biometrics & Bioinformatics		2	40	60	100
	Allied	09AT01	Animal Organisation	4	4	25	75	100
	Allied		Allied: Practical	2	-	-	-	-
IV	Skill Based	08SB31	Skill Based Subject-I: Bioinstrumentation	2	2	25	75	100
			TOTAL	**30**	**21**			

FORUTH SEMESTER

Part	Study Component	Subject Code	Title Of The Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
I	Tamil	P1LT41	Tamil: Thamil Ilakkiamum Makkal Thagavaliyal Arimugamum	6	3	25	75	100
	Sanskrit	P1LS41	Drama, Spoken Sanskrit & History of Sanskrit Literature – IV					
II	English	P2LE41	Prose, Poetry, Language Study & Composition	5	2	25	75	100
	English	P2LE42	Spoken English – II		1	100	--	100
III	Core	08CT41	Cell Biology & Embryology	4+3	4	25	75	100
	Core	08CT42	Plant Ecology	4	4	25	75	100
	Core	08CP43	Practical IV: Cell Biology, Embryology & Plant Ecology		2	40	60	100
	Allied	09AT02	Applied Zoology I	4	4	25	75	100
	Allied	09AP03	Zoology – Practical	2	2	40	60	100
IV	Skill Based	08SB41	Skill Based Subject II: Horticulture	2	2	25	75	100
			TOTAL	**30**	**24**			

FIFTH SEMESTER

Part	Study Component	Subject Code	Title Of The Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
II	English	P2LE51	English For Competitive Examinations	1	1	100	--	100
III	Core	08CT51	Taxonomy of Angiosperms & Economic Botany	5+3	4	25	75	100
	Core	08CT52	Genetics	5+3	4	25	75	100
	Core	08CT53	Microbiology	4	3	25	75	100
	Core	08CT54	Practical V: Taxonomy of Angiosperms, Economic Botany, Genetics & Microbiology		2	40	60	100
	Elective	08EP51	Elective-1: Medicinal Botany	5	4	25	75	100
IV	Skill Based	08SB51	Skill Based Subject-III: Mushroom Cultivation	2	2	25	75	100
IV	ES	ESUG51	Environmental Studies	2	2	25	75	100
			TOTAL	**30**	**22**			

SIXTH SEMESTER

Part	Study Component	Subject Code	Title Of The Paper	Hours	Credit	Sessional Marks	Summative Marks	Total
II	English	P2LE61	English For Competitive Examinations	1	1	100	--	100
III	Core	08CT61	Plant Physiology	5+3	4	25	75	100
	Core	08CT62	Biotechnology	5	4	25	75	100
	Core	08CP63	Practical VI: Plant Physiology & Biotechnology		2	40	60	100
	Elective	08EP61	Elective-2: Tissue Culture	4	4	25	75	100
	Elective	08EP62	Elective-3: Remote Sensing and GIS	4	4	25	75	100
IV	Skill Based	08SB61	Skill Based Subject-IV: Plant Breeding	2	2	25	75	100
	Skill Based	08SB62	Skill Based Subject-V: Biodiversity Conservation and Management	2	2	25	75	100
	Skill Based	08SB63	Skill Based Subject-VI: Nanobiology	2	2	25	75	100
	VE	VEUG61	Value Education	2	2	25	100	100
	EA		Extension Activities		1			
			TOTAL	**30**	**28**			
			TOTAL		**140**			

CBCS - DISTRIBUTION OF CREDIT
B.Sc. BOTANY
(For those who joined in June 2015 and after)

Study Component	SEMESTER						Total Credit
	I	II	III	IV	V	VI	
Tamil / Sanskrit	3	3	3	3	-	-	**12**
English	2	2+1	2	2+1	1	1	**12**
Core Subject	10	10	10	10	13	10	**63**
Allied Subject	4	4+2	4	4+2	-	-	**20**
Non Major Elective	2	2	-	-	-	-	**4**
Skill Based Subject	-	-	2	2	2	6	**12**
Elective Subject	-	-	-	-	4	8	**12**
Environmental Study	-	-	-	-	2	-	**2**
Value Education	-	-	-	-	-	2	**2**
Extension Activity	-	-	-	-	-	1	**1**
TOTAL	**21**	**24**	**21**	**24**	**22**	**28**	**140**

FACULTY MEMBERS

Dr. N. LAKSHMANAN, M.Sc., M.Ed., M.Phil., DGT., PGDT., PGDCA., Ph.D.,
Head, Associate Professor of Botany

Dr. P.T. MANOHARAN, M.Sc., M.Phil, PGDCA., Ph.D.
Associate Professor of Botany

Dr. V. RAMESH, M.Sc., DCA, Ph.D.,
Assistant Professor of Botany

Dr. T. SELLATHURAI, M.Sc., M.Phil., Ph.D.,
Assistant Professor of Botany

Dr.C. SOUNDARARAJU, M.Sc., B.Ed., Ph.D.,
Assistant Professor of Botany

முதல் பருவம்
(2015-2016ஆம் கல்வியாண்டு முதல் முதற்பருவத்தில் சேரும் மாணவர்களுக்குரிய பாடத்திட்டம்)

PART-I: Language Tamil Subject		
Subject Title: **இக்காலக் கவிதையும் உரைநடையும் - தாள்:1**		
Subject Code: **P1LT11**	Hours per week: **6**	Credit: **3**
Sessional Marks: **25**	Summative marks: **75**	Total Marks: **100**

அலகு: 1 தமிழ்ச் செய்யுள்: மரபுக்கவிதைகள்

1. பாரதியார் கவிதைகள்
   1. தமிழ் (நான்கு பாடல்கள்)
   2. அறிவே தெய்வம் (10 கண்ணிகள்)

2/ பாரதிதாசன் கவிதைகள்
   1. சஞ்சீவி பர்வதத்தின் சாரல்

3/ நாமக்கல் கவிஞர் வெ.இராமலிங்கம் பிள்ளை
   1. குருதேவர் இராமகிருஷ்ணர் (3 பாடல்கள்)

4/ கவிமணி தேசிய விநாயகம் பிள்ளை
   1. கோவில் வழிபாடு

5/ அரசஞ்சண்முகனார்
   1. மதுரை ஸ்ரீமீனாட்சியம்மைத் திருவடிப்பத்து (முதல் ஐந்து பாடல்கள்)

அலகு: 2 தமிழ்ச்செய்யுள்: புதுக்கவிதைகள்

6. அன்னை – கவிஞர் கண்ணதாசன்
7. கிழக்கு விழிக்கும் நேரம் - கவிஞர் வைரமுத்து (கொடிமரத்தின் வேர்கள்)
8. அவர்கள் வருகிறார்கள் - மு.மேத்தா – (சுதந்திர தாகம்)
9. புதுக்கவிதைகள் - க.நா.சுப்ரமண்யம் - கவிதை

10/ நாம் இருக்கும் நாடு – வாக்கு வரம் தரும் தெய்வம் -தமிழன்பன்

11 தீர்த்தக்கரையினிலே – ஒலிபெருக்கி – முருகு சுந்தரம்

12 ஹைக்கூ கவிதைகள் - க.ராமச்சந்திரன்

அலகு: 3 தமிழ் உரை நடை இலக்கியம் - சுவாமி சித்பவானந்தரின் சிந்தனைகள்

அலகு: 4 தமிழ் இலக்கணம் - எழுத்து

1. முதல் எழுததுக்கள்
2. சார்பெழுத்துக்கள்
3. மொழி முதல் எழுத்துக்கள்
4. மொழி இறுதி எழுத்துக்கள்
5. வல்லெழுத்து மிகும் இடங்கள், வல்லெழுத்து மிகா இடங்கள்

அலகு: 5 தமிழ் இலக்கிய வரலாறும் பயன்பாட்டுத் தமிழும்

அ) 1. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்
   2. மரபுக்கவிதையின் தோற்றறும் வளர்ச்சியும்

ஆ) மரபுப்பிழை நீக்குதல் - பிறமொழிச் சொற்களை நீக்குதல் - பிழையற்ற தொடரைத் தேர்ந்ததெடுத்தல் - ஒருமை பன்மை மயக்கம் – ஒரு எழுத்து ஒரு மொழிக்குரிய பொருள் - ஒலி வேறுபாடுகளும் பொருள் வேறுபாடுகளும் - பொருத்தமான பொருள் - பொருத்தமான தொடர்

பாடநூல் - தமிழ் செய்யுள் தொகுப்பு

சுவாமி சித்பவானந்தரின் சிந்தனைகள். – தமிழ்த்துறை வெளியீடு

தமிழ்ச் செய்யுட் தொகுப்பு – தமிழ்த்துறை வெளியீடு

பார்வை நூல்:

தமிழ் இலக்கிய வரலாறு – **பாக்யமேரி**

தமிழ் இலக்கிய வரலாறு – **எம்.ஆர்.அடைக்கலசாமி**

FIRST SEMESTER I
(For those who join in June 2015 and after)

PART - I Sanskrit Paper I		
Subject Title **: Fundamental Grammar & History of Sanskrit Literature – I**		
Subject Code: **P1LS11**	Hours per week: **6**	Credit: **3**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

FUNDAMENTAL GRAMMER & HISTORY OF SANSKRIT LITERATURE -I

Following portions for Grammar:

Declension of the following nouns and pronouns:

a) Akarantha
   Akarantha Mascular, Akarantha Famine & Akarantha Neuter.
b) Asmad and Yusmad Sabdas

Conjugation of the following verbs in present, past & future tense
Bhava, Pada, Vada, Gacha, Vasa, Dris (Pas) Krida, Dhava.

History of Sanskrit Literature:

a) Vedas and Puranas
b) Itihasa
c) Court Epics – Mahakavyas

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.

The prescribed text: “SAHITHYA RASA KANAH”
(Published by A.M.G. Publications, Madurai – 625 016)
Sanskrita Sri Patamala Book 1: Publication: Sanskrit Educational Society, Madras – 18.
A short history of Sanskrit Literature
(Published by A.M.G. Publications, Madurai – 625 016)

SEMESTER I
(For those who join in June 2015 onwards)

PART II – Paper I		
Subject Title **: Communicative English**		
Subject Code:**P2LE11**	Hours per week: **5**	Credit: **3**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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

- *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*

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. Premchand – The Golden Watch

Unit – II

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

Book: ***A Textbook of English Grammar and Usage*** **by K.V.Joseph** (Page. No.1-184) Second Edition (2012), TATA McGraw Hill Education Private Limited, New Delhi.

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)

SEMESTER - I
(For those who join in June 2015 and after)

PART – III : Core Subject Theory		
Subject Title **: Algae and Bryophytes**		
Subject Code: **08CT11**	Hours per week: **4+2**	Credit: **4**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

Objectives

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

UNIT I: General classification based on Fritsch-Class level only – Economic importance of Algae

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 - *Oscillatoria*

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:

1. Botany for Degree Students Algae – P.C. Vashishta, S.Chand & Company Ltd, Delhi, 2014 Ed.
2. Text Book of Botany – V. Singh, Rastogi Publications, Meerut, 2013 Ed.
3. Botany for Degree Students Algae - P.C. Vashishta, S.Chand & Company Ltd, Delhi, 2014 Ed.

Reference Books:

1. The structure and reproduction of Algae Vol. I & II - F.E.Fritsch, Cambridge University Press.
2. College Botany – Ganfule Hirendra (Chandra) Vol. I, New centre book agency, London, 2013 Ed.
3. An introduction to Embryophyta –Bryophytes - N.S. Parihar, Surjeet Publications, Delhi, 2014 Ed.

SEMESTER - I
(For those who join in June 2015 and after)

PART - III : Core Subject Theory		
Subject Title **: FUNGI AND PLANT PATHOLOGY**		
Subject Code: **08CT12**	Hours per week: **4**	Credit: **4**
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 there by 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

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: Structure, Reproduction and 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 - Late blight of Potato
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:

1. Introduction to Mycology - C.J.Alexopoulos, Willey Eastern Pvt. Ltd, 2013 Ed.
2. Microbiology - L.M.Prescott, J.P.Harley, D.A. Klein, McGraw Hill, 2010 Ed.
3. Introduction to fungi - Jhon Webster, Cambridge University Press, 2013 Ed.

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

PART - III : – Core Subject Practical – I		
Subject Title: **Algae, Bryophytes, Fungi and Plant Pathology**		
Subject Code: **08CP13**	Hours per week:	Credit: **2**
Sessional Marks: **40**	Summative Marks: **60**	Total Marks: **100**

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

SEMESTER I

(For those who join in June 2015 and after) FOR BOTANY/ZOOLOGY MAJOR

PART III – Allied Course Theory		
Subject Title **: Inorganic, Organic and Physical Chemistry**		
Subject Code:**07AT01**	Hours per week:4	Credit:4
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

INORGANIC, ORGANIC AND PHYSICAL CHEMISTRY 60 Hrs

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

Concept of Molecular weight, Formula weight, Equivalent weight – Concentrations of solutions – Molarity, Normality, Weight percentage. Principle of Titrimetry – Primary and secondary standards – Preparing standard solutions – Standardising the secondary standard solutions.

UNIT II: ORGANIC BASIC PRINCIPLES I 12 Hrs

Empirical formula – molecular formula – structural formula – Calculation of Empirical Formula and Molecular Formula from percentage composition. Isomerism – Structural isomerism – Chain isomerism – Position isomerism – Functional isomerism – Metamerism – Stereoisomerism.

UNIT III: ORGANIC BASIC PRINCIPLES II 12 Hrs

Nucleophiles – Electrophiles: Definition, types and examples. Types of reactions: Substitution – Addition – Elimination – Rearrangement and Polymerization – illustration with examples. Resonance and tautomerism.

UNIT IV: ORGANIC INTERMEDIATES 12 Hrs

Nature of valency of carbon in organic compounds – Tetrahedral arrangement of valency of carbon – bond breaking and bond forming in organic reactions – Homolytic cleavage – Heterolytic cleavage – Definition, types and examples of carbocation, carbanion and free radical.

UNIT V: CATALYSIS AND PHOTOCHEMISTRY 12 Hrs

Definition – different types of catalysis – acid base catalysis – surface catalytic reactions – definition and examples – auto catalyst –catalytic poisoning – promoters. Definition of photochemical reactions – comparison of thermal and photochemical reactions – 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

SEMESTER - I
(For those who join in June 2015 and after)

PART – IV : Non Major Elective		
Subject Title **: ENERGY RESOURCES**		
Subject Code: **08NE11**	Hours per week: **2**	Credit: **2**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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:

1. Environmental science engineering – Dr. A. Ravikrishanan Sri Krishna Hitect Pub Company PvT. Ltd. Chennai, 2012 Ed.
2. Environmental science engineering - C.P. Venugobal Rao, PHI Learning New Delhi, 2010 Ed.
3. Environmental science engineering - Anuradha Publishers Chennai, 2010 Ed.

Reference Books:

1. Renewable energy technologies for rural sector - Shyam, M, Pandey, K.C & A.K. Dubey, 2013 Ed.
2. Environmental studies – SK.Grarg, Khanna Pub Delhi, 2012 Ed.
3. Environmental Geography – Alka Gautam, Sharada pustac bharan, Alakabad, 2010 Ed.

இரண்டாம் பருவம் - பாடத்திட்டம்
(2015-2016ஆம் கல்வியாண்டு இரண்டாம் முதற்பருவத்தில் சேரும் மாணவர்களுக்குரிய பாடத்திட்டம்)

PART-I: Language Tamil Subject		
Subject Title: **இக்கால கதை இலக்கியமும் மக்கள் தகவலியலும் - தாள்:2**		
Subject Code: **P1LT21**	Hours per week: **6**	Credit: **3**
Sessional Marks: **25**	Summative marks: **75**	Total Marks: **100**

அலகு: 1 தமிழ்ச் சிறுகதை இலக்கியம் - சிறுகதைகள் பத்து

அலகு: 2 தமிழ் நாவல் இலக்கியம் - துணிந்தவன்

அலகு: 3 மக்கள் தகவலியல் - பாடப்பகுதிகள்

1. இதழியல் வளர்ச்சி வரலாறு
2. செய்தித்தாளின் அடிப்படை வரலாறு
3. இந்திய இதழியல் - தொடக்க காலம்
4. 19ஆம் நூற்றாண்டில் இந்திய இதழியல்
5. இந்திய விடுதலை இயக்கமும் இதழ்களும்
6. இதழ்கள் தொடங்குவதற்குரிய வழிமுறைகள்
7. செய்தித்தாள் நிர்வாக அமைப்பு

அலகு: 4 தமிழ் இலக்கணம் - சொல்

1. நான்கு வகைச் சொற்கள்
2. வினா – விடை வகைகள்
3. வேற்றுமைகள்
4. தொகைகள் - வேற்றுமைத் தொகை, வினைத்தொகை, பண்புத்தொகை. உவமைத்தொகை. உம்மைத்தொகை. அன்மொழித்தொகை

அலகு: 5 தமிழ் இலக்கிய வரலாறும் பயன்பாட்டுத்தமிழும்

அ) 1. சிறுகதையின் தோற்றமும் வளர்ச்சியும்
2. புதின இலக்கியத்தின் தோற்றமும் வளர்ச்சியும்

ஆ) தொடரும் தொடர்பும் அறிதல் - பிரித்து எழுதுதல் - பொருந்தாச் சொல்லைக் கண்டறிதல் – வழூவுச்சொற்களை நீக்கிய தொடரைக் குறிப்பிடுதல்- சொற்களை அகர வரிசைப்படுத்தல்- வேர்ச்சொல்லைத் தேர்வு செய்தல் - எவ்வகை வாக்கியம் எனக் கண்டு எழுதுதல் - சொற்களை ஒழுங்குபடுத்திச் சொற்றொடர் ஆக்குதல் - ஆங்கிலச்சொல்லுக்கு நிகரான தமிழ்ச் சொல் அறிதல்.

பாடநூல்:

1.சிறுகதைகள் பத்து – தொகுப்பாசிரியர். முனைவர். ஆ.ஜோசப்சார்லி - ஆ.தாஸ் நியு செஞ்சுரி புக் ஷவுஸ்(பி.லிட்). சென்னை – 98.
2.நாவல் - துணிந்தவன் - வல்லிக்கண்ணன்-பாவை பப்ளிகேஷன்ஸ். சென்னை -14.
3.இதலியல் கலை – டாக்டா.மா.பா.குருசாமி
4.தமிழ் இலக்கிய வரலாறு – **பாக்யமேரி**

பார்வை நூல்:

1. மக்கள் தகவல் தொடர்பியல் அறிமுகம் - டாக்டர் கி. இராசா.
2. இதழியல் - ச.ஈஸ்வரன்
3. இதழியல் - டாக்டர் இரா.கோதண்டபாணி
4. இதழியல் ஓர் அறிமுகம் - டாக்டர் அந்தோணி இராசு.
5. தமிழ் இலக்கிய வரலாறு – **எம்.ஆர்.அடைக்கலசாமி**

SEMESTER – II : PAPER – II
(For those who join in June 2015 and after)

PART – I Sanskrit Paper II		
Subject Title **: Poetry Grammar & History of Sanskrit Literature – II**		
Subject Code:**P1LS21**	Hours per week: **6**	Credit: **3**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

POETRY

Selected portions from the : KALIVIDAMBANAM &
SABHARANJANASATAKAM
Published by Sadguna Publications, Cidambaram

Kalividambanam

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.

Sabharanjanasatakam

Unit IV : Wisdom and it's acquisition Vv.1-12
Unit V : Donor and Donation and Values of Human Vv.31-42, 77-91.

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

SEMESTER II

(For those who join in June 2015 onwards)

PART II – Paper I		
Subject Title **: Functional English**		
Subject Code:**P2LE21**	Hours per week: **5**	Credit: **3**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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. Computers and Common Sense - Roger Hunt & John Shelly
4. The Golden Age of Cricket - Neville Cardus
5. On Keyhole Morals - A.G. Gardiner

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**
Second Edition (2012), TATA McGraw Hill Education Private Limited, New Delhi.

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
4. *The Lost Child - Mulk Raj Anand*
5. Tree Speaks - C. Rajagopalachari

Unit – V Translation **15 Hrs**

- Translation of Sentences and Stories from Tamil to English/English to Tamil

(Passages will be supplied)

SEMESTER - II
(For those who join in June 2015 and after)

PART - III : Core Subject Theory		
Subject Title **: Pteridophytes, Gymnosperms & Paleobotany**		
Subject Code: **08CT21**	Hours per week: **4+2**	Credit: **4**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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*
- *Studens will be able to understand the chronological events that have taken place in the earth*

PTERIDOPHYTES

UNIT I: General classification based on Smith (1955), 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 Sporne (1965) 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 - *Lyginopteris*

Text Books:

1. An introduction to Embryophyta –Pteridophytes - N.S. Parihar, Surjeet Publications, Delhi, 2012 Ed.
2. Text Book of Botany – V. Singh, Rastogi Publications, Meerut, 2013 Ed.
3. Botany for Degree Students Gymnosperms - P.C. Vashishta, S.Chand & Company Ltd, Delhi, 2014 Ed.

Reference Books:

1. Morphology of Gymnosperms,Coulter, M.Jhon,Surjeet Publications, Delhi, 2014 Ed.
2. College Botany – Ganfule Hirendra (Chandra) Vol. I, New centre book agency, London, 2013 Ed.
3. An introduction to Embryophyta –Bryophytes - N.S. Parihar, Surjeet Publications, Delhi, 2013 Ed.

SEMESTER - II

(For those who join in June 2015 and after)

Subject Title **: Plant Anatomy and Microtechniques**		
Subject Code: **08CT22**	Hours per week: **4**	Credit: **4**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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 and mounting and whole mount preparation.

Text Books

1. Plant anatomy - P.C.Vashista, S.Chand & Company Ltd, Delhi, 2012 Ed.
2. Plant anatomy - Kaatherine, Esau, Wiley Eastern Pvt. Ltd, 2013 Ed
3. Plant anatomy - A.Fahn, Pergamon Press, 2010 Ed.

Reference books

1. Introduction to Plant anatomy - Eames & Mac Daniels, Tata McGraw Hill Education in India, 2010 Ed.
2. Plant anatomy - M.S.Tayal, Rastogi Publications, Meerut, 2010 Ed.
3. Plant micro technique - Donald Alexander Johnson

CBCS Syllabus - SEMESTER - II
(For those who joined in June 2015 and after)

PART - III : – Core Subject Practical – II		
Subject Title: **Pteriodophytes, Gymnosperms, Paleobotany and Plant Anatomy**		
Subject Code: **08CP23**	Hours per week:	Credit: **2**
Sessional Marks: **40**	Summative Marks: **60**	Total Marks: **100**

1. Making suitable microprepartion of types prescribed in Pteriodophytes and Gymnosperms and plant anatomy
2. Identifying the specimens studied
3. Making suitable slide preparation of stem, root and leaves – including anomalous secondary thickening.
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.

SEMESTER II

(For those who join in June 2015 and after) FOR **BOTANY / ZOOLOGY** MAJOR

PART III – Allied Course Theory – II		
Subject Title **: Inorganic, Organic and Physical Chemistry – I**		
Subject Code:**07AT02**	Hours per week: **4**	Credit**: 4**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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

Definition of acids and bases- Arrhenius concept -Lowry-Bronsted and Lewis concept – Cady – Elsey concept – Lux Flood concept – Usinovich concept of acids and bases- P^H concept.

UNIT II : PESTIDCIDES, ANDFUNGICIDES 12 Hrs

Pesticides: Definition – Classification – Organic and inorganic pesticides – Mechanism of action – Characteristics – Safe handling of pesticides – Impact of pesticides on soil, plants and environment –Fungicides: Definition – classification – mechanism of action – sulfur, copper and mercury compounds.

UNIT III:AMINOACIDS, PROTEINS AND VITAMINS 12 Hrs

1. Classification – (Gabriel Phthalimide synthesis) – properties of amino acids – polypeptides – proteins – classification.
2. Vitamins Classification and biological functions of vitamins A, B_6, B_{12}, C, D, E and K(Structural elucidation not required).

.**UNIT IV: CHEMICAL BONDING** 12 Hrs

Ionic Bond – Lattice Energy – Born-Haber Cycle – Properties of Ionic Compounds - Covalent bond – polar covalent bond – characteristics of covalent bond – hydrogen bond – Metallic bond – Fajan's Rule.

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.

Water pollution: Types – sources –water – sewage – industrial effluents – inorganic pollutants- water pollution control – water treatment.

TEXT BOOK

Ancillary chemistry K.Ratinamuthu (Study material will be provided)

SEMESTER - II
(For those who join in June 2015 and after)

PART – IV : Non Major Elective		
Subject Title: **GARDENING**		
Subject Code: **08NE21**	Hours per week: **2**	Credit: **2**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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:

1. Plant Breeding – SS. Sandhu, Black Prints, New Delhi, 2013 Ed.
2. A Guide to Horticulture - J.S. Sundararaj, Kalyani Pub, Chennai, 2012 Ed.
3. Horticulture – V.L. Sheela, MJ Publishers, 2013 Ed.

Reference Books:

1. A manual of Gardening – Arun zingare, Satyam Pub, Jaipur, 2013 Ed.
2. Horticulture at a glance – Amar Singh, Kalyani Publishers, Chennai, 2013 Ed.
3. Dry Land Horticulture in India – P.P. Deshmukh, Himalaya Publishing House, Mumbai, 2013 Ed.

மூன்றாம் பருவம் - பாடத்திட்டம்
(2015-2016ஆம் கல்வியாண்டு இரண்டாம் முதற்பருவத்தில் சேரும் மாணவர்களுக்குரிய பாடத்திட்டம்)

PART-I: Language Tamil Subject		
Subject Title: **காப்பியமும் பக்தி இலக்கியமும் நாடகமும் - தாள்:3**		
Subject Code: **P1LT31**	Hours per week: **6**	Credit: **3**
Sessional Marks: **25**	Summative marks: **75**	Total Marks: **100**

அலகு: 1 தமிழ்க் காப்பிய இலக்கியம்

1.சிலப்பதிகாரம் - வழக்குரை காதை
2.மணிமேகலை – ஆபுத்திறன் திறம் அறிவித்த காதை
3.கம்பராமாயணம் - வாலி வதைப்படலம்
4.வில்லிப்புத்தூரர் பாரதம் - கண்ணன் தூதுச்சருக்கம்
5.கந்த பராணம் - அயனைச் சிறை நீக்கும் படலம்

அலகு: 2 தமிழ் பக்தி இலக்கியம்

1. இயேசு காவியம் - மலைப்பொலிவு – கண்ணதாசன்
2. பராபரக்கண்ணி – தாயுமானவர் - 10 பாடல்கள்
3. திருப்பாவை – ஆண்டாள் - 10 பாடல்கள்
4. தேவாரம் - திருஞானசம்பந்தர் (திருவேடகப் பதிகம்)
5. திருவாசகம் - மாணிக்கவாசகர் - பிடித்த பத்து
6. திருமந்திரம் - திருமூலர் - 10 பாடல்கள்

அலகு: 3 நாடகம்

வைகையில் வெள்ளம் வரும் - சேதுபதி

அலகு: 4 தமிழ் இலக்கணம்

1. அணிகள் - உவமை – உருவகம் - பிறிது மொழிதல் - தற்குறிப்பேற்றம் வஞ்சப்புகழ்ச்சி – சிலேடை – வேற்றுமை அணி
2. பா வகைகள் - நான்கு வகைப்பாக்கள்
3. வேற்றுமைகள்
4. கடிதம் வரைதல் - விண்ணப்பம் - புகார்க் கடிதம் - பாரட்டுக்கடிதம்

அலகு: 5தமிழ் இலக்கிய வரலாறும் படைப்பாற்றலும்

அ) 1. காப்பிய இலக்கிய வரலாறு
2. பக்தி இலக்கிய வரலாறு

ஆ) பத்திரிக்கைச் செய்தி எழுதுதல் - நேர்காணல் எழுதுதல் - துணுக்கள் எழுதுதல்

பாடநூல் :

1. தமிழ்ச் செய்யுட் தொகுப்பு – தமிழ்த்துறை வெளியீடு
2. நாடகம் - வைகையில் வெள்ளம் வரும் - சேதுபதி. பாவைபப்ளிகேஷன்ஸ்

பார்வை நூல்:

தமிழ் இலக்கிய வரலாறு – **பாக்யமேரி**
தமிழ் இலக்கிய வரலாறு – **எம்.ஆர்.அடைக்கலசாமி**

SEMESTER – III : PAPER – III
(For those who join in June 2015 and after)

PART – I Sanskrit Paper III		
Subject Title **: Prose ,Poetics & History of Sanskrit Literature – III**		
Subject Code: **P1LS31**	Hours per week: **6**	Credit: **3**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

PROSE

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

1. GURU BHAKTHI
2. MATANGA CHARITAM
3. SAMSARGAJAH DOSHAGUNAAH BHAVANTHI
4. AKARNA HRIDAYO GARDABAH
5. VASUDEVA DAUTHYAM

POETICS

ALAMKARAM (POETICS) FROM THE TEXT BOOK: SAHITYA RASAKANA:-
UPAMA, ANANVAYA, UTPREKSHA, ATHISAYOKTHI, ULLEKHA, VYATHIREKA, SAMASOKTHI, SLESHA, ARTHANITHARANYASA.

HISTORY OF LITERATURE

Prose Romance,
Historical Kavyas, Popular Tales.
A short history of Sanskrit Literature
(Published by A.M.G. Publications, Madurai – 625 016
Page No. 35 – 40, 40 – 44, 45 - 50)

SEMESTER III
(For those who join in June 2015 onwards)

PART II – Paper I		
Subject Title **:**	**English through Drama and Poetry**	
Subject Code:**P2LE31**	Hours per week: **4**	Credit: **3**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

OBJECTIVES: **Total number of hours per semester: 60 hours**

- *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 **15 Hrs**

1. The First and the Last - John Galsworthy
2. Remember Caesar - G.Devoit
3. The Sheriff's Kitchen - Ronald Gow
4. The Boatswain's Mate - W.W.Jacobs and H.C. Sargent
5. The Pathfinder - Hermon Ould

Unit II – Poems **15 Hrs**

1. Githanjali (Poem 50) - Rabindranath Tagore
2. The Earthen Goblet - Harinranath Chattopadhyaya
3. La Belle Dame Mercy - John Keats
4. Fidelity - William Wordsworth
5. Quality of Mercy - William Shakespeare
6. The Tiger and the Deer– Sri Aurobindo

Unit - III Objective English **10 Hrs**

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

Text Book: *Objective English for Competitive Examinations* – Hari Mohan Prasad, Uma Rani Sinha, Tata McGraw Hill Education Private Limited, New Delhi. 2010, Fourth Edition

Unit – IV Composition **10 Hrs**

- Dialogue Writing
- Paragraph Writing

Unit – V Extensive Reading **10 Hrs**

Hayavadana – Girish Karnad, Oxford University Press

SEMESTER - III

(For those who join in June 2015 and after)

PART – III : Core Subject Theory		
Subject Title: **Biochemistry, Biophysics and Biometrics**		
Subject Code: **08CT31**	Hours per week: **4+2**	Credit: **4**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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

Bioenergetics – Laws of thermodynamics – free energy – enthalpy –entropy – Redox Potential – free energy change in redox reactions – mitochondrial and chloroplast bioenergetics.

UNIT IV – Photobiology

Nature of light, light and plant pigments – absorption of light – fate of exited electrons – Action spectra – Photochemical reaction – Physical phenomena (Luminescence, Fluorescence, Phosphorescence)

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:

1. Elementary Biophysics – Srivastava, Narosa Publishers, Chennai, 2013 Ed.
2. Biostatistics – B.K.Mahajani, J.P.Brothers, Delhi, 2010 Ed.
3. Biophysics and bioinstrumentation – N. Arumugam, Saras Publicatoins, Nager coil, 2013 Ed

Reference Books:

1. Outlines of Biochemistry - Conn & Stomp, John Wiley & Sons, 2010 Ed.
2. Biochemistry - Lehniger, Kalyani Publications, Chennai, 2012 Ed.
3. Elements of Biochemistry – H.S.Srivastava, Rastogi Pub. Meerut, 2013 Ed.

SEMESTER - III
(For those who join in June 2015 and after)

PART – III : Core Subject Theory		
Subject Title: **Bioinformatics**		
Subject Code: **08CT32**	Hours per week: **4+3**	Credit**: 4**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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

Introduction to computers and its characteristics – Introduction to Windows, Word processing. Introduction to Excel – Construction of graph and taking printouts.

UNIT II

Bioinformatics – Definition – Terminologies used in bioinformatics – internet basic – Database NCBI and BLAST. Applications of bioinformatics.

UNIT III

Sequence analysis –Pairwise sequence alignment and multiple sequence alignment; similarity search tools-BLAST and FASTA

UNIT IV

Genomics – History and perspectives in genomic sciences – Prokaryotic and Eukaryotic genomics – Techniques for genomic studies (PCR)

UNIT V

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

Text Books:

1. Bioinformatics - B.G. Curran, CBS Publishers PVT Ltd, New Delhi, 2012 Ed.
2. Introduction to Computers – Alexix Leond Mathew, Leon Techniques, 2010 Ed.
3. Fundamental concepts of bioinformatics – E. Dan Krane, Dorting Kindersbey Pvt Ltd, Noida, 2010 Ed.

Reference Books:

1. Bioinformatics a modern approach – R. Srinivas vittal, prentice Hall of india Pvt Ltd , Delhi, 2010 Ed.
2. Bioinformatics - Tata McGraw Hill Eduction india, Delhi, 2010 Ed.
3. Bioinformatics a practical manual – M. Rajadurai, PBS Books Interprises, Chennai, 2012 Ed.

CBCS Syllabus - SEMESTER - III
(For those who joined in June 2015 and after)

PART – III : Core Subject Practical – III		
Subject Title: **Biochemistry, Biophysics, Biometrics & Bioinformatics**		
Subject Code: **08CP33**	Hours per week:	Credit**:** **2**
Sessional Marks: **40**	Summative Marks: **60**	Total Marks: **100**

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.

SEMESTER - III
B.Sc. Chemistry and B.Sc. Botany (Ancillary Zoology)
(For those who join in June 2015 and after)

Part – III : Allied Subject Theory		
Subject Title : **Animal Organisation**		
Subject Code: **09AT01**	Hours per week: **4**	Credit: **3**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

Objectives

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

Unit-I

1. Principles of taxonomy – Binomial nomenclature - Animal Organisation – body types – protozoa – metazoa – types of coelom – types of symmetry
2. Outline classification of Invertebrates and the salient features of the Phyla with examples. Outline classification of Chordates upto classes giving exampls

Unit – II

1. Feeding and digestion in Amoeba, Hydra and Frog.
2. Respiration in Amoeba, Cockroach, Gills in Fish and Lungs in bird.

Unit – III

1. Circulatory system in Paramoecium, Earthworm and Calotes.
2. Locomotion in Amoeba, Paramoecium and Earthworm: Flight mechanism in Pigeon.

Unit – IV

1. Nervous system of Earthworm: Human brain.
2. Receptors – photoreceptors of Euglena, insects and man. Human ear.

Unit – V

1. Excretion in Amoeba, Earthworm and Man.
2. Reproductive system of Rabbit.

Text books

- A Text Book of Invertebrates –2014. Nair *et al.*, Saras Publications.
- A Text Book of Chordates – 2014. Thangamani, *et.a.l.*, Saras Publications

Reference Books

- Chordate Zoology 2011 Jordan & Verma, S.Chand & Co Ltd
- Invertebrates 2011 R.L.Kotpal, Rastogi Publications
- Vertebrates 2011 R.L.Kotpal, Rastogi Publications

SEMESTER -III

(For those who join in June 2015 and after)

PART – IV : Skill Based Subject		
Subject Title: **Bioinstrumentation**		
Subject Code: **08SB31**	Hours per week: **2**	Credit**:** **2**
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 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 (PAGE)

Text Books:

1. Techniques in Biology – J. Jeyaraman, Higgin Bothams Ltd, 2010 Ed.
2. Analytical Biochemistry – P. Asokan, Chinna Publications, 2013 Ed.
3. Biophysics and bioinstrumentation – N. Arumugam, Saras Publicatoins, Nager coil, 2013 Ed

Reference Books:

1. Practical Biochemistry – David. T. Plummer, THM, 2010 Ed.
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.

நான்காம் பருவம் - பாடத்திட்டம்
(2015-2016ஆம் கல்வியாண்டு இரண்டாம் முதற்பருவத்தில் சேரும் மாணவர்களுக்குரிய பாடத்திட்டம்)

PART-I: Language Tamil Subject		
Subject Title: **சங்க இலக்கியமும் நீதி இலக்கியமும் - தாள்:4**		
Subject Code: **P1LT41**	Hours per week: **6**	Credit: **3**
Sessional Marks: **25**	Summative marks: **75**	Total Marks: **100**

அலகு: 1 தமிழ்ச் சங்க இலக்கியம்- பத்துப்பாட்டு

1. பத்துப்பாட்டு – முல்லைப்பாட்டு தமிழ்ச் செய்யுள் தொகுப்பு –தமிழ்த் துறை வெளியீடு

அலகு: 2 தமிழ்ச் சங்க இலக்கியம் - எட்டுத்தொகை

1. நற்றிணை
2. குறுந்தொகை
3. கலித்தொகை
4. அகநானூறு
5. புறநானூறு
6. பரிபாடல்

அலகு: 3 தமிழ் நீதி இலக்கியம்

1. திருக்குறள் : செய்நன்றியறிதல் - அதிகாரம் -11
   காலமறிதல் - அதிகாரம் - 49
   குறிப்பறிதல் - அதிகாரம் 71
2. பழமொழி நானூறு – கல்வி அதிகாரம்
3. நாலடியார் - கல்வி அதிகாரம்

அலகு: 4 தமிழ் இலக்கணம் - பொருள்

1. அகப்பொருள் - அகத்திணைகள்
2. புறப்பொருள் -புறத்திணைகள்
3. உள்ளுறை இறைச்சி

அலகு: 5 தமிழ் இலக்கிய வரலாறும் பயன்பாட்டுத்தமிழும்

அ) 1. சங்க இலக்கிய வரலாறு
   2. நீதி இலக்கிய வரலாறு

ஆ) புத்தகமதிப்பரை –தமிழ்த் திரைப்பட விமர்சனம்.

பாட நூல்:

1. தமிழ்ச் செய்யுள் தொகுப்பு –தமிழ்த் துறை வெளியீடு
2. தமிழ்ச் செய்யுள் தொகுப்பு – தமிழ்த்துறை வெளியீடு

பார்வை நூல்:

தமிழ் இலக்கிய வரலாறு – **பாக்யமேரி**

தமிழ் இலக்கிய வரலாறு – **எம்.ஆர்.அடைக்கலசாமி**

SEMESTER – IV : PAPER – IV
(For those who join in June 2015 and after)

PART - I Sanskrit Paper IV		
Subject Title **: Drama And History of Sanskrit Literature – IV**		
Subject Code: **P1LS41**	Hours per week: **4**	Credit: **2**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

60 hours to Drama, 30 hours to Spoken Sanskrit.

DRAMA

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

Unit I, II, III

1. Karnabharam of Bhasa

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)

Unit V

30 HOURS OF ORAL TRAINING DEVELOPING THE COMMUNICATION SKILLS THROUGH THE SANSKRIT LANGUAGE.

SEMESTER IV
(For those who join in June 2015 onwards)

PART II – Paper I		
Subject Title **: English through Classics**		
Subject Code:**P2LE41**	Hours per week: **4**	Credit: **3**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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 Oeborach Cowley (A True Life Story)
   From, English for Enrichment,
   Edited by Prof. K. Chellappan.
5. Within Without - Rabindranath Tagore.

Unit II – Poems

1. Kali the Mother — Swami Vivekananda
2. Lochinvar — Walter Scott
3. Yossouf — James Russell Lowell
4. The Daffodils — William Wordsworth
5. Much Madness — Emily Dickinson
6. The Woman Who is ……(XCII) — Kabir Das
7. Stopping by Woods on a Snowy Evening — Robert Frost

Unit III - Objective English

- Sentence Completion
- Synonyms

- Antonyms
- Idioms and Phrases
- Substitution

Text Book: *Objective English for Competitive Examinations* – Hari Mohan Prasad, Uma Rani SInha, Tata McGraw Hill Education Private Limited, New Delhi. 2010, Fourth Edition

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.
2. **Julius Caesar.** Act III – Scene II – Mark Antony and Brutus Speech.
3. **Twelfth Night.** Act V – Scene I – Before Olivia's House.
4. **Othello.** Act V – Scene II – A Bedchamber in the Castle.

SEMESTER - IV

(For those who join in June 2015 and after)

PART – III : Core Subject Theory		
Subject Title: **Cell Biology and Embryology**		
Subject Code: **08CT41**	Hours per week: **5**	Credit**: 4**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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

Plant Cell structure - Differences between eukaryotic and Prokaryotic cells. Brief account of structure and functions of the following 1.Cell membrane, 2. Golgi complex, 3. Mitochondria, 4. Chloroplast, 5. Ribsomes 6. Glyoxysomes, 7. Peroxisomes 8.Endoplasmic reticulum – Structure of Nucleus& chromosomes.

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

Endosperm – types – formation and significance Embryo – development of dicot embryo – *Capsella,* development of monocot embryo – *Luzula*

Text Books:

1. Cell Biology, Genetics & Molecular Biology – Dipak Kumar Kar, New Central Book Agency, Delhi 2013 Ed
2. Embryology of Angisperms – P.S. Verma, Rastogi Pub. Meerut, 2012 Ed.
3. Molecular cell Biology- CB. Power, Himalaya Pub, New Delhi, 2013 Ed.

Reference Books:

1. Cell and Molecular Biology – SP. Vyas, CBS Publishers Pvt.Ltd, New Delhi, 2013 Ed.
2. Cytogenetics – PA. Gupta, Rastogi Pub. Meerut, 2013 Ed.
3. Cell and Molecular biology – S.P. Vyas, CBS Pub, Chennai, 2013 Ed.

SEMESTER - IV
(For those who join in June 2015 and after)

PART – III : Core Subject Theory		
Subject Title: **Plant Ecology**		
Subject Code: **08CT42**	Hours per week: **4**	Credit**: 3**
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
c) Edaphic factor – Composition of soil – Origin and formation of soil – soil profile – soil erosion and soil conservation.

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 – Quardrat 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:

1. Plant Ecology - Shukla & Chandel, S. Chand & Company, 2013 Ed.
2. Environmental science and engineering – P. Venugobal Rao, PHI Learning, New Delhi, 2010 Ed.
3. Fundamentals of Ecology - Eugene P Odum, Oxford & IBH, 2013 Ed.

Reference Books:

1. Environmental studies – SK.Grarg, Khanna Pub Delhi, 2012 Ed.
2. Plant Ecology – RS. Ambasht, Students Friends & Co, 2010 Ed.
3. Environmental Pollution and Toxicology - Ray Chandhuri & Gupta, periodical experts Book Agency, 2013 Ed.

SEMESTER - IV
B.Sc. Chemistry and B.Sc. Botany (Ancillary Zoology)
(For those who join in June 2015 and after)

Part – III : Allied Subject Theory		
Subject Title : **Biology and Human welfare**		
Subject Code: **09AT02**	Hours per week: **4**	Credit: **3**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

Objectives

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

Unit I

Structure of a typical virus – Viral diseases – Chicken pox, Polio, Rabies, Mumps, Influenza, and AIDS.

Unit-II

Structure of typical Bacteria – Bacterial diseases – Cholera, Tuberculosis and Tetanus.

Unit III

- Fungal diseases – Ringworm and Black piedra.
- Protozoan diseases – Amoebic dysentery and Malaria.
- Helminth parasites – Ancylostoma, Wucheraria, Ascaris and Tapeworm

Unit IV

1. Sericulture 2. Fish culture 3. Vermiculture

Unit V

1. Biogas production 2. Mushroom culture 3. Apiculture.

Text Book:

Text Book of Microbiology 2004, Ananthanarayanan, Orient Longman.

Reference Books

- Text Book of Preventive and Social Medicines 2011 Park, M/s Banarsidas Bhanot Publications.
- Vermicomposting for sustainable agriculture 2005 Gupta, Agrobios.
- Handbook on Mushrooms 1988 Nita Bahi, Oxford and IBH.
- An Introduction to Sericulture 1997 Ganga shetty, Oxford and IBH.

SEMESTER - IV
B.Sc. Chemistry and B.Sc. Botany (Ancillary Zoology)
(For those who join in June 2015 and after)

Part – III : Allied Subject Practical		
Subject Title : **PRACTICAL-I**		
Subject Code: **09AP03**	Hours per week: **2**	Credit: **1**
Sessional Marks: **40**	Summative Marks: **60**	Total Marks: **100**

Objectives

- *Identification of all classes of invertebrates and vertebrates.*
- *Unrevealing anatomical features of invertebrate and chordate*
- *Exposure to applied zoology to make them self-employable*

1. Observation of the following -Spotters
    - Paramoecium conjugation
    - Obelia (entire)
    - Hydra (entire)
    - Taenia (entire)
    - Scolex of Taenia
    - Ascaris male and female
    - Neries (entire)
    - Penaeus
    - 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.

CBCS Syllabus - SEMESTER - IV
(For those who joined in June 2015 and after)

PART – III : Core Subject Practical – IV		
Subject Title: **Cell Biology, Embryology & Plant Ecology**		
Subject Code: **08CP43**	Hours per week:	Credit**: 2**
Sessional Marks: **40**	Summative Marks: **60**	Total Marks: **100**

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
9. Internal structure of *Nerium* leaf, *Casuarina* stem, *Hydrilla* stem and
1. *Nymphaea* petiole
10. Methods of studying vegetation – quadrat method.

SEMESTER - IV
(For those who join in June 2015 and after)

PART – IV : Skill Based Subject		
Subject Title: **Horticulture**		
Subject Code: **08SB41**	Hours per week: **2**	Credit**:** **2**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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

1. Horticulture – V.L. Sheela, MJ Publishers, 2013 Ed.
2. Horticulture at a glance – Amar singh, Kalyani Pub, Chennai, 2013 Ed.
3. A manual of Gardening – Arun zingare, Satyam Pub, Jaipur, 2013 Ed.

Reference Books

1. Hand Book of Horticulture - K.L.Chaddhe, D.I and Pub. Agri, New Delhi, 2012 Ed.
2. Principles of Horticulture - S.Prasad, Agrobios, International Books, 2013 Ed.
3. A manual of Gardening – Arun zingare, Satyam Pub, Jaipur, 2013 Ed.

SEMESTER V
(For those who join in June 2015 onwards)

PART II – Paper I		
Subject Title **: English for Career Development**		
Subject Code:**P2LE51** **P2CE51**	Hours per week: 1	Credit: 1
Sessional Marks: **100**		Total Marks: **100**

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.*

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 Uma Rani Sinha, Tata McGraw Hill Education Private Limited, New Delhi.

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

SEMESTER - V
(For those who join in June 2015 and after)

PART – III : Core Subject Theory		
Subject Title: **Taxonomy of Angiosperms & Economic Botany**		
Subject Code: **08CT51**	Hours per week: **5+3**	Credit**: 4**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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

Botanical Nomenclature and principles of classification.Classifications: Bentham & Hooker, Engler & Prantl.

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, Tilliaceae, Rutaceae, Caesalpinaceae, Mimosaceae, Cucurbitaceae and Apiaceae

UNIT IV

Distinguishing features and economic importance of the following families: Rubiaceae, Asteraceae, Asclepiadaceae, Solanaceae, Scrophulariaceae, Lamiaceae, Amarantaceae, 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.
2. Practical Taxonomy of Angiosperms – R.K. Singha, Inter. Publishing House, Delhi, 2013 Ed.
3. Plant Taxonomy – OP. Sharma, McGraw Hill Education, India, Delhi 2010 Ed.

Reference Books:

1. Economic Botany-B.P. Pandey, S.Chand & Company Ltd, Delhi, 2014 Ed.
2. Economic Botany- Hill. Albert .T, Surjeet Publications Delhi, 2012 Ed.
3. Morphology of Angiosperms – Eames Arthur.J, Surjeet Publications Delhi, 2014 Ed.

SEMESTER -V
(For those who join in June 2015 and after)

PART – III : Core Subject Theory		
Subject Title: **Genetics**		
Subject Code: **08CT52**	Hours per week: **4+3**	Credit**: 4**
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 (intrachomosomal-deletion,addition & inversion ; interchromosomal translocation) gentic significance of mutations-mutagens

UNIT V

Human genome project
Gene regulation in prokaryotes.

Text Books:

1. Fundamentals of Genetics – D.D. Singh, Kalyani Pub. Chennai, 2012 Ed.
2. Genetics and Biotechnology – R.P. Meyyan, Saras Publications, Nager Coil, 2013 Ed.
3. Genetics and Molecular biology – Veer Bala Rastogi, Kedarnath, Ramnats, Meerut, 2013 Ed.

Reference Books:

1. Principles of Genetics – E.J. Gardner, Wiley Eastern Company, 2013 Ed
2. Human Genetics – Prentice Hall of India - Victor A. McKusick, PHI, 2010 Ed.
3. Genetics – Veer Bala Rastogi, Kedarnath, Ramnats, Meerut, 2013 Ed.

SEMESTER - V
(For those who join in June 2015 and after)

PART - III : Core Subject Theory		
Subject Title **: MICROBIOLOGY**		
Subject Code: **08CT53**	Hours per week: **5**	Credit: **3**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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, 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

Nutrition and Microbial growth – Culture media – Growth – Measurement of growth – Growth Curve – Control of growth - Role of antimicrobial agents on growth.

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.
2. A text Book of Microbiology – R.C. Dubey, S.Chand & Company Ltd, Delhi, 2014 Ed.
3. Microbiology - S. Jeeva, Scitech Publications PVT. LTD, Chennai, 2010 Ed.

Reference Books:

1. Microbiology – R.P. Singh, Kalyani Publishers, Ludhiana, 2012 Ed.
2. Microbiology- L.M.Prescott, J.P.Harley, D.A. Klein, McGraw Hill, Hill Education India, 2010 Ed.
3. Microbiology - Michael J. Pelczar, McGraw Hill Education India, 2012 Ed.

CBCS Syllabus - SEMESTER - V
(For those who joined in June 2015 and after)

PART – III : Core Subject Practical - V		
Subject Title: **Taxonomy Of Angiosperms, Economic Botany, Genetics & Microbiology**		
Subject Code: **08CP54**	Hours per week:	Credit**: 2**
Sessional Marks: **40**	Summative Marks: **60**	Total Marks: **100**

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 20 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.

SEMESTER - V
(For those who join in June 2015 and after)

PART – III : Elective Subject		
Subject Title: **Medicinal Botany**		
Subject Code: **08EP51**	Hours per week: **5**	Credit**: 4**
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

Pharmocognosy – 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 following 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 somnifer, Aloe vera, Emblica Officinalis and Carthamus tanctorius

Text Books:

1. Medicinal plants of india – SS. Lal, New Central Book Agency, Delhi, 2012 Ed.
2. Herbs cultivation and medicinal uses - H. Panda, NIIR Publication, N. Delhi, 2012 Ed.
3. Economic Botany - S.L. Kochar, MacMillan Indian Ltd.N.Delhi, 2010 Ed.

Reference Books

1. Economic Botany - F. Hill, Tata Mcgraw Hill Publishing com. N.Delhi, 2010 Ed.
2. Medicinal Plants-Anil Kumar, Inter. Sci. Publishing Academy, New Delhi,2014 Ed.
3. Economic Botany – Albert F. Hill, Surjeet Publications, Delhi, 2012 Ed.

SEMESTER - V
(For those who join in June 2015 and after)

PART – IV : Skill Based Subject		
Subject Title: **Mushroom Cultivation**		
Subject Code: **08SB51**	Hours per week: **2**	Credit**:** **2**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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:

1. Hand book of Mushroom Cultivation-1999 - TNAU. Covai
2. Mushroom Cultivation, 2005 - Singh
3. Edible mushrooms – M. Christensen, published by university of Minnesota press, 2011 Ed.

Reference Books:

1. Mushroom a manual of cultivation – Biswal Subrata, PHI Learning Pvt Ltd, Delhi, 2012 Ed.
2. Mushroom Cultivation, 2005 – Suman
3. The mushroom book. A popular guide to the identification and study of our common fungi, with special emphasis on the edible fungi. - Marshall, Nina L, garden city publisher garden city, New York, 2010 Ed.

SEMESTER – V

(For those who join in June 2015 and after)

Part – IV : Common Subject Theory		
Subject Title : **Environmental studies**		
Subject Code: **ESUG51**	Hours per week: **2**	Credit: 2
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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 5hrs

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

Unit-IV 5 hrs

Environmental pollution – Air pollution- causes and effect – Ozone depletion – Global warming – acid rain – Water pollution – Noise pollution – Solid waste management – Nuclear hazard.

Unit-V 4hrs

Human population and the environment – Population growth – variation among nations – effects of population explosion – family welfare programme – environment and human health.

Text books

Environment studies – R.Murugesan (2009), Milleneum Pub. Madurai-16

SEMESTER VI
(For those who join in June 2015 onwards)

PART II – Paper I		
Subject Title **: English for Professional Excellence**		
Subject Code:**P2LE61** **P2CE61**	Hours per week: 1	Credit: 1
Sessional Marks: **100**		Total Marks: **100**

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*

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 Uma Rani Sinha, Tata McGraw Hill Education Private Limited, New Delhi.

Unit III

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

Unit IV

- Books and authors in English literature

SEMESTER - VI
(For those who join in June 2015 and after)

PART – III : Core Subject Theory		
Subject Title: **Plant Physiology**		
Subject Code: **08CT61**	Hours per week: **5+3**	Credit**: 4**
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

c) Transpiration – Types of transpiration – Mechanism of stomatal opening – significance of transpiration – Guttation.

d) Ascent of Sap: Mechanism of water movement.

UNIT II:

a) Photosynthesis – Structure of Chloroplast and Chlorophyll pigments – light reaction – Dark reactions (C_3 and C_4 pathways) CAM. plants – Photorespiration.

b) Respiration – RQ – Mechanism [Glycolysis, Kreb's cycle – oxidative phosphorylation – Pentose phosphate shunt- fermentation.

UNTI III:

a) Nitrogen_metabolism - Nitrate reduction – Aminoacid synthesis – mechanism of protein synthesis.

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 – Photo periodism and Vernalization.

c) Seed dormancy.

Text Books:

1. Plant Physiology – Suraj Mandal, Campus Books, New Delhi, 2014 Ed.
2. Plant Physiology – Ray Noggle .G, MJP Publishers, Chennai, 2010 Ed.
3. Plant Physiology - Jain, V.K, S.Chand & Company Ltd, Delhi, 2013 Ed.

Reference Books

1. Plant Physiology - Salisbury & Ross, C.B.S Publishers, Delhi, 2013 Ed.
2. Plant Physiology – G. Ray Noggle, PHI Learning, New Delhi, 2010 Ed.
3. Plant Physiology – Suraj Mandal, Campus Books, New Delhi, 2013 Ed.

SEMESTER - VI
(For those who join in June 2015 and after)

PART – III : Core Subject Theory		
Subject Title: **Biotechnology**		
Subject Code: **08CT62**	Hours per week: **4**	Credit**: 4**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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

Cloning vehicles – Restriction endonucleases and Ligases – Strategies of gene cloning in Bacteria – Gene cloning in Saccharomyces – application of genetic engineering.

UNIT II Industrial Biotechnology

Industrial production of ethyl alcohol, citric acid and penicillin. Immobilizalion 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 Biopesticites

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:

1. Molecular Biology and Biotechnology - H.D. Humar, Vikas Publishing House, 2012
2. Advances in Biotechnology- S.N. Jogdand, Oxford University Press, 2013 Ed.
3. A text Book of Biotechnology – R.C. Dubey, S.Chand & Company Ltd, Delhi, 2014

Reference Books:

1. Modern Biotechnology - S.B. Primrose, Black Well Scientific Publications, 2010 Ed.
2. Plant Biotechnology – PK. Gupta, Rastogi Pub, Meerut, 2012 Ed.
3. Medical Biotechnology – Nallari Pratibha, Oxford University Press, New Delhi, 2010 Ed.

CBCS Syllabus - SEMESTER - VI
(For those who joined in June 2015 and after)

PART – III : Core Subject Practical - VI		
Subject Title: **Plant Physiology and Biotechnology**		
Subject Code: **08CP63**	Hours per week:	Credit**: 4**
Sessional Marks: **40**	Summative Marks: **60**	Total Marks: **100**

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 CO_2 concentration on Photosynthesis
7. Separation of Leaf Pigments – Paper Chromotography
8. Find out the Respiration Quotient of the given material
9. Imbibition pressure – using Dilatometer.

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 O_2 during Photosynthesis
7. Arc Auxanometer
8. Clinostat
9. Phototropism
10. Kuhen's fermentation vessel
11. Demonstration of Tissue culture experiment using an explants.
12. Photographs – Callus, plasmids, Biogas,Phytohormones.
13. Visit to tissue culture and microbiology divisions of an industry

SEMESTER -VI
(For those who join in June 2015 and after)

PART – III : Elective Subject		
Subject Title: **Tissue Culture**		
Subject Code: **08EP61**	Hours per week: **5**	Credit**: 5**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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

Application of tissue culture in Horticulture – Transgenic plants – production of herbicide resistance, pest resistance, & salt tolerant plants – conservation of endangered and rare species.

Text Books:

1. Advances in Biotechnology- S.N. Jogdand, Oxford University Press, 2013 Ed.
2. A text Book of Biotechnology – R.C. Dubey, S.Chand & Company Ltd, Delhi, 2014 Ed.
3. Plant cell and Tissue Culture – Shekhaward Mahipal Singh, saras publications, Nagercoil, 2013 Ed.

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.
3. Plant Biotechnology a practical manual – CC. Giri, International Publishing House, Delhi, 2013 Ed.

SEMESTER - VI
(For those who join in June 2015 and after)

PART – III : Elective Subject		
Subject Title: **Remote Sensing and GIS**		
Subject Code: **08EP62**	Hours per week: **5**	Credit**: 4**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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:

1. Basics of RS & GIS. S. Kumar University science press, New Delhi, 2012
2. RS & GIS. B. Bhatta, Oxford University Press, 2010.
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.
2. Remote sensing and image interpretation. Lilles and Kiefer, Chipman, wily India – New Delhi – 2012.
3. Physical basis of RS - George Joseph, 2005

SEMESTER - VI
(For those who join in June 2015 and after)

PART – IV : Skill Based Subject		
Subject Title: **Plant Breeding**		
Subject Code: **08SB61**	Hours per week: **2**	Credit**:** **2**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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 hybrides*

UNIT I : Plant introduction:

Purpose of introduction – procedure for plant introduction – acclimatization – achievements in plant introduction.

UNIT II : **Selection:**

Types [Mass, Pure line and Clonal) – procedure for pure line selection – Advantages of pure line selection – achievements due to selection method.

UNIT III: **Hybridization:**

Types – techniques for hybridization – Hybridization techniques in crop plants – methods of hybridization [hybridization in self – pollinated crops – Pedigree and Bulk method.

UNIT IV: **Heterosis**

Definition – causes of heterosis – effects of heterosis – achievements in heterosis.

UNIT V:

Role of polyploids in plant breeding – Role of mutations in Crop improvement.

Text Books:

1. Elementary Principles of Plant Breeding - H.K Chanduri, Oxford & IBM, 2013 Ed
2. Plant Breeding and seed savings – A.K. Zingare, Satyam Pub, Jaipur, 2013 Ed.
3. Plant Breeding – SS. Sandhu, Black Prints, New Delhi, 2013 Ed.

Reference Books:

1. Dry Land Horticulture in India – P.P. Deshmukh, Himalaya Publishing House, Mumbai, 2013 Ed.
2. Principles of Plant breeding - R.W. Allard, John Wiley & Sons, 2010 Ed.
3. Plant Breeding, biomet & biotech – Dijak Kumar, New Central Book Agency, New Delhi, 2010 Ed.

SEMESTER – VI
(For those who join in June 2015 and after)

PART - IV : Skill Based Subject		
Subject Title: **Biodiversity Conservation and Management**		
Subject Code: **08SB62**	Hours per week: **2**	Credit**:** **2**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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**

Major causes for the loss of biodiversity – listing threatened diversity [Extinct, Endangered, Vulnerable, rare, indeterminate and Census of threatened species.

UNIT III : **Uses of biodiversity**

Consumptive use values, Product use 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
3. Biodiversity principles and conservation – Kumar, International Book Distributors, Dehradun, 2013 Ed.

References Books:

1. Plant Conservation Biotechnology - E. Benson, Ane Books distributors, New Delhi 2013 Ed.
2. Biodiversity Biotechnology - Samit Ray and Arun K. Ray, New Central Book Agency, Kolkata, 2010 Ed.
3. The management of Forest - F.C.O. Osmaston, international book publishers, 2010 Ed.

SEMESTER - VI
(For those who join in June 2015 and after)

PART – IV : Skill Based Subject		
Subject Title: **Nanobiology**		
Subject Code: **08SB63**	Hours per week: **2**	Credit**:** **2**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

Objective:

- *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

Nano Agricultural Mechanization – Genetically Modified Organism's – Agricultural Engineering – Need for Nanoagriculture – Nanoproducts – Topdown and Bottomup Approach.

Text Books:

1. Nano Biotechnology – Subbiah Balagi, MZP Publishers, 2010 Ed.
2. Nano Science & Nanotechnology – KK. Chatiopadhyay, PHI Learning, New Delhi, 2012 Ed.
3. Bio Nanotechnology – Vinita Singh, Advanced Learners Press, New Delhi, 2013 Ed.

Reference Books:

1. Elements of Nanotechnology – KK. Sulabha, IBD Pub. New Delhi, 2010 Ed.
2. Bioinformatics – Methods & Protocols – Misener, IBD Pub. New Delhi, 2013 Ed.
3. Nanotechnology – U. Kumar, Agrobios. India, 2013 Ed.

SEMESTER – VI
(For those who join in June 2015 and after)

PART – IV : Common Subject Theory		
Subject Title **: Value Education**		
Subject Code: **VEUG61**	Hours per week: **2**	Credit: **2**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

UNIT I: The heart of Education

Introduction – Eternal Value – Integrated approach to value education - one for all and all for one – Responsibilities of a citizen – Habit Vs wisdom – purifying mind pollution – Respect for all Religions – Parents, teachers and fellow students – The need and benefit of exercise and meditation for students.

UNIT II:

The Value of Body and Life Energy

Introduction – what are the causes for paid, Disease and death? Three Basic needs for all living Beings – Personal Hygeine 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

Introduction- Bio-magnetism – The base of the mind – characterisation of the Genetic Centre – metal frequency – practice for a creative mind - benefits of meditation.

UNIT III:

Analysis of Thought

Introduction – An Explosition on the nature of thought– six roots for thoughts – Introspection for analysis of thoughts-practical techniques for analysis of thoughts. Benefits of Blessings Effects of good vibrations – Make Blessing a Daily Habit

UNIT IV:

Moralisation of Derive

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

Neutralision 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

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 Maharisi)

Published By: Brain Trust, Aliyar A Wing of World Community Service Centre

SEMESTER – VI
(For those who joined in June 2008 and after)

PART – V : Common Subject Theory		
Subject Title **: Extension Activities**		
Subject Code: **EAUG61**	Hours per week:	Credit: **1**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

UNIT-I: Community Development-I

Definition – structure and composition – community based issues – need for awareness – Developmental Programmes.

UNIT – II: Community Development–II

Rural Scenario – need of the Community – need for the community service – role of youth in community building – communal harmony – literacy – Educational Recreation.

UNIT – III: Volunteer Empowerment

Women's Emancipation – formation of Youth Clubs – Self-Help Groups – Youth and Development.

UNIT – IV: Social Analysis

Social issues – cultural invasion – media infiltration – human rights Education/Consumer Awareness – Adolescents Reproductive – HIV/AIDS/STD – Social harmony/National integration – Blood Donation.

UNIT – V: Introduction to NSS

Basic Concepts – profile – aims – objectives – symbol – Motto – structure – Regular activities – Special Camping Programme – Adventure Programme – National Days and Celebrations.(Applicable to NSS Students)

(OR)

NCC - Origin – Organisation – Ministry of Defence – Armed forces – commands – Defence establishments in Tamil Nadu 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.

SEMESTER - III
(For those who joined in June 2015 and after)

PART – III : Allied Subject Theory		
Subject Title: **Plant Diversity**		
Subject Code: **08AT01**	Hours per week: **4**	Credit: **4**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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: **PTERIODOPHYTES**

General characters – structure and life cycle of *Lycopodium*.

UNIT V: **GYMNOSPERMS**

General characters – structure and life cycle of *Cycas.*

Text Books:

1. An introduction to Embryophyta –Pteridophytes - N.S. Parihar, Surjeet Publications, Delhi, 2012 Ed.

2. Introduction to Mycology - C.J.Alexopoulos, Willey Eastern Pvt. Ltd, 2013 Ed.

3. Botany for Degree Students Gymnosperms - P.C. Vashishta, S.Chand & Company Ltd, Delhi, 2014 Ed.

Reference Books:

1. Morphology of Gymnosperms – Coulter, M. Jhon, Surjeet Publications, Delhi, 2014 Ed.

2. Botany for Degree Students Algae – P.C. Vashishta, S.Chand & Company Ltd, Delhi, 2014 Ed.

3. An introduction to Embryophyta –Bryophytes - N.S. Parihar, Surjeet Publications, Delhi, 2013 Ed.

SEMESTER - IV
(For those who joined in June 2015 and after)

PART – III : Allied Subject Theory		
Subject Title: **Taxonomy of Angiosperms & Plant Physiology**		
Subject Code: **08AT02**	Hours per week: **4**	Credit: **4**
Sessional Marks: **25**	Summative Marks: **75**	Total Marks: **100**

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

Natural classification – Benthem and Hooker's classification.

UNIT II: Studying the following families:

Annonaceae, Caesalpiniaceae, 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 – C_3 and C_4 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.
2. Plant Physiology – Ray Noggle .G, MJP Publishers, Chennai, 2010 Ed.
3. Plant Taxonomy – OP. Sharma, McGraw Hill Education, India, Delhi 2010 Ed.

Reference Books:

1. Plant Physiology – Suraj Mandal, Campus Books, New Delhi, 2014 Ed.
2. Practical Taxonomy of Angiosperms – R.K. Singha, Inter. Publishing House, Delhi, 2013 Ed.
3. Plant Physiology - Jain, V.K, S.Chand & Company Ltd, Delhi, 2013 Ed.

SEMESTER - II
(For those who join in June 2015 and after)

PART – III : Allied Subject Practical		
Subject Title: **Algae, Fungi, Bryophytes, Pteridophytes, Gymnosperms, Taxonomy and Plant Physiology**		
Subject Code:**08CP03**	Hours per week: **2**	Credit: **2**
Sessional Marks: **40**	Summative Marks: **60**	Total Marks: **100**

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 O_2 during photosynthesis
7. Arc Auxanometer
8. Clinostat
9. Phototropism
10. Kuhne's fermentation vessel

DEPARTMENT OF BOTANY

CERTIFICATE COURSE IN MEDICINAL BOTANY

UNIT:I

Pharmocognosy – definition, Scope, History, Indigenous system of medicine (Ayurveda, Unani & Siddha) - Classification of crude drugs (Alphabedical, Taxnomical, morphological, Pharmacological, chemical and Chetexonomical)

UNIT:II

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

UNIT:III

Collections and processing of crude drugs- harvesting, drying, garbling, packing and storage of crude drugs adulteration-types of adulteration –methods of drug evaluation (physical, biological, chemical, and organoleptic Evaluation of pharmacopoeia standards.

UNIT:IV

Medicinal uses of lower plants – Botanical names, common and vernacular names, morphological of the useful parts and medicinal uses of the following

Stem& Tuber - *zingiber offcinale*
Bark & Wood - *cinnamomum zelannicam,santalum album*
Leaves - *Cassia senna*
Buds & flower - *Eugenia caryophyllota*
Fruits - *aegle marmelos*
Seeds - *myrsitica fragrans*
Resins and gums – *Ferula asafetida*

UNIT:V

Botanical name, common name, family, chemical constituents, cultivation, processing, harvesting and uses of the following withania *somnfier, Aloevera,Emblica offcinalis and carthamus tanctorius*

Text Books

Medicinal plants of India –SS. Lal, New central book Agency, Delhi,2012 Ed.
Herbs Cultivation and medicinal uses – H.Panda,NIIR Publication, New Delhi,2010 Ed.
Economic Botany-s.L.kochar,MacMillan Inmdian Ltd ,New Delhi,2012 Ed.

Reference Books

Economic Botany-F.Hill,Tata Mcgraw HillPublishing.com, New Delhi,2014 Ed.
Medicinal plants-Anil Kumar,Inter.sci. Publishing academy, New Delhi,2014 Ed.
Economic Botany-Albert F.Hill surjeet Publications, Delhi,2012 Ed.

DEPARTMENT OF BOTANY

CERTIFICATE COURSE IN HORTICULTURE

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

Cutting practices: Transplanting methods (bare rooted, shifting and balling, burlapping, potting and reporting) irrigation and manuring

UNIT: IV

Horticulture techniques: disbudding, ringing, notching, smudging and pruning

UNIT: V

Kitchen gardening-layout and maintenance, indoor gardening, rockery, Bonsai and lawn

Text books

Horticulture – V.L.Sheela, MJ Publishers, 2013 Ed.
Horticulture at a glance Amar singh, kalyani Pub, Chennai,2013 Ed.
A manual of Gardening - Arun Zingare, satyam Pub, Jaipur, 2013 Ed.

Reference Books

Hand Book of Horticulture- K.L.Chadde, D.I.and Pub,Agri, New Delhi,2012 Ed.
Principles of Horticulture- S.Prasad, Agrobios, International Books,2013 Ed.
A manual of Gardening - Arun Zingare, satyam Pub, Jaipur, 2013 Ed.