

SCOTT CHRISTIAN COLLEGE (AUTONOMOUS)

NAGERCOIL



(Estd. 1893)

CURRICULUM AND SYLLABUS
DEPARTMENT OF BOTANY & RESEARCH CENTRE
(Approved by the Standing Committee of the Academic Councils
held on 21.10.2023 & 13.01.2024)
UNDERGRADUATE PROGRAMME
CBCS-SEMESTER SYSTEM
(For those who join from 2023 to 2026)

An evolution towards revolution ...

Education is crucial for attaining full human potential, developing an unbiased and evenhanded society and promoting national and global development. The education sector in India is witnessing a sweeping wave of change. The very first policy for education, *National Policy on Education* (NPE-1968) was promulgated in 1968, with the National Policy on Education (NPE- 1986) following in 1986. The National Policy on Education (NPE- 1992) and the Programme of Action 1992 (POA-1992) refined and implemented the NPE-1986. The National Education Policy 2020 (NEP 2020) is a landmark document and an evolution towards revolution in the Indian educational sector. It presents the vision for greater access, equity, excellence, inclusion, multiple entry and exit and affordability to help India emerge as the global knowledge superpower.

Providing access to quality education is the key to the curriculum and syllabus of Scott Christian College (Autonomous), in terms of social justice and equality, scientific advancement, cultural preservation and national and global integration. Students should have the freedom and flexibility in choosing their courses, skills, and capacities to become moral, successful, innovative, adaptable, and productive human beings.

Higher education plays an important role in promoting human as well as societal wellbeing and in contributing towards sustainable livelihoods and economic development. The present Outcome-Based Education (OBE) curriculum and syllabus, provides valuable insights and recommendations on aspects of education that include moving towards multidisciplinary and holistic education, mastery and high-order learning and promotion of quality research.

The current curriculum has been designed based on NEP 2020, the National Credit Framework (NCrF), the National Higher Education Qualifications Framework (NHEQF) and Curriculum and Credit Framework for Undergraduate Programmes (CCFUP) which envisage that students must develop into good, thoughtful, well-rounded, creative individuals with a standard of achievement. The themed curriculum aims to support teachers and students in developing their understanding of the curriculum design and delivery process as per the requirement of the world of work.



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PROFILE

DEPARTMENT OF BOTANY & RESEARCH CENTRE

A village-church school founded by Rev. W.T. Ringeltaube at Mylaudy in 1809 was shifted to Nagercoil in 1818 by Rev. C. Mead and elevated to Scott Christian College in 1893 by the indefatigable efforts of Rev. Dr. J. Duthie with a legacy of £ 1000 by Mr. Septimus Scott's family.

The present department of Botany evolved from the Biology department and became independent since June 1966 and Botany major was offered at the under-graduate level. In 1983, the department rose to post-graduate level and in 1986, it became a Research Department offering regular, part-time and sequential M.Phil. programmes. Since 1999, the department is recognised as a Research Centre by the Manonmaniam Sundaranar University to which the college is affiliated.

The department has a well-maintained library established in 1965 with a remarkable collection of reference books in addition to text books. Book bank facility is also offered in the library.

As an integral part of this library, there is a research library in memory of the late Dr. T.A. Davis which started functioning since 8th September 1999 and owes its existence to the indefatigable efforts of Dr. A. Deva Sobhana Raj. It has a collection of 18 current journals, 70 back volumes and 7 popular magazines. Visitors frequent this library.

The department also possesses a well-furnished tissue-culture laboratory and a micro-algal culture laboratory.

The Bryology Laboratory

The Bryology Laboratory, was founded on **9 January, 2009**, by **A.E. Dulip Daniels** with the grant that he received from the **Ministry of Environment and Forests (MoEF)**, Government of India, New Delhi, through All India Co-ordinated Project on Taxonomy (AICOPTAX). The laboratory was recognised by the **Index Herbariorum**, New York Botanical Garden, USA, on **4 July, 2012** and bears the acronym '**SCCN**'. Currently, there are **15,000** holdings.

Newsletter

Since September 2001, the department publishes a quarterly Newsletter called '**Botanical Trends**'. Staff and students contribute articles to this missive. It also provides a detailed account of the various activities of the department under the head '**Diary of events**'. Guest articles are also published. The Newsletter is being sent to at least 25 different institutions free of cost.

UG and PG Associations

Both the associations are highly active and throw opportunities to students to enrich their existing knowledge by way of invited lectures and also by offering platforms to make scientific/popular presentations.

Tours and field trips

Both UG and PG students are regularly taken out on educational tours and short field trips for a practical learning and are made to submit reports on the trips with photographs and sometimes with herbarium specimens too.

The department offers quality education in botany by way of lectures, laboratory exercises, assignments, seminars and projects. It provides a curriculum competent with that of other universities in the country. The allotted strength of students for B.Sc. is 48, M.Sc. 30, M.Phil. 10 (Full-time) and 10 (Part-time).

The research areas of the faculty range from micro-algae to orchids and tissue culture of commercially valuable and indigenous plants thereby making the studies a biodiversity network. In the last five years the faculty have published 30 research articles in reputed national and international journals and have completed 1 major project, 1 minor project and 2 student's projects.

The faculty have produced 20 Ph.Ds. and 48 M.Phils. in the last five years.

Every year the department organizes at least two regional/national level seminars and two endowment lectures.

The department has a team of highly competent teachers ready to accept challenges in research and teaching.

Financial Assistance from U.G.C.

The department was selected by the U.G.C. for special financial assistance during the 8th, 9th, 10th, 11th and 12th (Funds not yet released) plans. Moreover, a grant from '**Fund for Improvement of Science & Technology**' (FIST) grants of Rs. 4 Lakhs was sanctioned for the Dept of Botany.

Our Vision

To impart quality and effective information on recent developments in plant science

Our Mission

To be a high performing department that provides information resources to student life.

Members of the Board of Studies

The following members contributed to the framing of the Curriculum and the Syllabi in the Board of Studies held on 24.6.2023. The modified Curriculum and Syllabi were approved and recommended to be placed in the Academic Council.

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1. Dr. A.E. Dulip Daniels
2. Dr. M. Reginald
3. Dr. J. Lohidas
4. Dr. J. Irene Wilsy
5. Dr. B. Christudhas Williams
6. Dr. S. Thambiraj
7. Dr. S. Jeeva
8. Dr. C.P. Ben
9. Dr. V.P. Selva Shamal
10. Dr. Avvai M.S. Vijaya
11. Dr. Lini, J.J.
12. Dr. T.S. Shynin Brintha

The Scott Christian College (Autonomous) defines the focus reinforcing its academic programmes and student life experience on campus through the Graduate Attributes (GA), that describe the knowledge, competencies, values and skills students imbibe for holistic development, multidisciplinary development and contribution to society. These attributes comprise characteristics that are transferable beyond the sphere of study into the national and international realm through curricular, co-curricular and extra-curricular engagements. They equip graduates for life long personal development and employment. Every Graduate of Scott Christian College (Autonomous) – (SCC) is desired to possess the following Graduate Attributes:

GA 1: Intellectual Competencies

Graduates of SCC

- have a comprehensive and incisive understanding of their domain of study as well as the ability for cross-disciplinary learning
- have the ability to apply the knowledge acquired through the curriculum as well as self-directed learning to a broad spectrum ranging from analytical thinking to synthesize new knowledge through research
- are able to have critical, independent and individual outlook regarding academic work and socially relevant issues

GA 2: Problem Solving

Graduates of SCC

- have the capacity to extrapolate from what has been learnt, translate concepts to real-life situations and apply acquired competencies in the required contexts to generate solutions to specific problems
- can view a problem or a situation from multiple perspectives and think ‘out of the box’ and generate solutions to complex problems in unfamiliar contexts

- are effective problems-solvers, able to apply critical, creative and evidence-based thinking to conceive innovative responses to challenges

GA 3: Communication Skills

Graduates of SCC

- listen carefully, analyse texts and research papers, and present complex information in a clear and concise manner
- express thoughts and ideas effectively in writing and orally and communicate with others using appropriate media
- confidently express herself/himself and construct logical arguments using correct technical language related to a field of learning and area of professional practice

GA 4: Environmental Awareness

Graduates of SCC

- lessen the effects of environmental degradation, climate change, and pollution
- learn the nuances for cleanliness, conservation and wise use of resources so that it can be used for generations
- know the nuances of waste management, conservation of biological diversity, management of biological resources and biodiversity, and sustainable development and living

GA 5: Professional Ethics

Graduates of SCC

- develop principled and expert behavior, and this will be showcased in their chosen careers and constructive roles as citizens of the world at large
- imbibe intellectual integrity and ethics in scholarly engagement and develop a spirit of inclusiveness through interactions with diverse people at all levels in life
- acquire new knowledge and skills, including 'learning how to learn' skills, for pursuing learning activities throughout life and adapting to changing demands of the workplace through knowledge, skill development and reskilling, ethically

GA 6: Leadership Qualities

Graduates of SCC

- inculcate leadership qualities and attitudes, and team behaviour along autonomous lines through curricular, co-curricular and extra-curricular activities
- develop managerial and entrepreneurial skills to create new opportunities for diverse careers and gear up to take up competitive examinations
- act together as a group or a team in the interests of a common cause and work efficiently as a member of a team

GA 7: Holistic Skill Development

Graduates of SCC

- develop critical thinking, problem-solving capacity, effective communication, and social skills

- are self-aware, flexible, resilient and have the capacity to accept and give constructive feedback and cope up with stress
- develop soft skills, e-skills and life skills to live, learn and work in the technically sound society globally and use appropriate digital methods for analysis of data

GA 8: Cross-Cultural Competencies

Graduates of SCC

- gain cross-cultural competencies through engaging with diverse linguistic, ethnic and religious communities and know how to understand, accept and appreciate individuals at local, national and international levels
- develop a global perspective through contemporary curriculum, culture, language and international exchange programmes
- acquire knowledge of the values and beliefs of multiple cultures and a global perspective to honour diversity, gender sensitivity and adopt gender-neutral approach and show empathy to the less advantaged and the differently-abled

GA 9: Community Engagement

Graduates of SCC

- are sensitive to social concerns and have conviction toward social justice through active social engagement
- are endowed with a strong sense of environmental awareness through the curriculum and a friendly and serene campus eco-system.
- formulate an inspiring vision and build a team that can help achieve the vision, and motivate people to the right destination

GA 10: Value-Based Ethical Competency

Graduates of SCC

- are rooted in the principles of ethical responsibility and integrity permeated with Christian values leading to the building of character and constitutional values
- develop virtues such as truth, love, courage, unity, integrity, brotherhood, industry and uprightness
- practise responsible national and global citizenship required for responding to contemporary challenges, enabling learners to become aware of and understand global issues and to become active promoters of more peaceful, tolerant, inclusive, secure, and sustainable societies

Learning Outcomes Descriptors for Qualification at Level 4.5 on the NHEQF

An Undergraduate Certificate is awarded to students who have demonstrated the achievement of the outcomes located at level 4.5 on the NHEQF.

Element of the Descriptor	NHEQF level descriptors relating to under graduate certificate
Knowledge and Understanding	<p>The graduates should be able to demonstrate the acquisition of:</p> <ul style="list-style-type: none"> • knowledge of facts, concepts, principles, theories, and processes in broad multidisciplinary learning contexts within the chosen fields of learning • understanding linkages between the learning areas within and across the chosen fields of study, • procedural knowledge required for performing skilled tasks associated with the fields of learning.
General, Technical and Professional Skills	<p>The graduates should be able to demonstrate the acquisition of:</p> <ul style="list-style-type: none"> • cognitive, rational and technical skills required to identify, analyze and synthesize information and to accomplish tasks relating to the fields of learning. • Cognitive and technical skills required for selecting and using relevant methods, tools, and materials • apply the acquired technical and theoretical knowledge and use basic methods, tools, materials, and information to generate solutions to specific problems relating in the field of learning.
Generic Learning Outcomes	<p>The graduates should be able to demonstrate the ability to:</p> <ul style="list-style-type: none"> • listen carefully, read texts related to the chosen fields of study analytically, and present information in a clear and concise manner • express thoughts and ideas effectively in writing and orally and present the results/findings of the experiments carried out • make judgment and take decisions, based on analysis of data and evidence, for formulating responses to issues/problems associated with the chosen fields of learning
Constitutional, Humanistic, ethical, and moral values	<p>The graduates should be able to demonstrate the willingness to:</p> <ul style="list-style-type: none"> • practice constitutional, humanistic, ethical, and moral values in real-life situations, • put forward convincing arguments to respond to the ethical and moral issues associated with the chosen fields of learning • use reason and empathy, considering the consequences of human actions and the likely impact on other people and animals
Employability and Entrepreneurship Skills	<p>The graduates should be able to demonstrate the acquisition of:</p> <ul style="list-style-type: none"> • knowledge and essential skills, required to perform effectively in a defined job relating to the chosen fields of study, • ability to exercise responsibility for the completion of assigned tasks and for the outputs of own work, and to take some responsibility for group work and output as a member of the group • transferable skills and key personal attributes which are highly valued by employers and essential for effective performance in the workplace.
Credit Requirements	<ul style="list-style-type: none"> • The successful completion of the first year (two semesters) of the undergraduate programme of minimum 40 credit hours
Entry Requirements	<ul style="list-style-type: none"> • Certificate obtained after successful completion of Grade 12 or equivalent state of education.

Learning Outcomes Descriptors for Qualifications at Level 5 on the NHEQF

An Undergraduate Diploma is awarded to students who have demonstrated the achievement of the outcomes located at level 5 on the NHEQF.

Element of the Descriptor	NHEQF Level Descriptors
Knowledge and Understanding	The graduates should be able to demonstrate the acquisition of: <ul style="list-style-type: none"> • Theoretical and technical knowledge in multidisciplinary contexts • Deeper knowledge and understanding of the learning areas and its underlying principles and theories • Procedural knowledge required for performing skilled tasks
Application of Knowledge and Skills	The graduates should be able to demonstrate the ability to: <ul style="list-style-type: none"> • Apply the acquired specialized or theoretical knowledge, and arrange of cognitive and practical skills to gather quantitative and qualitative data, • Select and apply basic methods, tools, materials, and information to formulate solutions to problems related to the chosen field(s) of learning. • analyze and synthesize ideas and information from a range of sources and act on information to generate solutions to problems
Generic Learning Outcomes	The graduates should be able to demonstrate the ability to: <ul style="list-style-type: none"> • listen carefully, read texts and present complex information in a clear and concise manner in writing and orally • critically evaluate the essential theories, policies, and practices by following a scientific approach to knowledge development. • make judgement and take decision, based on the analysis and evaluation of information, for determining solutions to a variety of unpredictable problem associated with the chosen fields of learning
Constitutional, Humanistic, Ethical, and Moral values	The graduates should demonstrate the willingness and ability to: <ul style="list-style-type: none"> • embrace constitutional, humanistic, ethical, and moral values and practice these values in life • ethically address issues relating to the chosen fields of learning, including environmental and sustainable development issues • use reason and empathy, considering the consequences of human actions and the likely impact on other people and animals
Employability and Entrepreneurship Skills	The graduates should be able to demonstrate the acquisition of skill sets that are necessary to: <ul style="list-style-type: none"> • take up employment relating to the chosen fields of study or professional practice • exercise self-management within the guidelines of study and work contexts. • Take responsibility for the evaluation and improvement of work or study activities
Credit Requirements	The successful completion of the first two years (four semesters) of the undergraduate programme involving a minimum of 80 credit hours

Entry Requirements	Continuation of study or lateral entry in the second year of the undergraduate programme will be possible for those who have met the entrance requirements, including specified levels of attainment, specified in the programme regulations.
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Learning Outcomes Descriptors for a Higher Education Qualification at Level

5.5 on the NHEQF

The Bachelor's degree is awarded to students who have demonstrated the achievement of the outcomes located at level 5.5 on the NHEQF.

Element of the Descriptor	NHEQF Level Descriptors
Knowledge and Understanding	The graduates should be able to demonstrate the acquisition of: <ul style="list-style-type: none"> comprehensive, factual, theoretical, and specialized knowledge in broad multidisciplinary contexts with depth in the underlying principles and theories relating to the fields of learning. knowledge of the current and emerging issues and developments within the chosen field of learning. Procedural knowledge required for performing and accomplishing professional tasks in the chosen fields of learning.
General, Technical and Professional Skills	The graduates should be able to demonstrate the acquisition of: <ul style="list-style-type: none"> Cognitive and technical skills required for performing and accomplishing complex tasks Cognitive and technical skills required to evaluate and analyze complex ideas and generate solutions measurable abilities and knowledge that come through learning and can be job or task-specific
Application of Knowledge and Skills	The graduates should be able to demonstrate the ability to: <ul style="list-style-type: none"> apply the acquired theoretical knowledge, and cognitive and practical skills to gather and analyze quantitative and /or qualitative data employ the right approach to generate solutions to problems related to the fields of learning develop through practice, experience, and the effective utilization of acquired knowledge to perform specific tasks, solve problems, or exhibit competence
Generic Learning Outcomes	The graduates should be able to demonstrate the ability to: <ul style="list-style-type: none"> communicate in writing and orally the constructs and methodologies adopted for the studies undertaken relating to the chosen fields of learning, make coherent arguments to support the findings/results of the study undertaken and pursue self-paced and self-directed learning to upgrade knowledge and skills and pursue higher level of education and training. make judgement and take decisions based on the analysis and evaluation of information for formulating responses to problems based on empirical evidence
Constitutional, Humanistic, Ethical, and	The graduates should be able to demonstrate the willingness and ability to: <ul style="list-style-type: none"> Embrace constitutional, humanistic, ethical, and moral values, and practice these values in life. Formulate coherent arguments about ethical and moral issues, including

Moral Values	environmental and sustainable development issues, <ul style="list-style-type: none"> follow ethical practices in all aspects of research and development
Employability and Entrepreneurship Skills	The graduates should be able to demonstrate the acquisition of: <ul style="list-style-type: none"> knowledge and essential skills set and competence that are necessary to take up a professional job entrepreneurship skills required for setting up and pursuing self-employment the ability to exercise management and supervision in the contexts of work or study activities involving unpredictable work processes and working environments.
Credit Requirements	The successful completion of the first three years (six semesters) of the under graduate programme involving a minimum of 120 credit hours
Entry Requirements	Continuation of study or lateral entry into the third year of the undergraduate programme will be possible for those who have met the specified levels of attainment, specified in the programme admission regulations

PLO & GA Mapping

Programme Learning Objective #	Programme Learning Objective (PLO)	Description of PLO	PLO Mapped with GA#
PLO 1	Language proficiency	Exhibit spoken and written skills for effective communication	GA 3
		Relate reading and listening skills to expedite access to knowledge resources and understanding	GA 3
		Combine two or more language abilities while interacting	GA 3
PLO 2	Critical thinking and domain knowledge	Acquire knowledge of basic concepts, theories and processes through study of core courses in respective programmes and have a critical outlook	GA 1 GA 2
		Critically relate and consider domain specific knowledge to emerging areas of academia	GA 1
		Evaluate, familiarize and develop domain specific transferrable skills to new and or unfamiliar contexts	GA 2
PLO 3	Interdisciplinary knowledge	Identify and determine connection across disciplines	GA 1 GA 8
		Empower students to combine frameworks and concepts from multiple disciplines to examine and solve a problem from different perspectives	GA 1 GA 8 GA 2
		Procure and apply interdisciplinary knowledge for universal development	GA 1 GA 8

PLO 4	Digital competency	Acquire the ability to leverage digital technologies to communicate, collaborate, and analyze data	GA 7 GA 1 GA 2
		Get acquainted with software resources, computational skills and digital tools	GA 7 GA 1
		Ethically apply digital skills to confidently use technology for work, learning and daily life	GA 7 GA 10
PLO 5	Analytical skills	Develop the ability to think critically and relate learning to academic, professional and real-life problem solving	GA 1 GA 10 GA 2
		Apply empirical knowledge and skills to identify and collect quantitative and qualitative data to analyze and formulate evidence-based suggestions and solutions	GA 7 GA 2
		Analyse problems and come out with facts-based solutions	GA 2 GA 7
PLO 6	Academic writing & presentation skills	Formulate and document results, case studies, project works, field works and internships	GA 2
		Present ideas, analyze research and construct an effective argument	GA 3
		Keep focused, planned and structured by using effective methodologies and in formal presentations	GA 2 GA 1
PLO 7	Innovation and creativity	Validate convertible capabilities and entrepreneurial skills that are needed for employment opportunities	GA 2 GA 7
		Develop and generate intellectual property	GA 1
		Empower entrepreneurs to discover opportunities, solve problems, adapt to change, continuously improve, and drive business growth	GA 2 GA 5
PLO 8	Social engagement and responsibility	Exhibit the ability to link classroom learning with social concerns and engagement through service learning and outreach programmes	GA 5 GA 9
		Enhance positive leadership qualities for peaceful coexistence, general wellbeing and improved quality of life	GA 6 GA 10
		Have ethical responsibility, philanthropic responsibility and economic responsibility	GA 5 GA 9
PLO 9	Environmental sensitization	Appreciate environmental consciousness and sustainability	GA 4 GA 9
		Make students acquire sensitivity to the environment and its problems and help them to	GA 4 GA 9

		acquire a set of values for environmental protection	
		Encourage students to acquire knowledge of pollution and environmental degradation	GA 4
PLO 10	Autonomy and Responsibility	Demonstrate a sense of community service, be proactive and creative at work, committed to lifelong learning	GA 5 GA 10 GA 6
		Encourage independent thought, problem-solving, creative thinking and productive teamwork	GA 5 GA 1 GA 2
		Reflect the basic human need to have control over our own lives both at work and in life	GA 7 GA 10

METHODS OF ASSESSMENT

Remembering (K1)	<ul style="list-style-type: none"> • The lowest level of questions require students to recall information from the course content • Knowledge questions usually require students to identify information in the textbook
Understanding (K2)	<ul style="list-style-type: none"> • Understanding of acts and ideas by comprehending organizing, comparing, translating, interpolating and interpreting in their own words • The questions go beyond simple recall and require students to combine the ideas together
Application (K3)	<ul style="list-style-type: none"> • Students have to solve problems by using/applying a concept learned in the classroom • Students must use their knowledge to determine exact response
Analyze (K4)	<ul style="list-style-type: none"> • Analyzing the question by asking students to break down something into its component parts • Analyzing requires students to identify reasons, causes or motives and reach conclusions or generalizations
Evaluate (K5)	<ul style="list-style-type: none"> • Evaluation requires an individual to make judgment on something • Questions to judge the value of an idea, a character, a work of art, or a solution to a problem • Students are engaged in decision-making and problem-solving
Create (K6)	<ul style="list-style-type: none"> • The questions of this category challenge students to get engaged in creative and original thinking • Developing original ideas and problem solving skills

Cognitive Level (CL)

No.	Code	Cognitive Level
1	R	Remember
2	U	Understanding
3	Ap	Apply
4	An	Analyse
5	E	Evaluate
6	C	Create

Knowledge Category (KC)

No	Code	Knowledge
1	F	Factual
2	C	Conceptual
3	P	Procedural
4	M	Metacognitive

Learning Activities

A. Participative Learning

No	Code	Description
1	GD	Group Discussion
2	Sem	Seminar
3	SI	Simulation

B. Cooperative Learning

No	Code	Description
1	Lec	Lecture

C. Problem Solving Method

No	Code	Description
1	Ess	Essay
2	SP	Solution to Problem
3	AW	Article Writing

D. Experiential Learning

No	Code	Description
1	RP	Roleplay
2	FW	Fieldwork
3	Rep	Report Writing
4	Rev	Review writing
5	CW	Critique Writing

Assessment Task

No	Code	Description
1	MCQ	Multiple Choice Question
2	Ess	Essay
3	CA	Class Assignment
4	Qui	Quiz
5	CA	Class Assignment
6	HrA	Hour Assignment
7	CT	Class Test
8	ST	Self Test
9	OBT	Open Book Test
10	SA	Short Answer
11	OT	Online Test

UG Curriculum
(2023 - 2026)

Year	Semester	Module No.	Courses	Course code	Hours							Total Hours	Credits	Credit Points	
					Lecture	Tutorial	Practical	Internship	Self-Learning	Demonstration	Research Project				
I	I	1.1	Modern Indian Language	MIL- 1 23LT11	6							6	3	13.5	
		1.2	Communi- cative English	CE- 1 23LE11	5		1					6	3	13.5	
		1.3	Core Course 1	Plant Diversity - I Algae	23GB11	4	2						6	5	22.5
		1.4	Core Course 2	Plant Diversity - I Practical - I	23GBP1		4	2					6	5	22.5
		1.5	MS-1	Chemistry	23AC01	4		2					6	5	22.5
	II	2.1	Modern Indian Language	MIL- 2 23LT21	6							6	3	13.5	
		2.2	Communi- cative English	CE- 2 23LE21	5		1					6	3	13.5	

		2.3	Core Course - 3	Plant Diversity - II Fungi, Bacteria, Viruses, Plant pathology and Lichens	23GB21	4	2							6	5	22.5	
		2.4	Core Course - 4	Plant Diversity - II Practical - II	23GBP2		4	2						6	5	22.5	
		2.5	MS-2	Chemistry	23AC02	4		2						6	5	22.5	
II	III	3.1	Modern Indian Language	MIL- 3	23LT31	6								6	3	15	
		3.2	Communicative English	CE- 3	23LE31	5	1							6	3	15	
		3.3	Core Course - 5	Plant Diversity III - Bryophytes and Pteridophytes	23GB31	4	2								5	5	25
		3.4	Core Course - 6	Plant Diversity III Practical - III	23GBP3		3	2							5	5	25
		3.5	MS - 3	Botany for Zoology major	23AB01	4		2							6	5	25
		3.6	SEC- 1	Nursery & Landscaping	23GBN1	2									2	1	5

		3.7	VAC I	Health and Fitness through Yogasanas	23SE11	2							1	5
II	IV	4.1	Modern Indian Language	MIL- 4	23LT41	6						6	3	15
		4.2	Communi cative English	CE- 4	23LE41	5	1					6	3	15
		4.3	Core Course – 7	Plant Diversity IV - Gymnosperms, Paleobotany and Evolution	23GB41	4	2					6	5	25
		4.4	MS-4	Botany for Zoology major	23AB02	4	2					6	5	25
		4.5	SEC-2	Mushroom Cultivation	23GBS2	2						2	1	5
		4.6	VAC II	Digital Empowerment through Artificial Intelligence, Multimedia and Cyber Security	23SE21	2						2	1	5
		4,7	M- 1	Entrepreneurial Opportunities in Botany	23GBS5	2						2	2	10

		4.8	Internship		23GBD1				1				1	5		
III	V	5.1	Core Course- 8	Plant Morphology, Taxonomy & Economic Botany	23GB51	4		2					6	5	27.5	
		5.2	Core Course- 9	Project	23GBD2	4		2						6	5	27.5
		5.3	Core Course Elective-1	Cultivation of Algae	23GBEA	4	2							6	4	22
		5.4	Core Course Elective-2	Cell Biology, Genetics & Plant Breeding	23GB53	4	2							6	4	22
		5.5	SEC- 3	Botanical garden & Landscaping	23GBS3	2								2	1	5.5
		5.6	VAC III	Indian Knowledge System and Human Rights	23SE31	2								2	1	5.5
		5.7	M-2	Fermentation Technology	23GBS6	2								2	2	11
	VI	6.1	Core Course-10	Plant Anatomy & Embryology	23GB61	4		2						6	5	27.5
6.2		Core Course-11	Plant Physiology & Plant Biochemistry	23GB62	4		2						6	5	27.5	

	6.3	Core Course Elective-3	Plant Biotechnology & Molecular Biology	23GB63	4	2							6	4	22
	6.4	Core Course Elective-4	Entrepreneurial Botany	23GBEB	4	2							6	4	22
	6.5	SEC-4	Herbal Technology	23GBS4	2								2	1	5.5
	6.6	VAC- IV	Environmental Science	23SE41	2								2	1	5.5
	6.7	M-3	Botany for Competitive Examinations	23GBS7	2								2	2	11
		Total											180	130	651

**First Year
Semester – I
(NCrF Level 4.5)**

List of Courses	Name	Credits	No. of Hours
Modern Indian Language	MIL-1	3	6
Communicative English	CE-1	3	6
Core Course (CC - 1)	Plant Diversity - I Algae	5	6
Core Course (CC - 2)	Plant Diversity - I Practical - I	5	6
MS	MS-1 Chemistry	5	6
	Total	21	30

Course Title: Part – I Tamil Modern Indian Language-1 (MIL – 1)		
Course type: Theory		
Subject Code: 23LT11		
Total Hours : 90 Hours / Week – 6 Credits: 3		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Dr. D. Deva Sambath Associate Professor Head of the Department Mobile : 9994964710 devasambath013@gmail.com	Expert 1 Dr. S. Sujana Bai Assistant Professor Mob: 9486758307 sujanabai@gmail.com	Expert 2 Dr. J. Kingsly Assistant Professor Mobile: 7871978855 kingslyphd@gmail.com

CLO No.	Course Learning Outcomes (CLO) upon completion of this course, students will be able to	% of PLO mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO 1	பாரதியார் காலந்தொட்டு தற்காலப் புதுக்கவிதைகள் வரை கவிதை இலக்கியம் அறிமுகப்படுத்தப் படுவதால் கவியாக்கத் திறன் பெறுவர்	1(8), 2(8), 6(4)	1, 2, 3,	Ap	P
CLO 2	புதுக்கவிதை வரலாற்றினை அறிந்து கொள்வர்.	1(6), 2(8), 3(6)	1, 2, 3, 8	U	F
CLO 3	இக்கால இலக்கிய வகையினைக் கற்பதன் மூலம் படைப்பாக்கத் திறன் பெறுவர்.	1(8), 7(12)	2, 3, 7	An	M
CLO 4	மொழியறிவோடு சிந்தனைத் திறன் அறிவில் மேம்படுவர்.	1(10), 2(10)	2, 3	Ev	C
CLO 5	தமிழ்மொழியைப் பிழையின்றி எழுதவும், புதிய கலைச் சொற்களை உருவாக்கவும் அறிந்து கொள்வர்.	1(8), 3(6), 6(6)	2, 3, 8	C	P

Module	Course Description	Hours	% of CLO mapping with Module	Learning Activities	Assessment Tasks	Reference
அலகு I மரபுக்கவிதை						
1.1	தமிழ்த் தெய்வ வணக்கம் - மனோன்மணியம் பெ. சுந்தரனார்	2	1(11)	GT	HrA	1
1.2	சிறுத்தையே வெளியில் வா- பாரதிதாசன்	2	1(12)	Sem	CT	1
1.3	புத்தரும் சிறுவனும்- கவிமணி தேசிக விநாயகம் பிள்ளை	4	1(22)	GD	CT	1
1.4	மொழி உணர்ச்சி -முடியரசன்	2	1(11)	Lec	CA	1
1.5	ஆட்டனத்தி ஆதிமந்தி -ஆதிமந்தி புலம்பல் -கண்ணதாசன்	4	1(22)	Lec	HoA	1
1.6	வினாத்தாள் -சுரதா	2	1(11)	SI	ST	1
1.7	கடல் - தமிழ் ஒளி	2	1(11)	ESS	SA	1
அலகு II புதுக்கவிதை						
2.1	வீட்டுக்கொரு மரம் வளர்ப்போம் - அப்துல் ரகுமான்	2	2(11)	Sem	HoA	1
2.2	சென்றியூ கவிதைகள் -ஈரோடு தமிழன்பன் (ஏதேனும் ஐந்து கவிதைகள்)	2	2(11)	Lec	Qui	1
2.3	பிற்சேர்க்கை -வைரமுத்து	3	2(17)	Lec	CA	1
2.4	வாழைமரம் - மு. மேத்தா	2	2(11)	GD	CT	1
2.5	வள்ளுவம்பத்து- அறிவுமதி	2	2(11)	Lec	CT	1
2.6	ஆனந்தயழை மீட்டுகிறாய் - நா. முத்துக்குமார்	3	2(17)	OO	ST	1
2.7	சபிக்கப்பட்ட முத்தம்- சுகிர்தராணி	2	2(11)	Sem	SA	1

2.8	நீ எழுத மறுக்கும் எனது அழகு - இளம்பிறை	2	2(11)	Sem	HoA	1
அலகு III சிறுகதைகள்						
3.1	வாய்ச்சொற்கள்- ஜெயகாந்தன்	2	3(11)	Lec	HoA	9
3.2	கடிதம் -புதுமைப்பித்தன்	1	3(6)	Lec	CT	10
3.3	கரு- உமா மகேஸ்வரி	2	3(11)	GD	HrA	9
3.4	முள்முடி தி. -ஜானகிராமன்	2	3(11)	Sem	CT	9
3.5	சிதறல்கள்- விழி.பா. இதயவேந்தன்	2	3(11)	Lec	SA	10
3.6	காகித உறவு - ச. சமுத்திரம்	3	3(17)	Lec	ST	10
3.7	வீட்டின் மூலையில் ஒரு சமையலறை- அம்பை	4	3(22)	GD	Ess	9
3.8	நாயக்காரர் சீமாட்டி -ஆண்டன் செக்காவ்	2	3(11)	Lec	SA	4
அலகு IV இலக்கிய வரலாறு						
4.1	மரபுக்கவிதை	6	4(33)	Lec	MCQ	3
4.2	புதுக்கவிதை	6	4(33)	Lec	SA	3
4.3	சிறுகதை	6	4(34)	Sem	Ess	3
அலகு V மொழித்திறன் போட்டித்தேர்வு						
5.1	பொருள் பொதிந்த சொற்றொடர் அமைத்தல்	3	5(16)	RF	Qui	6
5.2	ஒரெழுத்து ஒரு மொழி	3	5(16)	Sem	MCQ	6
5.3	வேற்றுமை உருபுகள்	3	5(17)	Lec	Ess	4
5.4	திணை, பால், எண், இடம்	3	5(17)	Lec	MCQ	5
5.5	கலைச்சொல்லாக்கம்	3	5(17)	RF	CA	6
5.6	மொழிபெயர்ப்பு	3	5(17)	Ess	CA	8

Reference Books
1. பொதுத்தமிழ் -முதற்பருவம், தமிழ்த்துறை வெளியீடு, ஸ்காட் கிறிஸ்தவக் கல்லூரி (தன்னாட்சி), நாகர்கோவில்.
2. தமிழ் இலக்கிய வரலாறு சிற்பி. பாலசுப்பிரமணியன், கவிதா பதிப்பகம், சென்னை
3. புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு - தமிழண்ணல், மீனாட்சி புத்தக நிலையம், மதுரை.
4. ஆண்டன் செகாவ் கதைகள் எம். கோபாலகிருஷ்ணன், நூல்வனம் பதிப்பகம், சென்னை.
5. வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு முனைவர் பாக்யமேரி, நியூசெஞ்சுரி புக்ரவுஸ் (பி) லிட், சென்னை.
6. நன்னூல் - சொல்லதிகாரம், மணிவாசகர் பதிப்பகம், சென்னை
7. தொல்காப்பியம் - சொல்லதிகாரம், சாரதா பதிப்பகம், சென்னை
8. அடிப்படைத் தமிழ் இலக்கணம் -எம்.ஏ.நுஃமான், அடையாளம் பதிப்பகம், புத்தாந்தம்
9. 100 சிறந்த சிறுகதைகள் பாகம் (1) எஸ். ராமகிருஷ்ணன், தேசாந்திரி பதிப்பகம், சென்னை.
10. 100 சிறந்த சிறுகதைகள் எஸ். ராமகிருஷ்ணன், தேசாந்திரி பதிப்பகம், சென்னை பாகம்(2).

Course Title: Malayalam Modern Indian Language-1 (MIL – 1) Prose Composition and Translation		
Course type: Theory		
Subject Code: 23LM11		
Total Hours : 90 Hours / Week – 6 Credits: 3		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator	Expert 1	Expert 2
Name : Dr. Jisha S. K. Assistant Professor Mobile 8606520272 jisha@scottchristian.org	Name : Dr. Pramod Kumar D. N Associate Professor Mobile : 9446551748 pramodrds@gmail.com	Name : Dr. R. Sreejasankar Assistant Professor Mobile : 9847909335 sreejavijayan77@gmail.com

CLO- No.	Course Learning Outcomes (CLO) <i>Upon completion of this course, students will be able to:</i>	% of PLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO-1	understand the word level and sentence level translation and obtain the proverb narrative techniques	1(10), 2(10)	1, 8	U	M, C

CLO-2	evaluate the Malayalam Novel of different eras and getting life awareness and obtain the riddle's moral value	1(10), 2(5), 5(5)	1, 2, 3, 6, 8	U, An	M,F
CLO-3	analyse the Malayalam Short story of different eras and getting life awareness and obtain the riddle's moral value	5(10), 9(10)	6, 7	An, E	M,P
CLO-4	evaluate the Malayalam autobiography of different eras and getting life awareness	9(10), 10(10)	1, 3, 7	An, E	M,F, C
CLO-5	evaluate the Malayalam Travelogue. of different eras and getting life awareness and obtain	5(10), 9(10)	1, 2	U, E	M, C, P

Module	Course Description	Hours	% of CLO mapping with Module	Learning Activities	Assessment Tasks	References
1	Vivarthanam	18				
1.1	Malayala Vivarthana Charithram	1	1[10]	Lec	CA	14
1.2	Vivarthanathinte Prayojanam	1	1[15]	Lec	CA	14
1.3	Vivarthakanate Gunangal	1	1[12]	Lec	HrA	14
1.4	Vivarthanathinte Parimithikal	1	1[13]	Lec	CT	14
1.5	Englishil Ninum Malayalathilekku Vivarthanam Cheyyuka	4	1[12]	Lec	ST	14

1.6	Malayalathil NinnumEnglishilekku Vivarthanam Cheyyuka	4	1[13]	Lec	CT	14
1.7	Sailikalum Pazhanchollukalum	3	1[12]	Lec	ST	14
1.8	Aasayavipulanam	3	1[13]	Lec	CT	14
2	Malayalanovel	18				
2.1	Malayalanovel Charithram	2	2[10]	Lec	OT	1,4,6, 7,8,1 3
2.2	M.D.yude Novalukal	1	2[10]	Lec	OBT	1,4,6,7 ,8,13
2.3	Naalukettu Samagra avalokanam (Visada PadanamAadyathe 5 Adhvavangal)	3	2[20]	Lec	Qui	1,4,6,7 ,8,13
2.4	Adyayam 1	3	2[10]	Lec	HoA	1,4,6,7 ,8,13
2.5	Adyayam 2	3	2[20]	Lec	MCQ	1,4,6,7 ,8,13
2.6	Adyayam 3	3	2[10]	Lec	Qui	1,4,6,7 ,8,13
2.7	Adyayam 4	3	2[20]	Lec	HoA	1,4,6,7 ,8,13
3	Malayala Cherukadha	18				
3.1	Malayala Cherukadha Charithram	3	3[20]	GD	SA	1,2,3,5 ,10,11
3.2	Karoorinte Cherukadhakal	3	3[10]	CS	ESS	1,2,3,5 ,10,11
3.3	Marappavakal- Kaaroor	3	3[20]	Lec	CA	1,2,3,5 ,10,11

3.4	Uthuppante Kinar - Kaaroor	3	3[10]	Lec	HrA	1,2,3,5,10,11
3.5	Kalchakaram - Kaaroor	3	3[20]	Lec	CT	1,2,3,5,10,11
3.6	Poovamabhazham - Kaaroor	3	3[20]	Lec	CT	1,2,3,5,10,11
4	Athmakadha Saahithyam	18				
4.1	Malayala AathmakadhaSaahithyaCharithram	3	4[20]	Sem	ST	1,12
4.2	Joseph Mundasseri	3	4[20]	Sem	OT	1,12
4.3	Kozhinja Elakal Samagra avalokanam (Visada Padanam Aadya Naalu)	3	4[20]	CS	OBT	1,12
4.4	Adyayam 1	3	4[10]	Lec	Qui	1,12
4.5	Adyayam 2	3	4[20]	Lec	HoA	1,12
4.6	Adyayam 3	3	4[10]	Lec	Qui	1,12
5	Yaathravivaranam	18				
5.1	Malayala Yaathra vivarana Charithram	3	5[20]	Ess	MCQ	1
5.2	Raajan Kaakkanadan	3	5[10]	GD	SA	1
5.3	Himavante Mukal Thattil - Raajan Kaakkanadan Samagra avalokanam	3	5[20]	SP	CA	1
5.4	Adyayam 1	3	5[10]	SP	HrA	1
5.5	Adyayam 2	3	5[20]	GL	CT	1
5.6	Adyayam 3	3	5[20]	GL	CT	1

Reference Books

1. K. M. George, Aadgunika Malayala Sahithya Charithram Prasthanangalilude, Kottayam, D. C. Books, 1998.
2. M. Achuthan, Cherukadha Innale Innu, D.C Books,2007
3. N. Prabhakaran, Kadha Thedunna Kadha,

4. 4.Tharakan K.M. Malayala Novel Saahithya Charithram, Karala Saahithya Accademy Thichur, D. C. Books,1978
5. K. S .Ravikumar, Kadhayum Kalavum,
6. E. V. Ramkrishnan, Malayala Novalinte Desakaalangaal, Mathrbhoomi Books,2017.
7. K.P. Appan, Maranunna Malayala Noval, , D.C Books, 2015
8. P. K. Rajasekharan, Andhanaya Daivam, D.C Books,,1970
9. Dr.K.M. Prabhakara Varir, Shylee shilppam,
10. Kaaroor Neelakanda Pillai, Kaaroor Kadhakal Sampoomnam, NBS Kottayam 2004,
11. Karur Kadha patanam- M. M. Basheer,NBS Kottayam, 1980
12. Gopalakrishnan Naduvattom, Aathmakadhasaahithyam Saahithyam, Kerala Bhasha Institute,
13. Thiruvananthapuram, 1990
14. Tharakan K.M., Aadhunika Novel Dersanangaal, N.B.S. Kottayam, 1980.
15. Dr. N. E. Viswanadhan, Vivarthana Vicharam, D.C Books, 2004

Course Title: General Hindi Modern Indian Language-1 (MIL – 1)		
Course type: Theory		
Subject Code: 23LH11		
Total Hours : 90 Hours / Week – 6 Credits: 3		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Mrs. Josy Vincent Assistant Professor of Hindi Mobile: 9486357323 josysam2020@gmail.com	Expert 1 Dr. Sreedevi S Assistant professor of Hindi Mobile: 9495243814 sdtvpm@yahoo.com	Expert 2 Dr. Jayasree. K. AssistantProfessor of Hindi Phone :9539204383 Jayasree8262@gmail.com

CLO. No.	Course Learning Outcomes (CLO) <i>Upon completion of this course, students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO-1	Understand the concepts of Hindi sounds	1(10), 2(10)	1, 8	U	M,F,C
CLO-2	Understand and analyze Sentence formation in Hindi	2(10), 3(5), 5(5)	1,2, 3, 5	U,An	M,C
CLO-3	Remember Hindi vocabulary	2(10), 9(5), 10(5)	1, 3, 7, 8,	An, E	M,C,P
CLO-4	Understand and analyze stories and other passages	9(10), 10(10)	3, 7, 9	An, E	M,C,P
CLO-5	Evaluate Language ability	1(10), 5(5), 9(5)	1, 6,	U, E	M,C,P

Module	Course Description	Hours	% of CLO mapping with Module	Learning Activities	Assessment Tasks	References
1	Buniyadi Hindi	18				
1.1	Swar	3	1[10]	Lec	CA	2,3,4,5,6,8
1.2	Vyanjan	4	1[15]	Lec	CA	2,3,4,5,6,8
1.3	BarahKhadi	3	1[25]	Lec	HrA	2,3,4,5,6,8
1.4	Shabdh	2	1[25]	Lec	CT	2,3,4,5,6,8
1.5	Vakyarachana	3	1[25]	Lec	ST	1
2	Hindi shabdhavali					
2.1	Risthom ke naam	3	2[50]	Lec	OT	2,3,4,5,6,8

2.2	Gharelu Padharthom ke naam	3	2[50]	Lec	OBT	2,3,4,5,6,8
3	Vyakaran					
3.1	Sadharan vakya our sangya	3	3[25]	GD	SA	2,3,4,5,6,8
3.2	Sarvanaam	3	3[25]	CS	ESS	2,3,4,5,6,8
3.3	Visheshan	3	3[25]	Lec	CA	2,3,4,5,6,8
3.4	Kriya aadi shabdhom ka prayog	3	3[25]	Lec	HrA	2,3,4,5,6,8
4	Chote Gadhyamsh ke patan					
4.1	Bachom ki kahaniyam	3	3[50]	Lec	CT	7
4.2	Pathr pathrkaom mem Prakashith Gadyamsh ka patan	3	4[50]	Sem	OT	2,3,4,5,6,8
5	Nibandh					
5.1	Sant. Thiruvalluvar	3	5[25]	Ess	MCQ	9
5.2	EVR Thandai Periyar	3	5[25]	GD	SA	9
5.3	Naari Saktheekaran	3	5[25]	SP	CA	9
5.4	Paravaran Samrakshan	3	5[25]	SP	HrA	9

Reference Books

1. Hindi ke avyay vakyamsh – Chaturbuj Sahay
2. Subodh Hindi vyakaran – Phoochand Jain
3. Sanshipt Hindi Vyakaran – Vyavaharic Hindi – Nagappa
4. Abhinav Hindi vyakaran – Nagappa
5. Saral Hindi Vyakaran – Syamachandra Kapur
6. Vyakaran Pradeep – Ramdev
7. Lakhu Balkadhayem – Ramashankar
8. Hindi Grammar – Edwin Greeves
9. Hindi Nibandh

Course Title: CE- 1 Communicative English		
Course type: Theory		
Subject Code: 23LE11		
Total Hours: 90 (Including Seminar/ Practical [information Transfer] and formative assessment)		
Hours / Week – 6 Credits: 3		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %: 100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Dr. V Brinsley Assistant Professor of English 8903480894 vbrinsley@gmail.com	Expert 1 Dr. L. Judith Sophia Assistant Professor of English 9486459061 judithsophia24@gmail.com	Expert 2 Dr. Sheni D. L. Singh Assistant Professor of English 9487386706 shenisingh1984@gmail.com

CLO- No.	Course Learning Outcomes (CLO) <i>Upon completion of this course, students will be able to:</i>	% of PLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO-1	Develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking and Writing	1 (10) 6 (7) 7 (3)	2, 3	U AP	F P
CLO-2	Examine and present material of the prescribed texts and other texts	2 (8) 5 (12)	1, 2	U, An E	C M
CLO-3	Identify cross cutting issues like, Human values, (Professional, Personal and Domestic) ethics and environmental sustainability and practise them	3 (8) 8 (6) 9 (6)	1, 4, 8, 9	An E, Ap	C P
CLO-4	Present and differentiate various cultures and civilizations of the Globe and distinguish Indian traditional Knowledge	1 (10) 8 (5) 10 (5)	5, 6, 10	U, Ap	P M
CLO-5	Relate the textual content and underlying meaning of the context to the real life situations	5 (6) 8 (8) 10 (6)	1, 2, 5, 7	E, Ap, C	C M

Module	Course Description	Hours	% CLO mapping with Module	Learning Activities	Assessment Tasks	References
1	PROSE			18		
1.1	JRD - Harish Bhat					
1.1.1	Introduction to the Author, essay & Textual analysis	3	2 [4], 4 [4]	L	Ho A	1
1.1.2	Human values to be imbibed from the life of Tata	1	2 [4], 3 [5], 5 [5]	L GD	SA	1
1.1.3	Professional and Personal ethics revealed in “JRD”	2	2 [4], 3 [5], 5 [5]	L GD	Ess	1
1.2	Us and Them - David Sedaris					
1.2.1	Introduction to the Author, essay & Textual Analysis	3	2 [4], 4 [8]	L	Ho A	2
1.2.2	Thematic discussion: Self-centred attitude & Social media influence	2	2 [4], 3 [5], 5 [5]	L GD	MCQ HoA	2
1.2.3	Human Values (Empathy) reflected in “Us and Them”	1	2 [4], 3 [4], 5 [5]	L GD	SA Ess	2

1.3	Uncle Podger Hangs a Picture - Jerome K Jerome					
1.3.1	Introduction to the Author & essay Textual Analysis	3	2 [4], 4 [6]	L	Ho A	3
1.3.2	Thematic Discussion: Comic attitude of Patriarchal Dominance in the domestic context	2	2 [4], 3 [5],	L GD	Ess HoA	3
1.3.3	Uncle Podger- Character analysis	1	5 [5]	RP	MCQ	3
2	POETRY			18		
2.1	A Patch of Land - Subramania Bharati					
2.1.1	Introduction to the poet and the poem	1	2 [2], 4 [8]	L	Ho A	4
2.1.2	Poetry Analysis- Discussion on themes & Techniques	2	2 [3], 5 [5]	L GD	Hr A	4
2.1.3	Connection between Land and Poetic creation: A Reflection on Indian Knowledge	1	4 [6]	GD	Ess	
2.2	The Sparrow - Paul Laurence Dunbar					
2.2.1	Introduction to the poet and the poem	1	2 [3], 4[4]	L	Ho A	5
2.2.2	Poetry Analysis- Discussion on themes and Techniques	3	2 [4], 5 [3]	GD CCC	Hr A	5
2.2.3	Human - Environment Interaction and	1	2 [4],	L	Essay	5

	Sustainability implied in “The Sparrow”		3[5], 5 [5]	GD		
2.3	A Nation’s Strength – Ralph Waldo Emerson					
2.3.1	Introduction to the poet and the poem	1	2 [4], 4 [4],	L	Ho A	6
2.3.2	Poetry Analysis- Discussion on themes - Nation building & Techniques	3	2 [4], 4 [4]	L GD	Ho A	6
2.3.3	Democratic values and Universalism in “A Nation’s Strength”	1	4 [4] 5 [3]	PT	MCQ	6
2.4	Love Cycle - Chinua Achebe					
2.4.1	Introduction to the Poet and the poem	1	2 [4], 4 [4]	L, CCC	Ho A	7
2.4.2	Poetry Analysis- Discussion on themes - Connection between Land/Nature and human life and human values (tolerance)	2	2 [4], 3 [4], 5 [5]	PT GD	Ho A	7
2.4.3	Analysis of Techniques & Poetic devices in “Love Cycle”	1	2 [4]	PT	MCQ	7
3	SHORT STORIES			18		
3.1	The Faltering Pendulum- Bhabani					
3.1.1	Introduction to the author and the short story	1	2 [4], 4 [8]	L	Ho A	8
3.1.2	Plot & Character Analysis	3	2 [4], 5 [3]	TPS GD	Hr A Ho A	8

3.1.3	Nature- Human Interaction and Human rights in “Faltering Pendulum”	2	2 [4], 3[5], 5[5]	L GD	Hr A	8
3.2	How I Taught my Grandmother to Read- Sudha Murthy					
3.2.1	Introduction to the author and the short story	1	2 [4], 4[8]	L GD	Ho A	9
3.2.2	Plot & Character Analysis	3	2 [4], 5 [5]	CCC	Hr A CT	9
3.2.3	Thematic discussion: Lifelong learning & Human value of perseverance	2	2 [4], 3 [10], 5 [10]	L, GD	Ho A, CT	9
3.3	The Gold Frame- R.K. Laxman					
3.3.1	Introduction to the author and the short story	1	2 [4], 4 [4]	L	Ho A, CT	10
3.3.2	Plot & Character Analysis	3	2 [4], 5 [3]	L, CCC	Ho A, CT	10
3.3.3	Themes & Techniques	2	2 [4], 5[3]	PT, GD	Hr A	10
4	LANGUAGE COMPETENCY					18
4.1	Vocabulary: Synonyms, Antonyms & Word Formation	5	1[32],	CCC	Hr A	11, 12
4.2	Appropriate use of Articles	2	1[24],	CCC	Hr A	11, 12
4.3	Parts of Speech	7	1[24],	CCC	Hr A	11, 12
4.4	Error correction	4	1[20],	CCC	Hr A	11, 12

5	ENGLISH FOR WORKPLACE				18	
5.1	Self - introduction, Greetings	5	1[28],	GT, GD	Viva	13
5.2	Introducing others	4	1[20]	GT, GD	Viva	13
5.3	Listening for General and Specific Information	5	1[24],	GD	Viva	13
5.4	Listening to and Giving Instructions / Directions	4	1[28],	GD	Viva	13

Text books (Latest Editions)

1. <https://www.tata.com/newsroom/heritage/coffee-tea-jrd-tata-stories>
2. <https://legacy.npr.org/programs/morning/features/2004/jun/sedaris/usandthem.html>
3. <http://rosyhunt.blogspot.com/2013/01/uncle-Podger-hangs-picture.html>
4. [https://books.google.co.in/books?id=iSHvOmXuvLMC&printsec=frontcover&dq=subramania a+bharati+poems&hl=en&newbks=1&newbks_redir=0&source=gb_mobile_search&sa=X&redir_esc=y#v=onepage&q=subramania%20bharati%20poems&f=false](https://books.google.co.in/books?id=iSHvOmXuvLMC&printsec=frontcover&dq=subramania+a+bharati+poems&hl=en&newbks=1&newbks_redir=0&source=gb_mobile_search&sa=X&redir_esc=y#v=onepage&q=subramania%20bharati%20poems&f=false)
5. <https://poets.org/poem/sparrow-0>
6. <https://poets.org/poem/nations-strength>
7. <https://www.best-poems.net/chinua-achebe/love-cycle.html>
8. *Steel Hawk and Other Stories* by Bhattacharya, Bhabani, New Delhi: Sahitya Akademi, 1967
9. *How I Taught my Grandmother to Read and Other Stories*, Murthy, Sudha, Penguin Books, India, 2004
10. <https://fybaenglish.blogspot.com/2018/12/the-gold-frame-r-k-laxman.html>
11. *English in Use - A Textbook for College Students* (English, Paperback, - T.Vijay Kumar, K Durga Bhavani, YL Srinivas)
12. *Practical English Usage* - 4th Edition By Michael Swan
13. *The Art of Civilized Conversation: A Guide to Expressing Yourself with Style and Grace* -Margaret Shepherd, Penny Carter, (Illustrator), Sharon Hogan, 20

Course Title: Plant Diversity I - Algae (Core paper 1)		
Course type: Theory		
Subject Code: 23GB11		
Total hours: 90 Hours/Week: 6 [Th.: 6(Lecture 4+Turotial 2] Credits: 5		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- Understand the origin, evolution and inter-relationships of plants
- Enrich their knowledge on the distribution and economic importance of cryptogams
- Distinguish between the structural complexities and life-cycle patterns
- Apply the knowledge gained to identify the plants in the field

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Categorize algae based on their distribution and structural variations.	2[20]	1, 2	Ap	F
CLO2	Relate the structural organization and significance of algae.	2[20]	1, 2	U	F, C
CLO3	Explain the various life-cycle patterns and the fundamental concepts in algal growth.	2[20]	1, 2	U, Ap	F
CLO4	Demonstrate selected cultivation methods of algae.	2[20]	1, 2	Ap, U	C, P
CLO5	Explain the importance and commercial value of algae.	2[20]	1, 2	U, E	F, M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	ALGAE - General account					
1.1	General characters, distribution	2	1[50]	Lec	Sem	1,2,3
1.2	Classification by Fritsch (1935-1945), criteria for classification.	3	4[30]	Lec/Sp	Ess	1,2,3
1.3	Flagella, chromatophores	2	4[25]	Lec	Ass	1,2
1.4	Pyrenoids, eye-spots	2	4[25]	Lec/Sp	Ass	1,2
1.5	Life-cycle patterns	4	3[100]	Lec/Sp	Ess	1,2,3
2	ALGAE - Thallus organization					
2.1	Cyanophyceae - <i>Anabaena</i> ; Occurrence, distribution, structure and life-cycle of <i>Nostoc</i> .	3	2[10]	Lec	Ess	1,3
2.2	Chlorophyceae – unicellular form - <i>Chlorella</i> , colonial form – <i>Volvox</i> , filamentous- <i>Oedogonium</i> , siphonaceous – <i>Caulerpa</i> ;	3	2[10]	Lec	MCQ	1,3
2.3	Bacillariophyceae – Diatoms	2	2[10]	Lec	ESS	1,3
2.4	Phaeophyceae - <i>Sargassum</i>	2	2[10]	Lec	ESS	1,3
2.5	Rhodophyceae – <i>Gracilaria</i>	2	2[10]	Lec	Sem	1,3
3	ALGAE - Reproduction					
3.1	Vegetative, asexual and sexual reproduction	3	3[20]	Lec	Sem	1,2,3
3.2	Life history (haplontic – <i>Oedogonium</i>	2	3[20]	Lec	Ess	1,2
3.3	diplontic – <i>Sargassum</i>	2	3[20]	Lec	MCQ	1,2
3.4	diplohaplontic – <i>Ulva</i>	2	3[20]	Lec	Sem	1,2
3.5	diplobiontic – <i>Gracilaria</i>	3	3[20]	Lec	Sem	1,2,3
4	ALGAE - Cultivation methods					
4.1	Indoor cultivation methods	3	4[40]	Lec	Sem	1,2,3
4.2	Large-scale cultivation of algae	4	4[40]	Lec	GD	1,2,3
4.3	Harvesting of algae	3	4[20]	Lec	Ess	1,2,3
5	ALGAE - Economic importance					
5.1	Economic importance: Agar-agar, Alginic acid and Carrageenan and Diatomite.	3	5[40]	Lec	Sem	1,2,3
5.2	Resource potential of algae: In fuel, agriculture, pharmaceutical Industries, and Phycoremediation.	5	5[30]	Lec/Sp	Ess	1,2,3
5.3	Role of algae in CO ₂ sequestration, as indicators of water pollution and	5	5[30]	Lec	Ess	1,2,3

bioinoculants. Bioluminescence.					
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References

1. Ragland, A., Kumaresan, V. & Arumugam, N. 2014. Algae, Fungi, Bryophytes and Plant Pathology. Saras Publications, Nagercoil.
2. Vashishta, B.R., Sinha, A.K. & Singh, V.P. 2008. Botany for degree students. Part - I. Algae. S. Chand & Co., New Delhi.
3. Kumaresan, V. 1997. Algae & Bryophytes. Saras Publications, Nagercoil.
4. Kumar, H.D., 1990. Introductory Phycology. Affiliated East-West, New Delhi.
5. Sharma, O.P., 1986. Text Book of Algae. Tata McGraw Hill Pub. Co., New Delhi.
6. Gangulee, H.C. & Dutta, A.K., 1989. College Botany, Vol. II, Books & Allied Pvt. Ltd., Calcutta.
7. Edwardlee, R. 2018. Phycology, 5th Ed., Cambridge University Press, London.
8. Singh, Pandey and Jain. 2020. A text book of Botany, 5th Edition, Rastogi Publication, Meerut.
9. Smith, G.M. 1955. Cryptogamic Botany, Vols. I & II. McGraw Hill, New York.
10. Chapman V.J. and Chapman D.J, 2013. The Algae. Alpha Numera.
11. Lee, R.D. 2008. Phycology 4th Edition, Cambridge University Press, New York.

Course Title: Plant Diversity I - Algae (Core paper 2)		
Course type: Practical - I		
Subject Code: 23GBP1		
Total hours: 90 Hours/Week: 6 [Pract.: 6(Practical 2+Turotial 4)] Credits: 5		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %: 100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfvashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802, 9486702263 , sehimaravi@gmail.com

Objectives: This course enables the students to

- To develop skills to identify algae based on habitat, thallus structure and the internal organization
- To identify microalgae from a mixture
- To develop skills to prepare microslides of algae
- To study the economic importance of selected species of algae
- To understand importance of algae to animals and humans

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Know-ledge Category (KC)
CLO1	Recall and identify algae based on morphology and internal structure.	5[20]	1, 2, 7	R	F
CLO2	Identify algae from an algal mixture.	5[20]	1, 2, 7	Ap	M
CLO3	Demonstrate practical skills in preparation of fresh mount and identification of algal forms.	5[20]	2, 7	Ap	F, P
CLO4	Decipher the economic importance of algae.	5[20]	1, 2, 10	An	C
CLO5	Identify algae in fresh and marine water habitats.	5[20]	1, 2, 10	Ap	P

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	ALGAE - General account					
1.1	Micro-preparation of the types prescribed in the syllabus: <i>Anabaena, Chlorella</i>	2	1[50]	Lec	Ess	1,2,3,5
1.2	<i>Oedogonium, Caulerpa</i> , Diatoms	3	4[20]	Lec	Sem	1,2,3,5
1.3	<i>Sargassum</i> and <i>Gracilaria</i>	2	4[20]	Lec/Sp	GD	1,2,3,5
1.4	To identify the micro slides relevant to the syllabus.	3	4[10]	Lec/Sp	GD	1,2,3,5
2	ALGAE - Thallus organization					
2.1	To identify algae from an algal mixture (freshwater).	5	2[25]	Lec	Ess	1,2,3,5
2.2	Chlorophyceae - unicellular form - <i>Chlorella</i> , colonial form - <i>Volvox</i>	5	2[25]	Lec	Sem	1,2,3,5
2.3	Bacillariophyceae - Diatoms	2	2[50]	Lec/Sp	GD	1,2,3,5
3	ALGAE - Economic importance					
3.1	Algae as: (i) Food (ii) Feed (iii) SCP	3	3[20]	Lec	Ess	1,2,3,5
3.2	(iv) Biofertilizers (v) Seaweed liquid fertilizer	5	3[20]	Lec	Sem	1,2,3,5
3.3	(vi) Hydrogen production by algae	2	3[20]	Lec/Sp	GD	1,2,3,5
3.4	(vii) Agar Agar (viii) Alginate	2	3[20]	Lec	Sem	1,2,3,5
3.5	(ix) Diatomaceous earth	5	3[20]	Lec/Sp	GD	1,2,3,5

	(Products/photographs)					
4	ALGAE - Cultivation methods					
4.1	Field visit to study fresh water/marine water algal habitats – Report to be recorded	3	4[50]	Lec	Ess	1,2,3,5
4.2	Large-scale cultivation of algae	3	4[30]	Lec	MCQ	1,2,3,5
4.3	Harvesting of algae	3	4[20]	Lec	Sem	1,2,3,5
5	ALGAE – Industrial Visit					
5.1	Visit to nearby industry actively engaged in algal technology.	3	5[50]	Lec	Ess	1,2,3,5
5.2	Resource potential of algae: In fuel, agriculture, pharmaceutical Industries, and Phycoremediation.	5	5[50]	Lec	MCQ	1,2,3,5

References

1. Aziz, F and Rasheed, R. 2019. A Course Book of Algae. Publisher: University of Sulaimani. ISBN: 978-9922-20-391-1.
2. Kumar, H.D., 1999. Introductory Phycology. Affiliated East-West, New Delhi.
3. Kumaresan, V. 1997. Algae & Bryophytes. Saras Publications, Nagercoil.
4. Sharma, O.P., 1986. Text Book of Algae. Tata McGraw Hill Pub. Co., New Delhi.
5. Bendre, M. Ashok and Ashok Kumar, A. 2020. Text Book of Practical Botany-1 (10th ed). Rastogi Publications, Meerut.
6. Singh, Pandey and Jain. 2020. A text book of Botany, 5th Edition, Rastogi Publication, Meerut.
7. Vashishta, B.R., Sinha, A.K. & Singh, V.P. 2008. Botany for degree students. Part - I. Algae. S. Chand & Co., New Delhi.

Semester II (NCrF Level 4.5)

List of Courses	Name	Credits	No. of Hours
Modern Indian Language	MIL-2	3	6
Communicative English	CE-2	3	6
Core Course (CC - 3)	Plant Diversity - II Fungi, Bacteria, Viruses, Plant pathology and Lichens	5	6
Core Course (CC - 4)	Plant Diversity - II Practical - II	5	6
MS	MS-2 Chemistry	5	6
	Total	21	30

Course Title: Modern Indian Language II (MIL II)		
Course type: Theory		
Subject Code: 23LT21		
Total hours: 90 Hours/Week: 6 [Th.: 5(Lecture 3+Tutorial 2)] Credits: 3		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Dr. D. Deva Sambath Associate Professor Head of the Department Mobile : 9994964710 devasambath013@gmail.com	Expert 1 Dr. S. Vaila Baby Associate Professor Mobile No. 9566680189 vailahenry50398@gmail.com	Expert 2 Dr. V. Christal Assistant Professor Mob: 9047365876 christalmoses123@gmail.com
Expert 3 Dr. S. Aiswariya Sukhila Assistant Professor Mobile : 7598559897 slaiswariya@gmail.com	Expert 4 Dr. G. Edvin Ezhil Arasi Assistant Professor Mobile: 6381119481 ezhilarasil3583@gmail.com	

CLO No.	Course Learning Outcomes (CLO) upon completion of this course, students will be able to:	% of CLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO 1	பக்தி இலக்கியங்களைக் கற்பதன் மூலம் பக்தி நெறியினையும் சமய நல்லிணக்கத்தையும் தெரிந்து கொள்வர்.	1(8), 3(12)	1, 3, 8	U	F
CLO 2	உரைநடை இலக்கியத்தைக் கற்பதன் மூலம் சமுதாயத்தில் மனிதர்கள் வாழும் முறைகளை அறிந்து கொள்வர்.	3(11), 3(9)	1, 2, 8	Ap	C
CLO 3	நாடக இலக்கியத்தை கற்பதன் மூலம் நாடக உத்தி முறைகளையும், நாடகம் எழுதும் திறனையும், கதைக் கூறுகளையும் அறிவர்.	9(12), 10(8)	4, 5, 6, 10	R	F
CLO 4	போட்டித் தேர்வுகளில் வெற்றி பெறுவதற்கு உரிய பயிற்சியைப் பெறுவர்	6(13), 7(7)	1, 3, 7	An	P
CLO 5	தமிழ் வரலாற்றினை சமூகப் பண்பாட்டு இலக்கியங்கள் வாயிலாக அறிவர்.	8(10), 9(10)	4, 9	C	P

Module	Course Description	Hours	% CLO Mapping with Module	Learning Activities	Assessment Tasks	Reference
Unit I செய்யுள் -பக்தி இலக்கியம், சிற்றிலக்கியம்						
1.1	பக்தி இலக்கியம், சிற்றிலக்கியம் விளக்கம் மற்றும் வகைகள்	2	1(11)	Lec	Qui	1
1.2	தேவாரம் திருநாவுக்கரசர் (மறுமாற்றத் திருத்தாண்டகம்)	2	1(11)	Lec	SA	1
1.3	திருப்பாவை ஆண்டாள் (முதல் 10 பாகம்)	2	1(11)	Lec	Qui	1
1.4	அருள் விளக்க மாலை வள்ளலார் (முதல் 10 பாடல்கள்)	2	1(11)	Lec	Qui	1
1.5	இரட்சணிய மனோகரம் எச்.எ. கிருட்டினப்பிள்ளை (பால்ய பிரார்த்தனை)	2	1(11)	Lec	Sem	1
1.6	பராபரக்கண்ணி குணங்குடி மஸ்தான் சாகிபு (முதல் 10 கண்ணிகள்)	2	1(11)	Lec	SA	1
1.7	தமிழ் விடு தூது (முதல் 20 கண்ணிகள்)	2	1(11)	Lec	Qui	1
1.8	திருக்குற்றாலக் குறவஞ்சி (நாட்டுவளம் கூறுதல்)	2	1(11)	Lec	Qui	1
1.9	முக்கூடற் பள்ளு (குமுறல் கொடுமை)	2	1(12)	Lec	Qui	1
Unit II உரைநடை						
2.1	உரைநடை பொதுவான விளக்கம்	1	2(6)	Lec	Qui	2
2.2	சேமித்துப் பழகுவோம் அகிலன்;	3	2(17)	Lec	Qui	2
2.3	பெண்மக்கள் கடமை மறைமலை அடிகள்	1	2(6)	Sem	Sem	2
2.4	மூன்றாம் உலகப்போர் முனைவர் தே. ஞானசேகரன்	1	2(6)	Lec	SA	2
2.5	நடுநிலைமை மு. வரதராசன்	2	2(11)	Sem	CT	2

2.6	வாழ்வியல் நீதி - புலவர் செந்துறை முத்து	2	2(11)	Lec	Sem	2
2.7	கல்வியும் சமுதாய நலனும் - முனைவர் க. நஞ்சையன்	2	2(11)	Lec	SA	2
2.8	தென்றல் வீசுகிறது கி.வா. ஐகந்நாதன்	2	2(11)	Lec	Qui	2
2.9	தமிழின் தொன்மையும் சிறப்பும்	2	2(11)	Lec	OT	2
2.10	இலை முதல் இ மெயில் வரை இ ஸ்டான்லி	2	2(12)	Lec	Qui	2
Unit III -நாடகம்						
3.1	நாடகம் பற்றிய அறிமுகம்	1	3(6)	Lec	Qui	3
3.2	ஆசிரியர் அறிமுகமும் படைப்புகளும்	1	3(6)	Lec	SA	3
3.3	இராவணன் மாளிகை	2	3(11)	Sem	Qui	3
3.4	நீதிதேவன் மாளிகை	2	3(11)	Lec	Qui	3
3.5	தவச்சாலை	2	3(11)	Lec	SA	3
3.6	தேவலோகம்- அறமன்றம்	2	3(11)	Lec	GD	3
3.7	இராவணன் நீதிதேவன் வருகை	2	3(11)	Sem	Qui	3
3.8	கோபமாக கம்பர் வருகை	2	3(11)	Sem	Qui	3
3.9	அறநெறி கூறுவோர் அறுவர்	2	3(11)	Lec	QA	3
3.10	நீதி கூறல்	2	3(11)	Lec	GD	3
Unit IV -இலக்கணம்						
4.1	தொடர் வகைகள்	3	4(17)	Lec	Qui	4
4.2	மரபுத் தொடர்	2	4(11)	Lec	SA	5
4.3	பழமொழிகள்	2	4(11)	Lec	CT	5
4.4	பிறமொழி சொற்களைக் களைதல்	2	4(11)	Lec	Qui	5
4.5	வழுச்சொற்கள் நீக்குதல்	2	4(11)	Lec	GD	5
4.6	இலக்கண குறிப்பு அறிதல்	2	4(11)	Lec	GD	4

4.7	தொடர் வகைகளை உருவாக்கி எழுத மாணவர்களிடம் கூறல்	2	4(11)	Lec	CT	4
4.8	மரபுத்தொடர் பற்றி வகுப்பறையில் விவாதித்தல்	1	4(6)	Lec	Qui	5
4.9	இலக்கணக் குறிப்புகளைக் குறித்த பயிற்சி கொடுத்தல்	1	4(6)	Lec	Qui	5
4.10	பழமொழிகள் இடத்திற்கு இடம் மாறும் முறையினைக் கலந்து பேசுதல்	1	4(6)	Lec	GD	5
Unit V - இலக்கிய வரலாறு						
I. பக்தி இலக்கியம்						
5.1.1	பக்தி இலக்கியம் அறிமுகம்	1	5(6)	Lec	Qui	6
5.1.2	சைவமும் தமிழும்	2	5(11)	Lec	SA	6
5.1.3	வைணவமும் தமிழும்	2	5(11)	Lec	CT	6
5.1.4	சமணமும் தமிழும்	2	5(11)	Lec	Qui	6
5.1.5	இஸ்லாமும் தமிழும்	2	5(11)	Lec	GD	6
5.1.6	கிறிஸ்தவமும் தமிழும்	2	5(11)	Lec	Qui	6
II. சிற்றிலக்கியம்						
5.2.1	சிற்றிலக்கியம் தோற்றமும் வளர்ச்சியும்	1	5(6)	Lec	SA	6
5.2.2	பரணி, பிள்ளைத்தமிழ்	2	5(11)	Lec	Qui	6
5.2.3	கலம்பகம், குறவஞ்சி, உலா	2	5(11)	Lec	Qui	6
5.2.4	பள்ளு, தூது	2	5(11)	Lec	Qui	6

Reference Books
□ தமிழ் இலக்கிய, வரலாறு சிற்பி. பாலசுப்பிரமணியன், சாகித்ய அகாதெமி, சென்னை 2013
□ பொதுத்தமிழ், தமிழ்த்துறை, ஸ்காட் கிறிஸ்தவக் கல்லூரி, நாகர்கோவில்
□ நீதிதேவன் மயக்கம், பேரறிஞர் அண்ணா, பூம்புகார் பதிப்பகம், சென்னை
□ நன்னூல், கழக வெளியீடு, சைவ சித்தாந்த நூற்பதிப்புக் கழகம், சென்னை
□ தமிழ்நாடு பாடநூல், பொதுத்தமிழ் (6 முதல் 10 வரை)
□ வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு, முனைவர் பாக்ய மேரி, நியூ செஞ்சரி புக் ஹவுஸ் (பி)லிட், அம்பத்தூர், சென்னை 2008.

Course Title: Malayala Kavitha Modern Indian Language II (MIL - II)		
Course type: Theory		
Subject Code: 23LM21		
Total hours: 90 Hours/Week: 6 Credits: 3		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator	Expert 1	Expert 2
Dr.Jisha.S.K Assistant Professor Mobile: 8606520272 jisha@scottchristian.org	Dr.Pramod Kumar D.N Associate Professor Mobile : 9446551748 pramodrds@gmail.com	Dr. Suja S. Associate Professor Mobile : 8590178009 sujasdr@gmail.com

CLO- No.	Course Learning Outcomes (CLO)	% of PLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO-1	Upon completion of this course, students will be able to: Understand and review Malayalam different periods.	1(10), 5(10)	1, 6, 8	1,2,3	U

CLO-2	Understand the impact of various theories.	1(10), 2(5), 3(5)	1, 2, 3, 5	1,3	U, An
CLO-3	Evaluate the characteristics of Poetries and obtain the poetry narrative techniques	5(10), 10(10)	1, 3, 7	1,2,5	An, E
CLO-4	Understand the word level and sentence level Poetry writing styles	9(10), 10(10)	3, 7	1, 9, 10	An, E
CLO-5	Evaluate the different texts and obtain moral values.	5(10), 9(10)	6, 7	1,2,5	U, E

Module	Course Description	Hours	% of CLO Mapping with Module	Learning Activities	Assessment Task	Reference
I	Pracheenakhattam	18				
1.1	Paattu	1	1[15]	Lec	CA	8,9,10,11,12
1.2	Naadan Paattu	1	1[20]	Lec	HrA	8,9,10,11,12
1.3	nalacharitham (Naadan Paattu)	1	1[15]	Lec	CA	8,9,10,11,12
1.4	Gaadha	1	1[15]	Lec	CA	1
1.5	Bhakthi Prasthaanam	4	1[20]	Lec	HrA	2,3,11,12
1.6	Poonthanam jnanappana	10	1[15]	Lec	CA	8,9,10,11,12
2	Navodhanavum Navodhana anandara Pravanathakalum	18				

2.1	Kalpanikaprasthanam	2	2[20]	GD	ST	8,9,10,11,12
2.2	Kumaranasan	2	2[20]	GD	ST	4,5,8,9
2.3	Duravastha – kumaranasaan	7	2[20]	GD	ST	8,9,10,11,12
2.4	Edasseri	2	2[20]	,Lec	OT	8,9,10,11,12
2.5	Karuththachettichikal – Edasseri	5	2[20]	Sem	OBT	8,9,10,11,12
3	Aadhunika khattam	18				
3.1	Aadhunika kavithayude savishesathakal	3	2[20]	Qui	MCQ	8,9,10,11,12
3.2	Kakkadinte kavyalokam	3	2[20]	Qui	MCQ	8,9,10,11,12
3.3	Kakkadu – safalameeyaathra	4	4[20]	Qui	MCQ	8,9,10,11,12
3.4	Ayyappanikkarude jeevithavum Kavithayum	4	3[20]	Lec	HoA	8,9,10,11,12
3.5	Ayyappanikkar – Kaadevide Makkale	4	3[20]	GL	MCQ	8,9,10,11,12
4	Aadhunika Ananthara khattam	18				
4.1	Post Modernism	2	4[10]	CS	Ess	6,7
4.2	Dalith vaadam,	2	4[15]	Lec	MCQ	6,7
4.3	Paristhithivaadam	2	4[15]	GD	SA	6,7
4.4	Sthreevaadam	3	4[20]	CS	Ess	6,7
4.5	Bhaagavatham – Vijayalekshmi	3	4[10]	Lec	MCQ	6,7
4.6	Malayala kavithaykku oru kaththu	3	4[20]	CS	Ess	6,7

4.7	Uththamapurushan Kadha parayumpol	3	4[10]	Lec	MCQ	6,7
5	Cyber Kavitha	18				
5.1	Digital Saangethikathayude Saadhyathakal Parimithikal	2	5[15]	Lec	HrA	7.,11,12
5.2	Printing Meedia	2	5[15]	GS	CA	7.,11,12
5.3	Kavithaapooranam	2	5[10]	GS	MCQ	7.,11,12
5.4	Chithrarechana	2	5[10]	Lec	HrA	7.,11,12
5.5.	Inter Active Poetry	2	5[10]	GS	CA	7.,11,12
5.6	hyper Text	4	5[10]	Lec	MCQ	7.,11,12
5.7	Game – Viswaprasaad	2	5[15]	Lec	HrA	7.,11,12
5.8	Blog – ottamazha 2010	2	5[15]	Lec	MCQ	7.,11,12

Reference Books

1. Mukudhan N, Gadha, keralabhasha Institute: Thiruvananthapuram, 2013.
2. Ezhuthachan, Ramayanam Kilipattu, N.B.S: Kottayam, 2012
3. Mukundhan N, Kilippattu, Keralabhasha Institute, Thiruvananthapuram, 2013
4. Kumaranashan ,veenapovu, D.C.Books: Kottayam, 1988
5. Susheelan K. P, Kumaranashane orkkumbol, Keralabhasha Institute, Thiruvananthapuram, 2013
6. P.P.K Pothuvaal, Paristhithi kavithaykkoraamukham, D.C Books, Kottayam 1995.
7. Balachandran Vadakkedath, Aadhunikathaykkum Utharaadhunikaykkum edayil, Pranatha Books , Cochin
8. Leelavathy.M, Kavithasahithya charithram, Keralanbhasha Institute: Thiruvananthapuram, 2013
9. George K.M, Aadhunika Malayala sahithya Charithram prasthanagaliloode, Kottayam :DC books.
10. George.K.M, Sahithya Charithram prasthanagaliloode, Kottayam , Sahithya Pravarthaka saharana Sangam, 1958.
11. Krishna Pilla N, Kairaliyude kadha, D.C. Books, Kottayam, 1958.
12. Venugopan Nair. S. V., Malayala Bhasha Charitram, Maluben publications, Thiruvananthapuram. 2000.

Course Title: General Hindi Modern Indian Language II (MIL- II)		
Course type: Theory		
Subject Code: 23LH21		
Total hours: 75 Hours/Week: 5 Credits: 3		
Pass-out Policy: Min. Contact Hours: 45		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator	Expert 1	Expert 2
Mrs. Josy Vincent Assistant Professor of Hindi Mobile: 9486357323 josysam2020@gmail.com	Dr.Sreedevi S Assistant Professor of Hindi Phone ;9495243814 sdtvpm@yahoo.com	Dr.Jayasree. K. Assistant Professor of Hindi Phone :9539204383 Jayasree8262@gmail.com

CLO. No.	Course Learning Outcomes (CLO) <i>Upon completion of this course, students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO-1	Understand Hindi Fiction	1(10), 2(5), 5(5)	1, 2, 5, 6, 8, 10	U	M,F, C
CLO-2	Evaluate social values through stories	2(10), 3(10)	1, 2, 3,	U, An	M,C
CLO-3	Remember cultural values through reading passages	2(10), 5(5), 10(5)	1, 2, 3, 6, 7	An, E	M,P
CLO-4	Apply practical grammar	9(10), 10(10)	8, 3, 7	An, E	M,C
CLO-5	Evaluate modules related to fiction based on competitive examinations	1(10), 5(5), 9(5)	1, 7, 8	U,E	M,C,P

Module	Course Description	Hours	% of CLOMapping with Module	Learning Activities	Assessment Task	Reference
1	Hindi Katha sahithya Parichay	18				
1.1	Kahani ke thathva	6	1[20]	Lec	CA	1,2,3
1.2	Hindi ke Pramukha kahaanikarom ka parichay	4	1[30]	Lec	CA	1,2
1.3	Ekanki ke Thathva	5	1[25]	Lec	HrA	1,2
1.4	Hindi ke Pramukha ekankikarom ka parichay	3	1[25]	Lec	CA	1,2
2	Hindi Kahaniyaam					1,2
2.1	Bade ghar ki betti – Premchand	6	1[30]	Lec	CA	1,2
2.2	Vo thera ghar Yah Mera ghar – Malathi Joshi	6	1[30]	Lec	HrA	1,2
2.3	Pita – Gyanarenjan	6	1[40]	Lec	CA	1,2
3	Hindi Ekanki	18				1,2
3.1	Lekshmi ka Swagath – Upendranath ashk	6	1[30]	Lec	CA	1,2
3.2	Vibhajan – vushnu prabhakar	6	1[40]	Lec	HrA	1,2
3.3	Maa Baap – Srivishnu	6	1[30]	Lec	CA	1,2
4	vyakaran	18				1,2
4.1	Kriya visheshan	6	1[25]	Lec	CA	1,2
4.2	Sambatha Bodhak	4	1[25]	Lec	CA	1,2
4.3	Samuchay Bodhak	5	1[25]	Lec	HrA	1,2
4.4	Vismaya Bodhak	3	1[25]	Lec	CA	1,2

5	Thakaneeki shabdh our anuvaad	18				1,2
5.1	Thakaneeki Shabdh	9	1[50]	Lec	HrA	1,2
5.2	Chotte Chotte anuvaad	9	1[50]	Lec	CA	1,2

Reference Books

1. Aath Ekanki natak – Ed. Dr.Ramkumar Varma
2. Das Ekanki

Course Title: Communicative English (CE- 2)		
Course type: Theory		
Subject Code: 23LE21		
Total hours: 90 (Including Seminar/ Practical [information Transfer] and formative assessment)		
Hours/Week: 6 Credits: 3		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Dr. L. Judith Sophia Assistant Professor of English 9486459061 judithsophia24@gmail.com	Expert 1 Dr. A. Belinda Asir Assistant Professor of English 9486756827 belinda.basewel@yahoo.com	Expert 2 Mrs. P. Jemimma Assistant Professor of English 9488024065 jemimagodwin38@gmail.com

CLO- No.	Course Learning Outcomes (CLO) <i>Upon completion of this course, students will be able to:</i>	% of PLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO-1	Develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking and Writing	1 (10) 6 (7) 7 (3)	2, 3	U AP	F P
CLO-2	Examine and present material of the prescribed texts and other texts	2 (8) 5 (12)	1, 2	U, An E	C M

CLO-3	Identify cross cutting issues like, Human values, (Professional, Personal and Domestic) ethics and environmental sustainability and practise them	3 (8) 8 (6) 9 (6)	1, 4, 8, 9	An E, Ap	C P
CLO-4	Present and differentiate various cultures and civilizations of the Globe and distinguish Indian traditional Knowledge	1 (10) 8 (5) 10 (5)	5, 6, 10	U, Ap	P M
CLO-5	Relate the textual content and underlying meaning of the context to the real life situations	5 (6) 8 (8) 10 (6)	1, 2, 5, 7	E, Ap, C	C M

Module	Course Description	Hours	% of PLO mapping with CLO	Learning Activities	Assessment Tasks	References
1	PROSE 18					
1.1	When You Dread Failure (1952)- A. J. Cronin					
1.1.1	Introduction to the author & the Essay	1	2 [4], 4 [10]	L	Ho A	1
1.1.2	Textual Analysis	2	2 [4]	L GD	SA	1
1.1.3	Thematic analysis: Developing positive mindset Discussion on Human values, Personal and Professional ethics	3	2 [4], 3[5], 5[7]	L GD	Essay	1
1.2	I Have a Dream (1963) - Martin Luther King					
1.2.1	Introduction to the author & the Essay	1	2 [4], 4 [10]	L	Ho A	1

1.2.2	Textual Analysis	2	2 [4]	L GD	MCQ	1
1.2.3	Themes: Sensitizing towards equality and liberty & Discussion on racial discrimination- reflection of Human values	3	2 [4], 3[5], 5[7]	L GD	Ess	1
1.3	I Plead that You Read- Shashi Tharoor (2023)					
1.3.1	Introducing the author & Essay	1	2 [4], 4 [8]	L	Ho A	1
1.3.2	Textual analysis	2	2 [4]	L, GD	S A	1
1.3.3	Thematic analysis: The need for critical reading	3	2 [4], 3[5], 5[7]	L GD	Ess	1
2	POETRY 18					
2.1	Solitary Reaper - Wordsworth					
2.1.1	Introducing the poet & the poem	1	2 [4] 4[5]	L	Ho A	1
2.1.2	Analysis of the poem	2	2[4]	L, GD	S A	1
2.1.3	Theme: Work is worship- work ethics & Soothing effect of Music, Art & communication	2	2 [4], 4[5]	GD, TPS	Ess	1
2.2	Telephone Conversation - Wole Soyinka					
2.2.1	Introducing the poet & the poem	1	2[4] 4[5]	L	Ho A	1
2.2.2	Analysis of the poem	2	2[4]	L, GD	MCQ	1
2.2.3	Themes of the poem- Injustice; racial discrimination and Human values	2	2 [4], 3[4], 5[5]	GD, TPS	Ass	1

2.3	On Killing a Tree- Gieve Patel					
2.3.1	Introducing the poet & the poem	1	2 [4] 4[5]	L	Ho A	1
2.3.2	Analysis of the poem	2	2[4]	L GD	S A	1
2.3.3	Themes: Creating awareness to protect trees; Environmental issues	1	2 [4], 3[4], 5[5]	L GD	Ess	1
2.4	Still I Rise - Maya Angelou					
2.4.1	Introducing the poet & the poem	1	2 [4] 4[5]	L	Ho A	1
2.4.2	Analysis of the poem	1	2[4]	L GD	S A	1
2.4.3	Human Values & gender issues in “Still I Rise”	2	2 [4], 3[5], 5[4]	L GD	Ess	1
3	FICTION 18					
3	<i>The Lion, the Witch and the Wardrobe</i>- C. S. Lewis					
3.1	Plot & Character analysis	7	2 [5] 5[10]	L GD	MCQ	2
3.2	Compare and contrast the characters	3	2 [6]	GD	S A	2
3.3	Thematic analysis: Conflict between Good and Evil	4	2 [5] 4[20]	L GD	Ess	2
3.4	Human Values reflected in <i>The Lion, the Witch and the Wardrobe</i>	2	2 [5], 3[12], 5[10]	GD CCC	Ass	2

3.5	Ethical issues presented in <i>The Lion, the Witch and the Wardrobe</i>	2	2 [5], 3[12], 5[10]	GD CCC	S A	2
4	LANGUAGE STUDY 18					
4.1	Grammar Units 26-53 (<i>Essential English Grammar</i> by Raymond Murphy)	18	1[100]	CCC	Hr A	3
5	LANGUAGE IN PRACTICE 18					
5.1	<p>Vocabulary: One Word Substitutes</p> <p>One Word substitutes for Person: 1. Anthropologist, 2. Anchor, 3. Celebrity 4. Extrovert, 5. Humanitarian, 6. Hypocrite, 7. Optimist, 8. Philanthropist, 9. Philatelist, 10. Teetotaller.</p> <p>One Word substitutes for Generic terms: 1. Almanac, 2. Axiom, 3. Biopsy, 4. Chronology, 5. Extempore, 6. Integrity, 7. Panacea, 8. Plagiarism, 9. Souvenir, 10. Utopia.</p> <p>One Word Substitutes for Venue/ Spot: 1. Archives, 2. Aviary, 3. Aquarium, 4. Arena, 5. Burrow, 6. Cemetery, 7. Gymnasium, 8. Kennel, 9. Orchard, 10. Wardrobe.</p>	5	1[26]	CCC	CT	4
5.2	Taking and Making Notes	3	1[18]	ABL	CT	4

5.3	Writing Paragraphs	3	1[18]	ABL	CT	4
5.4	Reading for General and Specific Information (Only for- Viva/Practical purpose) [Interpreting Charts, Tables, Schedules, Graphs, Maps etc.]	3	1[18]	ABL PL	Practical	4
5.5	Spoken English (Practical) Situational Conversations: <ul style="list-style-type: none"> At the Booking counter in a Bus Stand and Railway Station At the reception counter to book a room At restaurant ordering food At the bank to open an account 	4	1[20]	PL	Practical	4

References:

1. *Orchard: Semester 11 Prose and Poetry*. Edited by the Department of English, 2024.
2. Lewis, C. S. (1950). *The Chronicles of Narnia: The Lion, the Witch and the Wardrobe*. Harpercollins Children's Book, 2009.
3. *Essential English Grammar* by Raymond Murphy
4. *Language in Use: Work Book 11*. Edited by the Department of English

Course Title: Plant Diversity – II: Fungi, Bacteria, Viruses, Plant Pathology and Lichens		
(Core Course 3)		
Course type: Theory		
Subject Code: 23GB21		
Total hours: 90 Hours/Week: 6 [Th.: 6(Lecture 4+Turotial 2)] Credits: 5		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselvashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, schimaravi@gmail.com

Objectives: This course enables the students to

- To understand the biology of viruses, mycoplasma and bacteria and their mode of classification.
- To study the structure and biology of fungi.
- To gain knowledge on the role of fungi in various fields.
- To understand the structure, function and ecology of lichens thereby recognize the different kinds. Comprehend the events of symbiosis and lichenization, and understand the use of lichens.
- To identify the main groups of plant pathogens, their symptoms and to study selected plant diseases.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Distinguish viruses, mycoplasma and bacteria and classify them based on their structural organization.	2[20]	K1	R, Ap, E	F
CLO2	Develop an understanding of fungi and appreciate their adaptive strategies based on structural organization.	2[20]	K2	U	C, F
CLO3	Explain the economic importance of fungi.	2[20]	K3	Ap	F, M
CLO4	Explain the structure, biology and the uses of lichens in various fields.	2[20]	K4	An	F
CLO5	Identify the common plant diseases and suggest control measures.	2[20]	K5	E	F, P

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	VIRUS, MYCOPLASMA and BACTERIA:					
1.1	Virology – Viruses	2	1[20]	Lec/S p	GD	1,5,6
1.2	General characters, structure and reproduction of T4 bacteriophage	3	1[20]	Lec/S p	GD	1,5,6
1.3	General characters of Mycoplasma.	2	1[20]	Lec/S p	GD	1,5,6
1.4	General characters, structure and reproduction of bacteria	2	1[20]	Lec/S p	GD	1,5,6

1.5	Outline Classification (Bergey's, 1994).	4	1[20]	Lec	Sem	1,5,6
2	FUNGI					
2.1	Characteristic features	3	2[20]	Lec	Sem	1,4,9
2.2	Thallus organization, mode of nutrition	3	2[20]	Lec/S p	GD	1,4,9
2.3	Classification of fungi, criteria for classification - (Alexopoulos and Mims, 1979).	2	2[20]	Lec/S p	GD	1,4,9
2.4	Structure, reproduction and life-history of classes, each with one suitable example: Zygomycotina (Mucor), Ascomycotina	2	2[20]	Lec/S p	GD	1,4,9
2.5	Basidiomycotina (Puccinia) and Deuteromycotina (Cercospora).	2	2[20]	Lec/S p	GD	1,4,9
3	ECONOMIC IMPORTANCE OF FUNGI:					
3.1	Fungi in agriculture application – as biofertilizers	3	3[20]	Lec/S p	GD	9,11
3.2	Mycotoxins (biocontrol agents).	2	3[20]	Lec/S p	GD	9,11
3.3	Production of industrially important products - alcohol (ethanol), organic acids (citric acid), enzymes (protease). Vitamins (Vitamin B-complex and Vitamin B-12),	2	3[20]	Lec/S p	GD	9,11
3.4	Applications of fungi in pharmaceutical products (Penicillin).	2	3[20]	Lec/S p	GD	9,11
3.5	Importance of VAM fungi. Harmful effects of Fungi (any five).	3	3[20]	Lec/S p	GD	9,11
4	LICHEN					
4.1	General characters - Habitat, nature of association, Structure, Nature of Mycobionts and Phycobionts.	3	4[40]	Lec	Ess	12,15,16
4.2	Classification (Hale, 1969). Study of growth forms of lichens (crustose, foliose and fruticose).	4	4[40]	Lec	Sem	12,15,16
4.3	Distribution, thallus organization, reproduction and ecological significance of lichens with special reference to <i>Usnea</i> .	2	4[10]	Lec/S p	GD	12,15,16
4.4	Economic importance of Lichens: Food, flavouring agent, tanning and dyeing, cosmetics and perfumes, Brewing and distillation, pharmaceutical products, air pollution and biomonitoring	1	4[10]	Lec	MCQ	12,15,16
5	PLANT PATHOLOGY					

5.1	Host-Pathogen interaction, Disease cycle and environmental relation	3	5[40]	Lec	Ess	15,17
5.2	any five symptoms of plant diseases, causal organism, prevention and control of the following plant diseases. Bacterial diseases – Citrus canker and Paddy blight	5	5[30]	Lec	Sem	15,17
5.3	Viral diseases – Bunchy top of banana and Vein clearing of Papaya Fungal diseases – Leaf spot of groundnut and Banana Wilt	5	5[30]	Lec/S p	GD	15,17

References

1. Pandey, B.P. 1997. College Botany. Vol. I Fungi & Pathology.
2. Mehrotra, R.S and Aneja, K.R. 2003. An introduction to mycology. New age International (P) Ltd, Publishers, New Delhi.
3. Poonam Singh and Ashok Pandey. 2009. Biotechnology for agro-Industrial residues utilization. Springer.
4. Satyanarayana T and Johri B.N. 2005. Microbial diversity, Current Perspectives and Potential Applications, IK International.
5. Nair, L.N. 2007. Topics in Mycology and Pathology, New Central Book agency, Kolkata.
6. Sharma, P.D. 2011. Plant Pathology, Rastogi Publication, Meerut, India.
7. Mahendra Rai. 2009. Advances in Fungal Biotechnology. I.K. International Publishing House, New Delhi.
8. Alexopoulos, C.J., Mims, C.W., Blackwell, M. 1996. Introductory Mycology. 4th edition. John Wiley & Sons (Asia) Singapore.
9. Webster, J and Weber, R. 2007. Introduction to Fungi. 3rd edition. Cambridge University Press, Cambridge.
10. Sharma, O.P. 2011. Fungi and allied microbes The McGraw –Hill companies, New Delhi.
11. Burnett, J.H. 1971. The fundamentals of Mycology. ELBS Publication, London.
12. Bessey, E.A. 1979. Morphology and Taxonomy of fungi, Vikas publishing House Pvt. Ltd, New Delhi.
13. Dharani Dhar Awasthi. 2000. A Handbook of Lichens Vedams eBooks (P) Ltd. New Delhi.
14. Pelzer, M.J., Chan, E.C.S and Krieg, N.R. 1983. Microbiology, Tata MaGraw Hill Publishing House, New Delhi.
15. Pandey, P.B. 2014. College Botany- 1: Including Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. Chand Publishing, New Delhi.
16. Mishra, A. and Agarwal, R.P. 1978. Lichens – A Preliminary Text. Oxford and IBH.
17. Pandey, B.P. 2005. College Botany I: Including Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S Chand & Company

Course Title: Plant Diversity II - Fungi, Bacteria, Viruses, pathology and Lichens – Practical II (Core Course 4)		
Course type: Practical - II		
Subject Code: 23GBP2		
Total hours: 90 Hours/Week: 6 [Pract.: 6(Practical 2+Turotial 4)] Credits: 5		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %: 100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 ypseshamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum, 9486702263, schimaravi@gmail.com

Objectives: This course enables the students to

- Identify the structure of viruses and bacteria.
- Prepare microslides of fungi – vegetative and reproductive.
- To know the economic importance of fungi studied.
- To identify lichens based on the morphology and microslides.
- Understand the symptoms of plant diseases by making suitable micropreparations.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Identify viruses and bacteria using key identifying characters	3[20]	1, 8	R, Ap	F, M
CLO2	Identify fungi using key identifying characters	3[20]	1, 8	R, Ap	F, M
CLO3	Comment on the economic importance of fungi	3[20]	1, 8	An	C
CLO4	Identify lichens and explain based on the morphology and microslides	3[20]	1,8	R, E	F, P, M
CLO5	Identify plant diseases based on the symptoms by making suitable micropreparations and suggest control measures.	3[20]	1,8	R, C, An	F, P, M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	VIRUS AND BACTERIA					
1.1	Observation of ultrastructure of virus (T4) and bacteria through electron microphotographs.	8	1[50]	Lec	Ess	1,2,3,5
1.2	Gram's staining for identification of bacteria.	8	1[50]	Lec	MCQ	1,2,3,5
2	FUNGI					
2.1	Micropreparation of fungi and lichens mentioned in the syllabus.	10	2[20]	Lec	Ess	1,2,3,5
2.2	Study of economically important products obtained from fungi: Fungal biofertilizers, biopesticides, biofungicide (<i>Trichoderma</i>), edible mushroom/Yeast, organic acids (citric acid) enzymes (protease), antibiotics and vitamins.	10	3[20]	Lec	Sem	1,2,3,5
2.3	Mycorrhiza: ecto-mycorrhiza and endo-mycorrhiza (Photographs)	8	2[10]	Lec /Sp	GD	1,2,3,5
3	PLANT PATHOLOGY					
3.1	Herbarium preparation of any five diseases prescribed in the syllabus.	8	5[20]	Lec	Sem	1,2,3,5
4	FUNGI - Industrial visit					
4.1	Field visit – fungal biotechnology lab/agriculture farm	8	3[40]	Lec /Sp	GD	1,2,3,5

References

1. Chmielewski, J.G and Kraysky, D. 2013. General Botany laboratory Manual. Author House, Bloomington, USA.
2. Das, S and Saha, R. 2020. Microbiology Practical Manual. CBS Publishers and Distributors (P) Ltd., New Delhi, India.
3. Webster, J and Weber, R. 2007. Introduction to Fungi, 3rd Ed. Cambridge University Press, Cambridge
4. Nair, L.N. 2007. Topics in Mycology and Pathology, New Central Book agency, Kolkata.
5. Alexopoulos, J and Mims, W. 1985. Introductory Mycology, Wiley Eastern Limited New Delhi.
6. Bendre, M. Ashok and Ashok Kumar, A. 2020. Text Book of Practical Botany 1 (10th ed). Rastogi Publications, Meerut.

**Second Year
Semester III
(NCrF Level 5.0)**

List of Courses	Name	Credits	No. of Hours
Modern Indian Language	MIL-3	3	6
Communicative English	CE-3	3	6
Core Course (CC - 5)	Plant Diversity III - Bryophytes and Pteridophytes	5	5
Core Course (CC - 6)	Plant Diversity III Practical - III	5	5
MS	MS-3 Botany for Zoology major	5	6
Skill Enhancement Course (SEC – 1)	Nursery and Landscaping	1	2
Value Added Course (VAC I)	Health and Fitness through Yogasanas	1	0
Total		23	30

Course Title: Tamil Modern Indian Language III (MIL – III)		
Course type: Theory		
Subject Code: 23LT31		
Total Hours : 90 Hours / Week – 6 Credits: 3		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Dr. D. Deva Sambath Associate Professor Head of the Department Mobile: 9994964710 devasambath013@gmail.com	Expert 1 Dr. R. Josily Associate Professor Mobile: 9486663021 josilythilakar76@gmail.com	Expert 2 Dr. R.S. Rajasree Assistant Professor of Tamil Mobile: 9843438207 rajasreejohn@rediffmail.com

Expert 3	Expert 4
Dr. E. Christal Jaya Assistant Professor Mobile: 9500596700 jayaajeesh@gmail.com	N. Vidhya Assistant Professor Mobile : 9944852624 vidhuknmony@gmail.com

CLO No.	Course Learning Outcomes (CLO) upon completion of this course, students will be able to	% of PLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO 1	காப்பியங்கள்	2(8), 3(12)	1, 2, 8	U	P
CLO 2	அறிமுகப்படுத்தப்படுவதால் தமிழ்	4(12), 6(8)	1, 2, 7	U	C
CLO 3	மொழியின் உயர்வையும்	2(12), 3(8)	1, 2, 8	C	C
CLO 4	சிறப்பையும் உணர்தல்	5(12), 6(8)	1, 2, 3, 10	E	F
CLO 5	தமிழ் புதினங்களின் வழி சமகாலப் படைப்புகளின் வாழ்வியல் சிந்தனையைப் பெறுவர்	7(12), 8(8)	2, 6, 7, 10	E	C

Module	Course Description	Hours	% of CLO Mapping with Module	Learning Activities	Assessment Tasks	Reference
	Unit I செய்யுள்					
1.1	சிலப்பதிகாரம் -வழக்குரைகாதை	2	1(12)	Lec	MCQ	1
1.2	மணிமேகலை- ஆதிரை பிச்சையிட்ட காதை	2	1(12)	Lec	CA	1
1.3	கம்பராமாயணம் -மந்தரை சூழ்ச்சிப் படலம்	2	1(12)	Sem	SA	1

1.4	சீறாப்புராணம் - புலி	2	1(12)	GD	HOA	1
1.5	வசனித்த படலம்	2	1(12)	Sem	OBT	1
1.6	இரட்சணிய யாத்திரிகம் ஆரணிய பருவம்-விடாத கண்டப்படலம்	2	1(12)	GL	Ess	1
1.7	பெரியபுராணம்- பூசலார் நாயனார் புராணம்	3	1(14)	GD	CT	1
1.8	அரிச்சந்திர புராணம்- நகரச் சிறப்பு	3	1(14)	Sem	HRA	1
Unit II நாவல்						
2.1	வெ. இறையன்பு- சாகாவரம்	18	2(100)	Lec	MCQ	1
Unit III உரைநடை- நெக்கையில்லா தேவதைகள்						
3.1	நெக்கையில்லா தேவதைகள்- அரவாணிகள்;	2	3(11)	Lec	SA	2
3.2	இயற்கையின் அதிசயம்	2	3(11)	GD	HrA	2
3.3	கனவுலகம்	2	3(11)	Sem	OBT	2
3.4	அஜ்னபி நாவலும் புலம்பெயர் மக்கள் வாழ்க்கையும்;	2	3(11)	Lec	CT	2
3.5	நெஞ்சையள்ளும் சிலம்பு	2	3(11)	GD	ESS	2
3.6	செம்மொழித் தமிழ்	2	3(11)	GL	MCQ	2
3.7	புதுக்கவிதைகளில் வாழ்வியல் பதிவுகள்;	2	3(12)	Lec	HOA	2
3.8	நாட்டுப்புற பண்பாட்டில் சடங்குகள்	2	3(11)	Sem	MC	2
3.9	செவி வாயாக நெஞ்சு களனாக	2	3(11)	GD	SA	2
Unit IV இலக்கணம்						
4.1	யாப்பு (யாப்பின் உறுப்புக்கள் ஆறு)	3	4(17)	Lec	Qui	1
4.2	அணியிலக்கணம் (i) உவமையணி	2	4(11)	Lec	CA	1
	(ii) சிலேடை அணி					
	(iii) தற்குறிப்பேற்றவணி	2	4(11)	GD	HrA	1
	(iv) உருவக அணி	1	4(6)	Sem	OBT	1
	(v) வேற்றுப்பொருள் வைப்பணி	2	4(11)	Lec	CT	1
	(vi) பின்வருநிலையணி	2	4(11)	GD	Qui	1
	(vii) தீவக அணி	2	4(11)	Sem	MCQ	1

4.3	மொழிப் பயிற்சி	2	4(11)	Lec	Qui	1
4.4	மொழிபெயர்ப்பு	2	4(11)	Sem	SA	1
Unit V இலக்கிய வரலாறு						
5.1	ஐம்பெருங் காப்பியங்கள்	4	5(20)	Lec	Qui	3,4, 5
5.2	ஐஞ்சிறுகாப்பியங்கள்	4	5(20)	GD	HrA	3,4, 5
5.3	பெரியபுராண சிறப்புகள்;	4	5(20)	GD	CA	3,4, 5
5.4	அரிச்சந்திர புராணம்	4	5(20)	Lec	CT	3,4, 5
5.5	நளவெண்பா	2	5(20)	Lec	CT	3,4, 5

Text Books	
1.	பொதுத்தமிழ், ஸ்காட் கிறிஸ்தவக் கல்லூரி, தமிழ்த்துறை வெளியீடு
2.	றெக்கையில்லா தேவதைகள், ஜி. ஐசக் அருள்தாஸ், நியூ செஞ்சுரி புக் ஹவுஸ், திருநெல்வேலி.

Reference Books	
1.	தமிழ் இலக்கிய வரலாறு, சிற்பி. பாலசுப்பிரமணியன்
2.	புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, தமிழண்ணல்
3.	வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு, முனைவர். பாக்யமேரி
4.	அமிர்த சாகர் இயற்றிய யாப்பருங்கலக் காரிகை, வேங்கடசாமி நாட்டார். கழகப் பதிப்பு, சென்னை 1997
5.	தண்டியலங்கார கெ. ம் சென்னை. இராமலிங்கதம் பி ரான், கழக வெளியீடு

Course Title: Drisyakalasaahithyam		
Modern Indian Language III (MIL – III)		
Course type: Theory		
Subject Code: 23LM31		
Total Hours : 90 Hours / Week – 6 Credits: 3		
Pass-out Policy: Min. Contact Hours: 45		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator	Expert 1	Expert 2
Dr.Jisha.S.K Assistant Professor Mobile: 8606520272 jisha@scotchchristian.org	Suja S. Associate Professor Mobile: 9447218018 sujasdr@gmail.com	Dr.R.Sreejasankar Assistant Professor Mobile: 9847909335 sreejavijayan77@gmail.com

CLO- No.	Course Learning Outcomes (CLO) <i>Upon completion of this course, students will be able to:</i>	% of PLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO-1	Understanding the visual arts and literature of Kerala and acquiring the ability to act by understanding the difference between characters, dialogues and context	1(10), 2(5),5(5)	1, 2, 3, 8	1,2,3	M, F, C
CLO-2	increased ability to understand and entertained by visual Art	2(10), 3(10)	1, 2, 3, 5	1,2,3	M, C
CLO-3	understand the Linguistic Characteristics of the visual arts of Attakkadha and Tullal	2(10), 5(5), 10(5)	1, 2, 3, 6, 7	1,2	M,P
CLO-4	understands the tradition of drama in details and obtains play writing ability.	9(10), 10(10)	3, 7	1, 9, 10	M, C
CLO-5	Realizing the uniqueness of the screenplay and acquiring writing skills.	1(10), 5(5), 9(5)	1, 2, 3, 8	1,2,3	M, C, P

Module	Course Description	Hours	% of CLO Mapping with Module	Learning Activity	Assessment Task	Reference
1	Aattakkadha	18				
1.1	Kadhakaliyude aarambhavum valarchayum	3	1[20]	CS	CT	1
1.2	Pradhaana Attakkadhakriththukal	3	1[20]	GL	CA	1
1.3	Slokam, Padam, Dandakam	4	1[20]	GD	HrA	1
1.4	Kadhakali chadangukal	4	1[20]	CS	CT	1
1.5	Nalacharitham Aattakkadha randaam Divasam	4	1[20]	GD	HrA	1
2	Thullal	18				
2.1	Thullalinte Aarambham Valarcha	4	2[25]	GD	HrA	14,15
2.2	Kunchannampyarude Saahithyasambhaavanakal	4	2[25]	CS	CT	14,15
2.3	Saamoohika Vimarsanam Haasyam	5	3[25]	Lec	CA	14,15
2.4	Kalyana Saugandhikam (Enkilo pandu yudhishtiranmuthal dharikka nee Mahaabhaage..)	5	3[25]	Lec	CA	14,15
3	Naadakam	18				
3.1	Malayaala Naadakaththinte Aarambham Valarcha	6	3[35]	Lec	CA	2,3,4,5
3.2	Paaschaththya Naadaka swadheenam	6	3[35]	Lec	CA	2,3,4,5
3.3	Kudukka – P.M.Taaj	6	4[30]	GL	CA	2,3,4,5
4	Thirakkadha	18				
4.1	Thirakkadha yude pothu Khadakangal	6	4[30]	GL	CA	6,7,8,9,10
4.2	Pradhaana Malayaala Thirakkadhaakriththukkal	6	4[35]	GL	CA	6,7,8,9,10

4.3	Oridaththoru Fayalvaan	6	4[35]	GD	HrA	6,7,8, 9,10
5	Cinimayile Puthuvazhikal	18				
5.1	Documentary, Short films	2	4[10]	GD	HrA	11,12, ,13
5.2	Webseries	2	4[20]	GD	HrA	11,12, 13
5.3	Editing Aappukal	2	5[10]	CS	CT	11,12, 13
5.4	Chilavukuranja Cinemanirmaanam	2	4[20]	GD	HrA	11,12, 13
5.5	YouTube videos	2	4[10]	GD	HrA	11,12, 13
5.6	Mobile phone kaalathe Cinema	2	4[10]	GD	HrA	11,12, 13
5.7	Nalacharitham Anchaam Divasam - Vinod	3	4[10]	GD	HrA	11,12, 13
5.8	Web Series - Karikku	3	5[10]	Lec	ST	11,12, 13

Reference Books

1. Krishna Kaimal Imanam, Aattakadha Sahithyam, Keralabhasha institute, Thiruvananthapuram. 2002
2. Shankarapilla G, Nadakadharshanam, D.C.Books: Kottayam,1990
3. Dr. Vayalavasudevan Pilla (AD), Nadaka Sahityam, Sambhoorna Malayala Sahitya Charitram, current books, Kottayam, 2007.
4. Rajan Thiruvothu, Nadakacharithrathinte kanni Keralabhasha Institute: Thiruvananthapuram,2007.
5. Grama Prakash N. R., Nadakam padavum prayogavum, Keralabhasha institute Thiruvananthapuram 2009
6. Shankarapilla G, Nadakasahityacharithram, Sathiyapravarthaga Sahakaranasangam: Kottayam,1968
1. Vijaya Krishnan, Chalachitrathinte Porul, Kerala Bhasha institute, Thiruvananthapuram , 2011.
2. Divakaran .R.V.M, Kathayum thirakkathayum DC books, Kottayam .2010
3. Vijaya Krishnan, Chalachitra Sameeksha, Kerala Bhasha institute, Thiruvananthapuram .2011
4. Tony Mathew, M.T . Yude Sarga Prabancham, Keralabhasha institute, Thiruvananthapuram .2013
5. V.K.Joseph, Cinemayum prathayashasthravum, keralasamsarika prasithikaranavagup.
6. Binu Kumar .P.M, Thirakkathayude reethi Sastram,(Compiled and Study) , Kerala Bhasha institute, Thiruvananthapuram , 2011.
7. Raveenthran, Cinema samuham prathayashasthrum mathrubhumi books
8. Dr. Jose K. Manuval, kathayam thirakkathaiyum, kairali books, Kannur.
9. George K.M, Aadhunika Malayala sahithya Charithram prasthanagalilooode, Kottayam :DC books.
10. George.K.M, Sahithya Charithram prasthanagalilooode , Sahithya Pravarthaka sahakarana Sangam,1958

Course Title: Pracheen, Samakaaleen, Aadhunik Kavithayem, Letter writing Modern Indian Language III (MIL – III)		
Course type: Theory		
Subject Code: 23LH31		
Total Hours : 60 Hours / Week – 4 Credits: 3		
Pass-out Policy: Min. Contact Hours: 36 alankaar		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Mrs. Josy Vincent Assistant Professor of Hindi Mobile: 9486357323 josysam2020@gmail.com	Expert 1 Dr. Sreedevi S Assistant Professor of Hindi Mobile: 9495243814 sdtvpm@yahoo.com	Expert 2 Dr. Jayasree K. Assistant Professor of Hindi Mobile: 9539204383 Jayasree8262@gmail.com

CLO No.	Course Learning Outcomes (CLO) <i>Upon completion of this course, students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO-1	Apply nuances of letter writing in Hindi	1(10), 5(10)	1, 3, 7	1,2,3	M,F,C
CLO-2	Analyse the rules of official correspondence	1(10), 2(5), 3(5)	1, 2, 3, 5	1,3	F,C
CLO-3	Understand Hindi poetry	5(10), 10(10)	3, 6, 7	1,2,5	M,C
CLO-4	Evaluate the drafting of job application letter	9(10), 10(10)	1, 3, 7	1, 9, 10	M,F,C
CLO-5	Understand official Hindi	9(10), 5(10)	3, 7, 8	1,2,5	C

Module	Course Description	Hours	% of CLO Mapping with Module	Learning Activities	Assessment Task	Reference
1	Niji Pathra lekhan	18				
1.1	Niji PthraLekhan Arth our Bhed	6	1[50]	Lec	CA	1

1.2	Mithr our Bhai ke naam pathr	12	1[50]	GD	ST	1
2	Noukari ke aavedhan Pathr	18				
2.1	Saamajik Pathr arth our bhedh	9	1[50]	Lec	HoA	1,2
2.2	Avedhan Pathr noukari chutti aadi	9	1[50]	GL	MC Q	1
3	Pracheen Kavithayem					
3.1	Kabeerdas	6	1[35]	GL	CA	2,3
3.2	Rahim	6	1[35]	GL	CA	2,3
3.3	Thulasi das	6	1[30]	GL	CA	2,3
4	Samakaleena Kavithayem	18				
4.1	Dhoomil ki kavitha	6	1[35]	GL	CA	2,3
4.2	Kedhaar Nath sing ki kavitha	6	1[35]	GL	CA	2,3
4.3	Sarveshwar Thayaal Saksena ki kavitha	6	1[30]	GL	CA	2,3
5	Aadhika Kavithaayem	18				
5.1	Maidhili saran Gupth ka Nirchar	9	1[50]	GL	CA	2,3
5.2	Mahadevi Varma Ka Kah de maam ab Kya dhekhoom	9	1[50]	GL	CA	2,3

Reference Books

1. Alekhan our Tipan – Prof Viraj.
2. Aalekhan – Kichlu
3. Kaabya Tharang – Dr. Niranjan

Module	Course Description	Hours	CLO with Degree	Learning Activities	Assessment Tasks	References
1	PROSE				18	
1.1	My London Days (1929) - M. K. Gandhi					
1.1.1	Introduction to the author & the Essay	1	2 [4] 4 [10]	L	Ho A	1
1.1.2	Textual Analysis	2	2 [4]	L GD	SA	1
1.1.3	Thematic analysis: Developing responsibility & Human values	3	2 [4], 3[8], 5[10]	L GD	Ass	1
1.2	Shooting an Elephant (1936)- George Orwell					
1.2.1	Introduction to the author & the Essay	1	2 [4] 4 [10]	L	Ho A	1
1.2.2	Textual Analysis	2	2 [4]	L GD	Quiz	1
1.2.3	Human values and Human rights	3	2 [4], 3[5], 5[6]	L GD	Ass	1
1.3	Yes We Can (2008) - Barack Obama					
1.3.1	Introduction to the author & the Essay	1	2 [4] 4 [5]	L	Ho A	1
1.3.2	Textual Analysis	2	2 [4]	L GD	SA	1
1.3.3	Human Values	3	2 [4],	L	Ass	1

			3[5], 5[5]	GD		
2	POETRY 18					
2.1	A Poison Tree - William Blake					
2.1.1	Introduction to the poet & the poem	1	2 [4] 4[5]	L	Ho A	
2.1.2	Poetry Analysis	2	2[4]	L GD	Quiz	
2.1.3	Human Values	2	2 [4], 3[6], 5[6]	L GD	Ass	
2.2	Tear and Smile - Khalil Gibran					
2.2.1	Introduction to the poet & the poem	1	2 [4] 4[7]	L	Ho A	1
2.2.2	Poetry Analysis	2	2[4]	L GD	SA	1
2.2.3	Human Values	2	2 [4], 3[3], 5[3]	L GD	Ass	1
2.3	A Song of Hope- Oodgeroo Noonuccal					
2.3.1	Introduction to the poet & the poem	1	2 [4] 4[5]	L	Ho A	1
2.3.2	Poetry Analysis	2	2[4]	L GD	Essay	1
2.3.3	Human Values	1	2 [4], 3[3], 5[3]	L GD	Ass	1
2.4	Night of the Scorpion- Nissim Ezekiel					
2.4.1	Introduction to the poet & the poem	1	2 [4] 4[5]	L	Ho A	1

2.4.2	Poetry Analysis	2	2[4]	L GD	Essay	1
2.4.3	Human Values and Indian Ethos -Domestic Values	1	2 [4], 4[3], 5[3]	L GD	Ass	1
3	SCENES FROM SHAKESPEARE					18
3.1	<i>The Merchant of venice Act IV Scene i</i>					
3.1.1	Introduction to Shakespeare and the play	1	2 [4] 4[5]	L GD	Ho A	1
3.1.2	Character analysis	2	2[4]	L RP	Essay	1
3.1.3	Reflection of Human values (mercy)	3	2[4] 3[10]	TPS	Ass	1
3.2	<i>Othello Act IV Scene ii</i>					
3.2.1	Introduction to the play	1	2 [4]. 4 [5]	L	Ho A	1
3.2.2	Character Analysis Plot and Character analysis	3	2[6]	L RP	Essay	1
3.2.3	Human Values	2	2[6] 3[10]	L GD	Ass	1
3.3	<i>Julius Caesar Act III Scene ii</i>					
3.3.1	Introduction to the play	1	2[4] 4 [8]	L	Ho A	1
3.3.2	Analysis of the scene	3	2 [4]	L RP	Essay	1
3.3.3	Human Values	2	3[14] 5[12]	L GD	Ass	1
4	LANGUAGE STUDY					18

4.1	Grammar: Units 53- 83	18	1[10 0]	ABL	Ho A	2
5	LANGUAGE IN PRACTICE					18
5.1	Vocabulary: Phrases apart from, approve of, bear with, break down, call upon, calm down, carry on, come across, deal with, endowed with, give away, go through, hand over, hold on, look into, look up to, look after, keep on, passed away, put an end to, in vain, inferior to, step down, take over, root out, see through, shut up, side with, try for, wipe out	5	1 [20]	CCC	CT MCQ	3
5.2	Writing Emails		1[10]	P L	Ass	3
5.3	Learning netiquette, email etiquette	3	1[10]	PL	Ass	3
5.4	Messaging in Social Media Platform [blogs, twitter, instagram, facebook] (Experiential Learning- Practical)	4	1[20]	PL	Practi cal	3
5.5	Data Interpretation and Presentation (Practical)	4	1[20]	PL	Ass	3
5.6	Spoken English (Viva alone) 1. Dialogue between a Teacher and Student 2. Dialogue between a Doctor and Patient 3. Dialogue between Shop owner and Consumer	2	1[20]	RP	Viva	3

References:

1. *Semester III Prose, Poetry and Drama*. Edited by the Department of English.
2. *Essential English Grammar* by Raymond Murphy. Cambridge University Press
3. *Language in Use: Workbook 111*. Edited by the Department of English

Course Title: Plant Diversity – III Bryophytes And Pteridophytes (Core Course 5)		
Course type: Theory		
Subject Code: 23GB31		
Total hours: 75 Hours/Week: 5 [Th.: 5(Lecture 4+Turotial 2)] Credits: 5		
Pass-out Policy: Min. Contact Hours: 45		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To enable the students to have an overview of Non-vascular and Vascular cryptogams.
- To understand the morphological diversity of Bryophytes and Pteridophytes.
- To know the evolution of Bryophytes and Pteridophytes.
- To understand the economic importance of the Bryophytes and Pteridophytes.
- To understand anatomy and reproduction of Bryophytes and Pteridophytes.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Recognize morphological variations of Bryophytes and Pteridophytes.	3[20]	K1	R, U	F, C
CLO2	Explain the anatomy and reproduction of Bryophytes and Pteridophytes.	3[20]	K2	R, U, An	F, C
CLO3	Compare and contrast the variations in the internal cellular organization, gametophyte and sporophyte of Bryophytes and Pteridophytes.	3[20]	K3	An, E	C, M
CLO4	Decipher the stages of plant evolution and their transition to land habitat.	3[20]	K4	An, E	C, M
CLO5	Access the useful role of Bryophytes and Pteridophytes.	3[20]	K5	U, An	F

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	BRYOPHYTES					
1.1	General characters of Bryophytes	5	1[50]	Lec	MCQ	1,3,5
1.2	Classification (Rothmaler) (up to family).	5	1[30]	Lec	Ess	1,3,5
1.3	Structure, reproduction and life histories of the following classes each with a suitable example: Hepaticopsida (Riccia)	5	2[25]	Lec	Sem	1,3,5
1.4	Anthocerotopsida (Anthoceros)	5	2[25]	Lec/Sp	GD	1,3,5
2	BRYOPHYTES					
2.1	Structure, reproduction and life history of Bryopsida (Polytrichum).	5	2[10]	Lec/Sp	GD	1,2,4
2.2	Economic importance of Bryophytes	5	5[10]	Lec/Sp	GD	1,2,4
2.3	Ecological importance (Pollution indicators and monitoring),	4	5[10]	Lec/Sp	GD	1,2,4
2.4	Medicinal uses, horticulture	4	5[10]	Lec	MCQ	1,2,4
2.5	Industrial uses and absorbent bandages.	4	5[10]	Lec	MCQ	1,2,4
3	PTERIDOPHYTES					
3.1	Morphology, anatomy and reproduction of the taxa belonging to each of the following classes: Psilotopsida (Psilotum),	5	2[20]	Lec	Ess	2,9,1 2
3.2	Lycopsida (Lycopodium)	4	2[20]	Lec	Sem	2,9,1 2
3.3	Morphology, anatomy and reproduction of Sphenopsida (Equisetum)	4	3[20]	Lec/Sp	GD	2,9,1 2
3.4	Pteropsida Adiantum).	4	3[20]	Lec	MCQ	2,9,1 2
4	PTERIDOPHYTES					
4.1	Stelar Evolution	4	4[40]	Lec	Ess	2,9,1 2
4.2	Economic importance of Pteridophytes	4	5[40]	Lec	Sem	2,9,1 2
4.3	Ecological importance (Pollution indicators and monitoring)	4	5[20]	Lec/Sp	GD	2,9,1 2
4.4	Medicinal uses, horticulture and industrial uses.	4	5[20]	Lec/Sp	GD	2,9,1 2

References

1. Sharma, O.P. 2017. Bryophyta, MacMillan India Ltd. Delhi.

2. Alam, A. 2020. Contemporary Research on Bryophytes Book Series: Recent Advances in Botanical Science. 10.2174/97898114337881200101.
3. Alain Vanderpoorten. 2009. Introduction to Bryophytes, 1st Edition, Cambridge University Press.
4. Chopra, R. N. 2005. Biology of bryophytes. New Age International (P) Ltd. New Delhi, India.
5. Prem Puri. 2001. Bryophytes– morphology growth and differentiation. Atma Ram & Sons. Lucknow, India.
6. Eames, A. 1963. Morphology of lower vascular plant, McGraw Hill, Chennai.
7. Parihar. N.S. 1967. An introduction of Embryophyta, Vol.III – Pteridophyta, Central book depot, Allahabad.
8. Smith, G.M. 1955. Cryptogamic Botany, Volume-II– McGraw Hill, Chennai
9. Sporne, K.L. 1976. Morphology of Pteridophytes, 4th edition, B.I. Publication. Chennai.
10. Watson, E.V. 1963. The structure and Life of Bryophytes. Hutchinson & Co, UK.
11. Parihar, N.S. 1991. Bryophytes. Central Book Depot, Allahabad.
12. Parihar, N.S. 1996. The Biology and Morphology of Pteridophytes. Central Book Depot, Allahabad.

Course Title: Plant Diversity III Bryophytes and Pteridophytes - Practical-III (Core Course 6)		
Course type: Practical		
Subject Code: 23GBP3		
Total hours: 75 Hours/Week: 5 [Practical 2 + Tutorial 3] Credits: 5		
Pass-out Policy: Min. Contact Hours: 45		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator A.E. Dulip Daniels 9791245551 dulipdaniels@yahoo.co.uk	Expert 1 V.P. Selva Shamal 9597385274 vpselfvashamal@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To enable students gain expertise in hand sectioning technique.
- To study diversity of Bryophytes and Pteridophytes.
- To understand the anatomical structure of the Bryophytes and Pteridophytes.
- Develop comprehensive skills in sectioning and micro preparation.
- Describe the structure of fossil forms prescribed in the syllabus.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Recognize the major groups of Non-vascular and Vascular	2[20]	1, 2	R, U	C

	cryptogams.				
CLO2	Describe the structure of Bryophytes and Pteridophytes forms prescribed in the syllabus.	2[20]	1, 2	An, E	F, C
CLO3	Identify and illustrate the morphological and anatomical features of bryophytes and Pteridophytes.	2[20]	1, 2	R, An, E	P
CLO4	Develop comprehensive skills in sectioning and micro preparation.	2[20]	1, 2	C, An	M, P
CLO5	Interpret the significance of reproductive structures in Bryophytes and Pteridophytes.	2[20]	1, 2	U, An	C, M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	BRYOPHYTES					
1.1	Study of morphology, anatomy of Bryophytes included in the theory syllabus	7	2[10]	Lec	Sem	1,3,4
1.2	Study of structure of the vegetative and reproductive organs of Bryophytes included in the theory syllabus	7	2[40]	Lec/S p	GD	1,3,4
1.3	Hepaticopsida (<i>Riccia</i>);	7	2[30]	Lec	MCQ	1,3,5
2	BRYOPHYTES					
2.1	Anthocerotopsida (<i>Anthoceros</i>)	7	2[30]	Lec	Ess	1,3,5
2.2	Bryopsida (<i>Polytrichum</i>)	7	2[25]	Lec	MCQ	1,3,5
3	PTERIDOPHYTES					
3.1	Study of morphology, anatomy and structure of the vegetative and reproductive organs of Pteridophytes genera included in the theory syllabus.	7	2[30]	Lec	Ess	1,2
3.2	Psilotopsida (<i>Psilotum</i>)	7	2[30]	Lec	Sem	1,2
3.3	Lycopsida (<i>Lycopodium</i>)	7	2[30]	Lec/S p	GD	1,2,3
4	PTERIDOPHYTES					
4.1	Sphenopsida (<i>Equisetum</i>)	7	2[20]	Lec	Ess	1,2,3
4.2	Pteropsida (<i>Adiantum</i>).	6	2[20]	Lec	Sem	1,2,3
4.3	Identifying the micro slides relevant to the forms mentioned in the theory.	6	4[20]	Lec/S p	GD	1,2,3

References

1. Sharma, O.P. 2017. Bryophyta, MacMillan India Ltd, New Delhi.
2. Sharma, O.P. 2012. Pteridophyta, Tata McGraw-Hills Ltd, New Delhi.
3. Ashok, M. Bendre and Kumar. 2010. A text book of Practical Botany, Algae, Fungi, Lichen, Bryophyta, Pteridophyta, Gymnosperms and Palaeobotany. Revised edition. Published by Rakesh Kumar Rastogi publication.
4. Prem Puri. 2001. Bryophytes– morphology growth and differentiation. Atma Ram & Sons. Lucknow, India.
5. Tuba Z., Slack N.G. and Stark L.R. 2011. Bryophyte Ecology and Climate Change. Cambridge university press, Cambridge.
6. Ashok, M. Bendre and Kumar. 2010. A text book of Practical Botany, Algae, Fungi, Lichen, Bryophyta, Pteridophyta, Gymnosperms and Palaeobotany. Revised edition. Published by Rakesh Kumar Rastogi publication.
7. Mohammed Gufran Khan, Shite Gatew and Bedilu Bekele. 2012. Practical manual for Bryophytes and Pteridophytes. Lambert Academic Publishing.
8. Puri, P. 1980. Bryophytes. Atma Ram and Sons, New Delhi.
9. Sporne, K.R. 1991. The Morphology of Pteridophytes. B.I. Publ. Pvt. Ltd. Chennai.
10. Vashista, P.C. 1971. Botany for Degree students: Pteridophyta. S. Chand & Co. New Delhi.

Course Title: ELECTIVE ALLIED BOTANY- I		
Course type: Theory		
Subject Code: 23AB01		
Total hours: 90 Hours/Week: 6 [Th.: 6(Lecture 4+Turotial 2] Credits: 5		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802, 9486702263, sehimaravi@gmail.com

Objectives:

- To study morphological and anatomical adaptations of plants of various habitats.
- To demonstrate techniques of plant tissue culture.
- To familiarize with the structure of DNA, RNA.
- To carryout experiments related with plant physiology.
- To perform biochemistry experiments.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	explain the structure and life-cycle of viruses, bacteria and fungi.	3[20]	1, 2	U, An	F, P
CLO2	explain the structure, life-cycle and discuss the economic importance of algae.	3[20]	1, 2	U, E	M
CLO3	explain the structure and interpret the life-cycle of bryophytes, pteridophytes and gymnosperms.	3[20]	1, 2	An, U, E	F, P
CLO4	describe the structure of a plant cell and its components.	3[20]	1, 2	An, Ap	C, P
CLO5	interpret the various concepts of genetics and tissue culture	3[20]	1, 2	Ap	P, M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	VIRUS, BACTERIA AND FUNGI					
1.1	Virus - general characters, structure of TMV.	4	1[50]	Lec	Ess	1,2,4
1.2	Bacteria - general characters, structure of <i>Escherichia coli</i> .	4	1[30]	Lec	Sem	1,2,4
1.3	General characters of fungi. Structure, reproduction and life cycle of <i>Agaricus</i> .	4	1[20]	Lec/Sp	GD	1,2,4
2	ALGAE					
2.1	General characters of algae	4	2[20]	Lec	Ess	1,4,10,12
2.2	Structure, reproduction and life cycle of the following genera - <i>Anabaena</i> and <i>Sargassum</i>	4	2[20]	Lec	Sem	1,4,10,12
2.3	Economic importance of algae	4	2[10]	Lec/Sp	GD	1,4,10,12
3	BRYOPHYTES, PTERIDOPHYTES AND GYMNOSPERMS:					
3.1	General characters of Bryophytes, Structure and life cycle of <i>Riccia</i> .	4	3[20]	Lec	Ess	2,8,9
3.2	General characters of Pteridophytes, Structure and life cycle of <i>Selaginella</i> .	4	3[20]	Lec	Sem	2,8,9
3.3	General characters of Gymnosperms, Structure and life cycle of <i>Cycas</i> .	4	3[10]	Lec/Sp	GD	2,8,9

4	CELL BIOLOGY					
4.1	Prokaryotic and Eukaryotic cell- structure /organization.	4	4[40]	Lec	Ess	1,5,10
4.2	Cell organelles - ultra structure and function of chloroplast, mitochondria and nucleus.	4	4[30]	Lec	MCQ	1,5,10
5	GENETICS AND PLANT TISSUE CULTURE					
5.1	Mendelism - Law of dominance, Law of segregation, Incomplete dominance.	4	5[20]	Lec	Ess	1,5,10
5.2	Law of independent assortment.	4	5[30]	Lec	MCQ	1,5,10
5.3	Monohybrid and dihybrid cross - Test cross - Back cross.	4	5[30]	Lec	Ess	1,5,10
5.4	Principles and applications of Plant Tissue Culture.	4	5[50]	Lec	Sem	1,5,10

References

1. Singh, V., Pande, P.C and Jain, D.K. 2021. A Text Book of Botany. Rastogi Publications, Meerut.
2. Bhatnagar, S.P and Alok Moitra. 2020. Gymnosperms, New Age International (P) Ltd., Publishers, Bengaluru.
3. Sharma, O.P. 2017. Bryophyta, MacMillan India Ltd. Delhi.
4. Lee, R.E. 2008. Phycology, IV Edition, Cambridge University Press, New Delhi.
5. Rao, K., Krishnamurthy, K.V and Rao, G.S. 1979. Ancillary Botany, S.Viswanathan Pvt. Ltd., Madras.
6. Parihar, N.S. 2012. An introduction to Embryophyta – Pteridophytes -Surjeet Publications, Delhi.
7. Alexopoulos, C.J. 2013. Introduction to Mycology. Willey Eastern Pvt.Ltd.
8. Vashishta, P.C. 2014. Botany for Degree Students Gymnosperms. Chand & Company Ltd, Delhi.
9. Coulter, M. Jhon, 2014. Morphology of Gymnosperms. Surjeet Publications, Delhi.
10. Vashishta, P.C. 2014. Botany for Degree Students Algae. 2014. Chand & Company Ltd, Delhi.
11. Parihar, N.S. 2013. An introduction to Embryophyta – Bryophytes -, Surjeet Publications, Delhi.
12. Pandey B.P. 1986, Text Book of Botany (College Botany) Vol I & II, S.Chand and Co. New Delhi.

Course Title: ALLIED BOTANY PRACTICALS -I		
Course type: Practical - I		
Subject Code:		
Total hours: 45 Hours/Week: 3 [Pract.: 3(Practical 2+Tutorial 1)] Credits: 2		
Pass-out Policy: Min. Contact Hours: 27		
Total Score %: 100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802, 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To enhance information on the identification of each taxonomical group by developing the skill-based detection of the morphology and microstructure of microorganisms, algae, and fungi.
- To comprehend the fundamental concepts and methods used to identify Bryophytes, Pteridophytes and Gymnosperms through morphological changes and evolution, anatomy and reproduction.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	To study the internal organization of algae and fungi.	5[20]	1, 2, 7	An, Ap	F, P
CLO2	Develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms.	5[20]	1, 2, 7	Ap	M, P
CLO3	Interpret the various concepts of genetics and tissue culture	5[20]	2, 7	Ap	F, P
CLO4	To study the structure of a plant cell and its components.	5[20]	1, 2, 10	An	F, P

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	ALGAE, FUNGI, BRYOPHYTES AND PTERIDOPHYTES					
1.1	Make suitable micro preparation of the types prescribed in Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms.	10	1[50] 2[50]	Lec	Ess	1,2,3,7
2	CELL BIOLOGY					
2.1	Micro photographs of the cell organelles ultra structure.	10	4[50]	Lec	Ess	1,2
3	GENETICS					
3.1	Simple genetic problems.	10	3[50]	Lec	Ess	3,5
4	SPOTTERS					
4.1	Algae, Fungi, Bryophytes, Pteridophytes, Gymnosperms, Cell biology and Plant tissue culture	10	3[5] 1[50] 2[50]	Lec	Ess	1,2,3,6

References

1. Sharma, O.P. 2017. Bryophyta, MacMillan India Ltd, New Delhi.
2. Sharma, O.P. 2012. Pteridophyta, Tata McGraw-Hills Ltd, New Delhi.
3. Benjamin, A. Pierce. 2012. Genetics- A conceptual Approach. W.H. Freeman and Company,

New York, England.

4. Strickberger, M.W. 2005. Genetics (III Ed). Prentice Hall, New Delhi, India.
5. Nancy Serediak and M. Huynh. 2011. Algae identification lab Guide. Accompanying manual to algae identification field guide, Ottawa Agriculture and Agri food Canada publisher.
6. Mohammed Gufran Khan, Shite Gatew and Bedilu Bekele. 2012. Practical manual for Bryophytes and Pteridophytes. Lambert Academic Publishing.

Course Title: Skill Enhancement Course (SEC) - 1 Nursery and Landscaping		
Course type: Theory		
Subject Code: 23GBN1		
Total hours: 30 Hours/Week: 2 [Th.: 2] Credits: 1		
Pass-out Policy: Min. Contact Hours: 18		
Total Score %: 100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 1 V.P. Selva Shamal 9597385274 vpselfashamal@gmail.com	Expert 2 Dr. A. Jaya Jasmine (Professor & Head) Horticultural Research Station, TNAU, Pechipparai 9442450976, hrrsppi@tnau.ac.in

Objectives: This course enables the students to

- recognize the importance of growing plants (indoor and outdoor)
- learn the methods of propagation
- study about the different types of gardens
- learn about the importance of plant growing structures
- understand the importance of organic and inorganic manures

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Explain the basic principles and components of gardening.	3[20]	1, 8	U	F
CLO2	Propagate selected horticultural plants.	3[20]	1, 8	Ap	F
CLO3	Layout various types of gardens according to the culture and terrarium and bonsai.	3[20]	1, 8,2	Ap	C, P
CLO4	Design different garden styles and landscaping patterns.	3[20]	1, 8, 2	Ap	C, P
CLO5	To prepare compost and vermicompost.	3[20]	1, 8	Ap	C, M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	NURSERY AND LANDSCAPING					
1.1	Introduction	2	1[20]	Lec	Sem	1,2
1.2	Prospects	2	1[20]	Lec/ Sp	Sem	1,2
1.3	Importance and scope of nursery and landscaping	2	1[20]	Lec/ Sp	Sem	1,2
2	METHODS OF PROPAGATION					
2.1	Cutting, layering, grafting and budding	2	2[50]	Lec	Ess	1,2
2.2	Cultivation of: Rose	2	2[25]	Lec	Ess	1,2,4
2.3	Chrysanthemum	2	2[25]	Lec	Ess	1,2,4
2.4	Jasmine	2	2[25]	Lec	Ess	1,2,4
3	GARDENING					
3.1	Components of a: public garden	2	3[10]	Lec	Ess	1,2
3.2	Kitchen garden	2	3[10]	Lec	Ess	1,2
3.3	Indoor gardening (Bonsai and terrarium)	1	3[20]	Lec	Ess	1,2,3
4	PLANT GROWING STRUCTURES					
4.1	Green house	2	4[10]	Lec	GD	1,2
4.2	Shade house	2	4[10]	Lec/ Sp	Ess	1,2
4.3	Mist chamber	2	4[10]	Lec/ Sp	Ess	1,2
5	MANURES					
5.1	Organic and inorganic, advantages and disadvantages.	2	5[10]	Lec/ Sp	GD	1,2
5.2	Composting	2	5[10]	Lec/ Sp	GD	1,2
5.3	Vermicomposting (methods and application)	1	5[10]	Lec/ Sp	GD	1,2

References

1. Amarnath, V. 2006. Nursery and Landscaping, M/s IBD Publishers, New Delhi.
2. Butts, E and Stensson, K. 2012. Sheridan Nurseries: One hundred years of People, Plans, and Plants. Dundurn Group Ltd.
3. Russell, T. 2012. Nature Guide: Trees: The world in your hands (Nature Guides). Mukherjee D. Gardening in India, Oxford IBH publishing co, New Delhi.
4. Kumar, N. 1997. Introduction to Horticulture, Rajalakshmi Publications, Nagercoil.
5. Edmond Musser and Andres, Fundamentals of Horticulture, McGraw Hill Book Co. New Delhi.
6. Agrawal, P.K. 1993. Hand Book of Seed Technology, Dept. of Agriculture and Cooperation, National Seed Corporation Ltd., New Delhi.
7. Janick Jules. 1979. Horticultural Science. (3rd Ed.), W.H. Freeman and Co., San Francisco, USA.
8. Singh, J. 2018. Fundamentals of Horticulture. Kalyani Publishers.
9. Sharma V. K. 1999. Encyclopaedia of Practical Horticulture, Vol I –IV, Deep and Deep Publ. Pvt. Ltd.

Course Title: Value Added Course I Health and Fitness through Yogasanas		
Course type: Theory		
Subject Code: 23SE11		
Total Notional Hours: 30 Hours/Week: 2 Credits: 1		
Pass-out Policy: Min. Contact Hours: 18		
Total Score %: 100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Dr. C. Samson Assistant Professor Mobile: 9080025484 samson@scottchristian.org	Expert 1 Dr. N. Aseer Rufuss Associate Professor Mobile: 9865187847 aseerrufs@gmail.com	Expert 2 Dr. B. Benitto Anand Associate Professor Mobile:9443204442 anandbenit@gmail.com

CLO No.	Course Learning Outcomes <i>Upon completion of this course, students will be able to:</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	analyse their body physically and mentally for the integration of physical, mental and spiritual fitness	2(8), 3(12)	1,8	U	M
CLO2	evaluate mental health	2(4), 3(7), 4(5), 6(4)	1,2,7	An, Ap	C, P
CLO3	apply co-ordination in sports	2(2), 3(8), 4(7), 6(3)	1,2,7,8,10	C	P
CLO4	understand oneself with basic knowledge about one's personality	2(2), 3(8), 4(7), 6(3)	1,2,7,8,10	Ap, C	C, P
CLO5	evaluate themselves and become healthier, saner and more integrated members of the society and of the nation	2(3), 3(9), 4(6), 6(2)	1,2,7,8,10	An, E	C, F, M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	INTRODUCTION TO YOGA					
1.1	Asanas, Procedure for doing asanas	2	1[33]	Lec	HrA	1
1.2	Asanas in Long sitting position	1	1[17]	BS	Qui	1
1.3	Padmasana, Chin Mudra	1	1[17]	OT	CA	1
1.4	Sugasana, Vajrasana	2	1[33]	Se	SA	1

				m		
2	PRONE POSITION ASANAS					
2.1	Prone position Asanas	2	2[33]	SI	HoA	2
2.2	Makrasana	1	2[17]	WS Q	CT	2
2.3	Dhanurasana	1	2[17]	FC	CA	2
2.4	Bujankasana	2	2[33]	OO	SA	2
3	SUPINE POSITION ASANAS					
3.1	Supine position Asanas - Sava asana	2	3[33]	TPS	ESS	2
3.2	Sarvaangasana	1	3[17]	KW L	HA	2
3.3	Vibareethakarani	1	3[17]	OO	MCQ	2
3.4	Halasana	2	3[33]	Soc	CA	2
4	STANDING POSITION ASANAS					
4.1	Standing position Asanas - Thirikonasana	2	4[33]	Se m	HA	3
4.2	Thadasana	1	4[17]	GT	MCQ	3
4.3	Veerapathrasana	1	4[17]	Lec	HrA	3
4.4	Bathahasthasana	2	4[33]	BS	Qui	3
5	KNEELING POSITION ASANAS					
5.1	Kneeling position Asanas	2	5[33]	OT	CA	3
5.2	Mayoorasana	1	5[17]	Se m	SA	3
5.3	Arthasirasana	1	5[17]	SI	HoA	3
5.4	Sirasana	2	5[33]	WS Q	CT	3

References

1. K. Chandrasekaran, "Sound Health through Yoga" Prem Kalian Publication, Sedapatti, 1999.
2. Yogeshwar, "Textbook of Yoga", Madras Yoga Centre, 2004.
3. Kumaresan P. "Yogasanam", Abinaya Publications, 2002.

Semester IV (NCrF Level 5.0)

List of Courses	Name	Credits	No. of Hours
Modern Indian Language	MIL- 4	3	6
Communicative English	CE- 4	3	6
Core Course (CC - 7)	Plant Diversity IV - Gymnosperms, Paleobotany and Evolution	5	6
MS	MS- 4 Botany for Zoology major	5	6

Skill Enhancement Course (SEC – 2)	Mushroom Cultivation	1	2
Value Added Course (VAC II)	VAC II -Digital Empowerment through AI, Multimedia and Cyber Security	1	2
M- 1	Entrepreneurial opportunities in Botany	2	2
Internship		1	0
Total		21	30

Course Title: Tamil Modern Indian Language – IV (MIL – IV)	
Course type: Theory	
Subject Code:23LT41	
Total Hours : 90 Hours / Week – 6 Credits: 3	
Pass-out Policy: Min. Contact Hours: 54	
Total Score %: 100 Int.: 40 Ext.: 60	
Minimum Pass %: 40 [No min. for Int.]	
Course Creator Dr. D. Deva Sambath Associate Professor & Head of the Department Mobile : 9994964710 devasambath013@gmail.com	Expert 1 Dr. K. Jaya Seela Assistant Professor Mobile. 9486757071 kjeyaseela@gmail.com

CLO No.	Course Learning Outcomes (CLO) upon completion of this Course, Students will be able to	% of PLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO 1	தொன்மையான தமிழ் இலக்கியங்களின் சிறப்பினை அறிவார்	1(11), 2(9)	1, 2, 3	R	F
CLO 2	கட்டுரைகளின் வழி தமிழறிஞர்களின் சிந்தனைகளைக் கற்றறிவார்	3(8), 4(12)	1, 2, 7, 8	U	C

CLO 3	இலக்கியங்களைத் தமிழர்கள் உருவாக்குவதற்கு வகுத்துள்ள வரை முறைகளை இலக்கணங்கள் வழி அறிந்து கொள்வர்	3(13), 4(7)	1, 2, 7, 8, 10	An	C
CLO 4	தமிழறிஞர்களின் வாழ்வியல், இலக்கிய பணி பற்றி அறிந்த கொள்வர்	5(8), 7(12)	1, 2, 5, 10	U	C
CLO 5	தமிழ் இலக்கியங்களின் வரலாற்றுப் பின்புலத்தை அறிந்து கொள்வர்	8(9), 9(11)	4, 6, 9, 10	Ap	F

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
அலகு I செய்யுள்						
1.1	நற்றிணை (10, 14, 16 பாடல்கள்)	2	1(11)	Lec	CA	1
1.2	குறுந்தொகை (16, 17, 19, 20, 25, 29, 38, 44 பாடல்கள்)	3	1(17)	GD	HrA	1
1.3	கலித்தொகை (38, 51 பாடல்கள்)	1	1(6)	Sem	OBT	1
1.4	அகநானூறு (15, 33, 55 பாடல்கள்)	2	1(11)	Lec	CT	1
1.5	புறநானூறு (37, 86, 112 பாடல்கள்)	2	1(11)	GD	Quiz	1
1.6	பரிபாடல் 55 பாடல்	1	1(6)	Sem	MCQ	1
1.7	நெடுநல்வாடை முழுவதும்	7	1(38)	GL	SA	2
அலகு II உரைநடை						
2.1	கல்வி அழகே அழகு -மயில்வாகனன்	2	2(11)	Lec	CA	4

2.2	பரிமேலழகர் த. இயேசு தாஸ்	2	2(11)	GD	HrA	4
2.3	பரிசில் வாழ்க்கை-மு. வரதராசன்	2	2(11)	Sem	OBT	4
2.4	குறள் விளக்கம்- வ.சு.ப. மாணிக்கம்	2	2(11)	GL	CT	4
2.5	தலைமைப் பொறுப்பு -அகிலன்;	2	2(11)	GD	Quiz	4
2.6	நகைச்சுவைப் பாடல்கள் - ஜே. ரோஸ்லெட் டானிபாய்	2	2(11)	Lect	HOA	3
2.7	சுற்றுப்புறச் சூழல்- தே. தேவசம்பத்	2	2(11)	GD	SA	3
2.8	சமய நல்லிணக்கம் கு.வெ. பாலசுப்பிரமணியன்	2	2(11)	Sem	MCQ	4
2.9	விருந்தோம்பல் கி. இராசா	2	2(12)	GL	Ess	4
அலகு III வாழ்க்கை வரலாறு						
3.1	கல்வித் தந்தை காமராஜர் முனைவர் - ப. பாலசுப்பிரமணியன்	18	3(100)	GD	CT	6
அலகு IV இலக்கணம்						
4.1	அகப்பொருள் இலக்கணம்	4	4(22)	Lec	CA	1
4.2	அகப்பொருள் துறைகள் 1. அறத்தொடு நின்றல் (48) 2. வரைவு கடாதல் (165) 3. உடன்போக்கு (180) 4. பிரிவு (62) 5. பாங்கியிற் கூட்டம் வகை மடற் கூற்றும் மடல்விலக்கும் (145)	4	4(22)	GD	HOA	1
4.3	புறப்பொருள் இலக்கணம்	4	4(22)	Sem	OBT	1
4.4	புறப்பொருள் துறைகள் வெட்சிப்படலம் 1. விரிச்சி 2. செலவு 3. பாதிடு 4. உண்டாட்டு 5. வெறியாட்டு	3	4(17)	Lec	CT	1

4.5	6. போர் மலைதல் 7. புண்ணொடு வருதல் 8. பிள்ளைத் தெளிவு 9. பிள்ளையாட்டு 10. நெடுமொழி கூறல்	3	4(17)	Sem	Quiz	4
அலகு V இலக்கிய வரலாறு						
5.1	சங்க வரலாறு	4	5(22)	Lec	MCQ	1
5.2	சங்கம் இருந்தமைக்கான சான்றுகள்	4	5(22)	Sem	SA	1
5.3	எட்டுத்தொகை நூல்கள்	5	5(27)	GD	Ess	1
5.4	பத்துப்பாட்டு நூல்கள்	5	5(29)	GL	CT	1

1. சங்க இலக்கியம், எட்டுத்தொகை, முனைவர் வி. நாகராசன் (உ.ஆ), நியூ செஞ்சரி புக் ஹவுஸ் சென்னை 600 098..
2. சங்க இலக்கியம், பத்துப்பாட்டு, முனைவர் வி. நாகராசன் (உ.ஆ), நியூ செஞ்சரி புக் ஹவுஸ் சென்னை 600 098
3. மணிச்சிகை, ஜே.ஜி. என் டாசன் (தொ. ஆ), தமிழாய்வு மையம், ஸ்காட் சிறிஸ்தவக் கல்லூரி, நாகர்கோவில் -3
4. பொதுத்தமிழ் (நான்காம் பருவம்), தமிழ்த்றை வெளியீடு, ஸ்காட் சிறிஸ்தவக் கல்லூரி, நாகர்கோவில் 2024
5. வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு, முனைவர் பாக்ய மேரி, நியூ செஞ்சரி புக் ஹவுஸ் சென்னை - 600 098.
6. கல்வித் தந்தை காமராஜர், முனைவர் ப. பாலசுப்பிரமணியன், நியூ செஞ்சரி புக் ஹவுஸ் (பி) லிட்., சென்னை -600 050.

Reference Books	
1.	தமிழ் இலக்கிய வரலாறு சிற்பி. பாலசுப்பிரமணியன்.
2.	இராஜகோபாலாச்சாரியார், கே., அணியியல், கண்ணப்பன் பதிப்பகம், தி.நகர், சென்னை.

Course Title: Journalism and Composition Modern Indian Language – IV (MIL – IV)		
Course type: Theory		
Subject Code:23LM41		
Total Hours : 90 Hours / Week – 6 Credits: 3		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Dr.Jisha.S.K Assistant Professor Mobile: 8606520272 jisha@scottchristian.org	Expert 1 Suja S. Associate Professor Mobile: 9447218018 sujasdr@gmail.com	Expert 2 Pramod Kumar D.N Associate Professor Mobile : 9446551748 pramodrds@gmail.com

CLO- No.	Course Learning Outcomes (CLO) <i>Upon completion of this course, students will be able to:</i>	% of PLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO-1	Understand the history and necessity of Printing	1(10), 2(10)	1, 2, 3, 8	1,2,3	M, F, C
CLO-2	Understand the linguistic features of Media	2(10), 3(5),5(5)	1, 2, 3, 5	1,2,3	M, C
CLO-3	Understand different idioms and features of sentences	2(10), 9(5), 10(5)	1, 3, 7	1,2	M, C, P
CLO-4	Understand the compositional features of official writing and	9(10), 10(10)	3, 7, 8	1, 9, 10	M, C, P
CLO-5	Analyse social responsibility by learning essay writing based on social and cultural issues	1(10), 5(5), 9(5)	1, 2, 8	1,2,3	M, C, P

Module	Course Description	Hours	% of CLO Mapping with Module	Learning Activities	Assessment Task	Reference
1	Achadi	18				
1.1	Achadiyude Valarcha, Parinaamam	2	1[15]	GL	Qui	8
1.2	Pressukal	3	1[15]	GT	HrA	8
1.3	Pathramaasikakal	2	1[15]	Lec	CT	8
1.4	Vidyavinidini	3	1[15]	Lec	ST	8
1.5	Rasikarenjini	3	1[15]	GL	Qui	8
1.6	Jnananikhepam	3	1[15]	GT	HrA	8
1.7	Kavanakaumudi	2	1[10]	Lec	CT	8
2	Maadhyamabhaasha	18				
2.1	Kambyutting	4	2[30]	GL	OBT	6
2.2	Word document	4	2[30]	GD	HrA	6
2.3	Malayalam DTP cheyyunnavidham	10	2[40]	Lec	CT	6
3	Bhaashayum Prayogavum	18				
3.1	Padasudhi	4	3[25]	Lec	OBT	7
3.2	Samgrahanam	4	3[25]	GL	CA	7
3.3	Aasayavipulanam	5	3[25]	GD	HrA	7
3.4	Vaakyarachana	5	3[25]	CS	Qui	7
4	Vividhatharam Ezhuththukal	18				
4.1	Jolikkuvendiyulla Apekhakal	3	4[15]	Lec	CA	1,2

4.2	Suparsakkaththukal	3	4[15]	GL	OBT	1,2
4.3	Abhiprayamchodikkal	3	4[10]	Ess	HrA	1,2
4.4	Sarkkular	3	5[10]	Sp	CT	1,2
4.5	Vaaniyakkaththukal	2	5[10]	Lec	Ess	1,2
4.6	Memorandum	2	5[20]	Lec	HoA	1,2
4.7	Nivedanam	2	5[20]	Lec	CA	1,2
5	Upanyasa Rechana	18				
5.1	Upanyasa Rechana Reethi	2	5[20]	Sp	CT	4
5.2	Paristhithi vidyabhyaasam	4	5[20]	Lec	Ess	4
5.3	Keraleeya Kalakal	4	5[20]	Lec	HoA	4
5.4	Pusthaka Paaraayanam	4	4[20]	Ess	HrA	4
5.5	Bharanabhaasha Malayalam	4	5[20]	Sp	CT	4

Reference Books

1. George K.M, Aadhunika Malayala sahithya Charithram prasthanagaliloode, Kottayam :DC books, 1998.
2. George.K.M, Sahithya Charithram Prasthanagaliloode , Sahithya Pravarthaka Sahakarana Sangam Kottayam,1958
3. Krishna Pilla .N, Kairaliyude Katha, DC Books, Kottayam ,1958.
4. Rajendran , Upanyasanrachna, Sahitya Pravarthaga Sahakarana Sangam, Kottayam ,1997.
5. //ml.wikibooks.org/wiki/Malayalam_Computing
6. Gadyasilpam, C.V.Vasudeva Bhattathir,i Keralabkasha Institute, 1998
7. Malayalappacha ,Research Journal, vol – 7, no. 7, 2018

Course Title: Aadhunika Kavitha, Khandakaavya, Chand , Alankaar Modern Indian Language – IV (MIL – IV)
Course type: Theory
Subject Code:23LH41
Total Hours :90 Hours / Week – 6 Credits: 3
Pass-out Policy: Min. Contact Hours: 54spiritual
Total Score %: 100 Int.: 40 Ext.: 60
Minimum Pass %: 40 [No min. for Int.]

Course Creator Mrs. Josy Vincent Assistant Professor of Hindi Mobile: 9486357323 josysam2020@gmail.com	Expert 1 Dr.Sreedevi S Assistant Professor of Hindi Mobile: 9495243814 sdtvpm@yahoo.com	Expert 2 Dr.Jayasree. K. Assistant Professor of Hindi Phone :9539204383 Jayasree8262@gmail.com
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CLO. No.	Course Learning Outcomes (CLO) <i>Upon completion of this course, students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapping with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO-1	Understand the history of modern Kavitha	1(10), 2(10)	1,2, 3, 6, 8	1,2,3	M, C
CLO-2	Understand the value and Beauty of Modern Poetry	1(10), 2(5), 5(5)	1, 2, 3, 6	1,3	M,F
CLO-3	Evaluate history of short Epic	5(10), 9(10)	6, 7	1,2,5	M,P
CLO-4	Understand the usage of Chand our Alankaar in Poetry.	9(10), 10(10)	1, 3,7	1, 9, 10	M,F, C
CLO-5	Evaluate and gain knowledge about Translation	9(10), 5(10)	1, 7	1,2,5	M, C, P

Module	Course Description	Hours	% of CLO Mapping with Module	Learning Activities	Assessment Task	Reference
1	Aadhunika Kavitha	18				
1.1	Aadhunik kavitha ke bare mem, kaviyom ke bare mem	9	1[50]	Lec	CA	1,2,3
1.2	Gajanan Madhav Mukthi Bodh Kaa O Megh	9	1[50]	Lec	CA	1,2,3
2	Khanda Kavya	18				
2.1	SreeNaresh Mehtha nakak kavi ka Parichay	2	2[20]	GD	ST	5
2.2	Sabari ki Kahani	2	2[10]	Lec	OT	5
2.3	Thretha - adhyayan	2	2[10]	Sem	OBT	5

2.4	Pampasar - Adhyayan	3	3[20]	Lec	Qui	5
2.5	Thapasya - adhyayan	3	3[20]	Lec	HoA	5
2.6	Pareeksha - Adhyayan	3	3[10]	GL	MCQ	5
2.7	Dharshan – Adhyayan	3	4[10]	GD	SA	5
3	Chand	18				
3.1	Chand Parichay	2	2[20]	Sem	OBT	4
3.2	Dhoha Chand Vishadeekaran	4	3[20]	Lec	Qui	4
3.3	Sorata chand Vishadeekaran	4	3[20]	Lec	HoA	4
3.4	Indhravajra - Vishadeekaran	4	3[20]	GL	MCQ	4
3.5	Maalini - Vishadeekaran	4	4[20]	GD	SA	4
4	Alankaar	18				
4.1	Ardhaalankaar, shabdhalankaar, Ubhayalankar	2	2[20]	Sem	OBT	4
4.2	Anupras Alankaar	4	3[20]	Lec	Qui	4
4.3	Yamak Alankaar	4	3[20]	Lec	HoA	4
4.4	Upama Alankaar	4	3[20]	GL	MCQ	4
4.5	Roopak Alankaar	4	4[20]	GD	SA	4
5	Anuvad	18				
5.1	Anuvad Ka Swaroop	2	2 (20)	Sem	OBT	4
5.2	Anuvad Vinjan Ya Kala	4	3 (20)	Lec	Qui	4
5.3	Anuvad Ki Prakriya	4	3 (20)	Lec	HoA	4
5.4	Anuvad Prayogikatha	4	3 (20)	GL	MCQ	4
5.5	Anuvad Abhyas	4	4 (20)	GD	SA	4

Reference Books

1. Kaavya Tarang – Dr. Niranjana
2. Aadhunika Hindi Kaavya Kavi – Dr. Ramchandra Thivari
3. Aadhunika Hindi Kavitha – Vivid Ayam
4. Hindi vyakaran : ras, Chand, alankaar Sahith – 2019, Umesh Chandra Shukla, Hindi Sansthan, Nayidilli
5. Sabari – Sri Naresh Mehtha

Course Title: Communicative English CE- 4		
Course type: Theory		
Subject Code: 23LE41		
Total Hours: 90 (Including Seminar/ Practical [information Transfer] and formative assessment)		
Hours/Week: 6		Credits: 3
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Dr. Sheni D. L. Singh Assistant Professor of English 9487386706 shenisingh1984@gmail.com	Expert 1 Dr. A. Belinda Asir Assistant Professor of English 9486756827 belinda.basewel@yahoo.com	Expert 2 Dr. L. Judith Sophia Assistant Professor of English 9486459061 judithsophia24@gmail.com

CLO - No.	Course Learning Outcomes (CLO) <i>Upon completion of this course, students will be able to:</i>	% of PLO Mapping with CLO	CLO & PLO Mapping with GA#	Cognitive Level (CL)	Knowledge Category (KC)
CLO-1	Develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking and Writing	1 (10) 6 (7) 7 (3)	2, 3	U AP	F P
CLO-2	Examine and present material of the prescribed texts and other texts	2 (8) 5 (12)	1, 2	U, An E	C M
CLO-3	Identify cross cutting issues like, Human values, (Professional, Personal and Domestic) ethics and environmental sustainability and practise them	3 (8) 8 (6) 9 (6)	1, 4, 8, 9	An E, Ap	C P

CLO-4	Present and differentiate various cultures and civilizations of the Globe and distinguish Indian traditional Knowledge	1 (10) 8 (5) 10 (5)	5, 6, 10	U, Ap	P M
CLO-5	Relate the textual content and underlying meaning of the context to the real life situations	5 (6) 8 (8) 10 (6)	1, 2, 5, 7	E, Ap, C	C M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	PROSE		18			
1.1	Mother Teresa - John Frazer					
1.1.1	Introduction to the Author and the essay	1	2 [4], 4 [10]	L	Ho A	1
1.1.2	Textual Analysis	2	2 [4]	L GD	SA	1
1.1.3	Human Values in “Mother Teresa”	3	2 [4], 3[10], 5[7]	L GD	Ass	1
1.2	Anancy- Andrew Salkey					
1.2.1	Introduction to the Author and the essay	1	2 [4], 4 [10]	L	Ho A	1
1.2.2	Textual Analysis	2	2 [4]	L GD	Quiz	1
1.2.3	Reflection of Human Values in “Anancy”	3	2 [4], 3[5], 5[7]	L GD	Ass	1

1.3	Dangers of Drug Abuse- Hardin B. Jones					
1.3.1	Introduction to the Author and the essay	1	2 [4], 4 [5]	L	Ho A	1
1.3.2	Textual Analysis	2	2 [4]	L GD	SA	1
1.3.3	Human Values in “Dangers of Drug Abuse”	3	2 [4], 3[5], 5[5]	L GD	Ass	1
2	POETRY 18					
2.1	Ode to the West Wind- P. B. Shelley					
2.1.1	Introduction to the poet & the poem	1	2 [4] 4[3]	L	Ho A	1
2.1.2	Poetry Analysis	2	2[4]	L GD	Ess	1
2.1.3	Human Values reflected in “Ode to the West Wind”	1	2 [4], 3[3], 5[5]	L GD	Ass	1
2.2	The Lotus- Toru Dutt					
2.2.1	Introduction to the poet & the poem	1	2 [4] 4[5]	L	Ho A	1
2.2.2	Poetry Analysis	2	2[4]	L GD	Ess	1
2.2.3	Expressions of Indian Ethos in “The lotus” and cultural exchange between East and West	1	2 [4], 4[5], 5[4]	L GD	Ass	1
2.3	Once Upon a Time -Gabriel Okara					
2.3.1	Introduction to the poet & the poem	1	2 [4] 4[5]	L	Ho A	1
2.3.2	Poetry Analysis	2	2[4]	L	Ess	1

				GD		
2.3.3	Human Values in “Once Upon a Time”	1	2 [4], 3[3], 5[3]	L GD	Ass	1
2.4	Be the Best of Whatever You are- Douglas Malloach					
2.4.1	Introduction to the poet & the poem	1	2 [4] 4[5]	L	Ho A	1
2.4.2	Poetry Analysis	2	2[4]	L GD	Ess	1
	Human Values reflected in “Be the Best of Whatever You are”	1	2 [4], 3[6], 5[4]	L GD	Ass	1
3	ONE ACT PLAYS 18					
3.1	A Marriage Proposal - Anton Chekov					
3.1.1	Introducing the author and the play	1	2 [4]. 4 [5]	L	Ho A	1
3.1.2	Character and plot analysis	3	2[4]	L RP	Ess	1
3.1.3	Wealth, Love and Marriage in “A Marriage Proposal”	2	2[4] 5[10]	L GD	Ass	1
3.2	A Bishop’s Candlesticks - Norman McKinnel					
3.2.1	Introducing the author and the play	1	2 [4]. 4 [5]	L	Ho A	1
3.2.2	Character and plot analysis	3	2[9]	L RP	Ess	1
3.2.3	Human Values in “A Bishop’s Candlesticks”	2	2[8] 3[10]	L GD	Ass	1
3.3	Chitra - Rabindranath Tagore					

3.3.1	Introduction to Tagore and the play	1	2 [8]. 4 [5]	L	Ho A	1
3.3.2	Textual analysis and character analysis	3	2[4]	L RP	Ess	1
3.3.3	Human Values reflected in “Chitra”	2	2[10] 3[10]	L GD	Ass	1
4	LANGUAGE STUDY 18					
4.1	Grammar: Units 84-114	18	1[100]	ABL	CT	2
5	LANGUAGE IN PRACTICE 18					
5.1	<p>Vocabulary: Idioms</p> <p>1. To smell a cat 2. To kill two birds with one stone 3. To cut a sorry figure 4. Gift of the gab 5. In the family way 6. To fish in troubled waters 7. Spick and span 8. Maiden speech</p> <p>9. Through thick and thin 10. Beat around the bush 11. Elephant in room 12. Out of the blue</p> <p>13. By hook or crook 14. A wolf in sheep’s clothing 15. Between the devil and the deep sea 16. Better late than never 17. Blessing in disguise 18. Add fuel to the fire 19. Go the extra mile 20. Don’t cry over spilled milk</p> <p>21. Read between the lines 22. Turn a deaf ear 23. Look before you leap 24. Pour one’s heart out 25. Pull one’s leg 26. Break the ice 27. To bell the cat 28. Face the Music 29. Come out with flying colours 30. At face value</p>	4	1[10]	ABL	CT	3
5.2	Job Applications, Covering Letters, CV & Resume	4	1[20]	ABL	Ass	3
5.3	Circular, Notice, Agenda and Minutes	4	1[10]	ABL	Ass	3

5.4	Interview Etiquettes (Practical skills in Interviews -body language)- face to face - telephone and video conferencing)	2	1[20]	ABL	Viva	3
5.5	Power Point preparation (Practical)	2	1[10]	ABL	Ass	3
5.6	Creating a Digital Profile- LinkedIn (Practical)	1	1[10]	ABL	Ass	3
5.7	Spoken English (Practical) Making suggestions & Responding to suggestions, Asking for and giving Advice or Help	1	1[20]	RP	Viva	3

Reference

1. *Semester IV: Prose, Poetry and One Act Plays*. Edited by the Department of English.
2. *Essential English Grammar* by Raymond Murphy. Cambridge University Press
3. *Language in Use: Workbook 1V*. Edited by the Department of English.

Course Title: Plant Diversity IV Gymnosperms, Paleobotany and Evolution (Core Course 7)		
Course type: Theory		
Subject Code: 23GB41		
Total hours: 90 Hours/Week: 6 [Th.: 6(Lecture 4+Practical 2)] Credits: 5		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 ypsolvashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To enable the students to understand thallus organization,
- To enable the students to understand internal and the reproductive structures of Gymnosperms and the importance of evolution.
- to acquaint students with evidences of the past history of plant groups and significance of the fossilization.
- To know the scope of paleobotany, types of fossils and geological time scale.
- Understand the various fossil genera representing different fossil groups.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Relate to the general characteristics of Gymnosperms and fossil forms	3[20]	1, 8	R, An, E	F
CLO2	Explain the morphology and anatomy of Gymnosperms.	3[20]	1, 8	An, E	C, F
CLO3	Compare and contrast the reproductive structures of Gymnosperms & fossil forms.	3[20]	1, 8	An, U, E	C, M
CLO4	Analyze the anatomy and reproduction Gymnosperms along with their ecological and economical importance.	3[20]	1, 8	An, U, E	F, C
CLO5	Determine the various fossilization methods and their significance in paleobotany.	3[20]	1, 2, 8	An, U, E	F

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	GYMNOSPERMS					
1.1	General characters	4	1[50]	Lec	Ess	1,3,5
1.2	Classification of Gymnosperms (Sporne, 1954) (up to order).	5	4[30]	Lec	Sem	1,3,5
1.3	Morphology, anatomy and reproduction of the taxa belonging to each of the following orders: Cycadales	5	4[25]	Lec/Sp	GD	1,3,5

1.4	Coniferales (Pinus).	5	4[25]	Lec	Ess	1,3,5
2	GYMNOSPERMS					
2.1	Morphology, anatomy and reproduction of Gnetales (<i>Gnetum</i>).	5	2[10]	Lec	Ess	1,2,4
2.2	Economic importance of Gymnosperms - oil, resin	4	2[10]	Lec	Sem	1,2,4
2.3	Timber, ornamental, medicine and food.	4	2[10]	Lec/Sp	GD	1,2,4
3	PALEOBOTANY					
3.1	Introduction to fossils	2	3[20]	Lec	MCQ	7,8
3.2	Fossilization processes such as compression, casts, molds, petrification, impressions and coal balls.	3	3[20]	Lec	Ess	7,8
3.3	Geological time scale. Radiocarbon dating	4	3[20]	Lec	Sem	7,8
3.4	Contribution of Birbal Sahni	3	3[20]	Lec/Sp	GD	7,8
4	PALEOBOTANY					
4.1	Study of the following fossils: Rhynia, Lepidodendron	3	4[40]	Lec	Ess	7,8
4.2	Lyginopteris and Williamsonia sewardiana.	2	4[40]	Lec	MCQ	7,8
5	EVOLUTION					
5.1	Evolution - origin of life	3	4[10]	Lec	Ess	7,8
5.2	Chemosynthetic theory - evidences (any five).	2	4[10]	Lec	Sem	7,8
5.3	Theories of evolution - Darwin	2	4[10]	Lec/Sp	GD	7,8
5.4	Lamarck and De veries	2	4[10]	Lec	Ess	7,8
5.5	Modern synthetic theory	1	4[10]	Lec	Sem	7,8
5.6	Variation - analysis and sources, adaptive radiation.	1	4[10]	Lec/Sp	GD	7,8

References

1. Gupta, M.N. 1972. The Gymnosperms (2nd Edition) Shiva Lal Agarwala & Co., Agra.
2. Vashista, P.C. 1976. Gymnosperms, S. Chand & Co. New Delhi.
3. Bhatnagar, S.P and Moitra, A. 1996. Gymnosperms. New Age International Publishers, New Delhi, India.
4. Anil Kumar, 2006. Gymnosperms. S. Chand & Company Pvt. Ltd. New Delhi.
5. Sporne, K.R.1991. The Morphology of Gymnosperme. B.I. Publications, New Delhi.
6. Bhatnagar, S.P and Moitra, A. 1996. Gymnosperms, New Age Int. Pvt. Ltd., New Delhi.
7. Stewart, W.N and Rathwell, G.W. 1993. Paleobotany and the Evolution of Plants. Cambridge University Press.
8. Raup, D.M and Steven, M. Stanley. 2004. Principles of paleontology. San Francisco: W.H. Freeman, 1971.
9. Bhatnagar S.P and Alok Moitra. 2013. Gymnosperms. Publisher: New Age International Pvt Ltd Publishers. New Delhi.

Course Title: ELECTIVE ALLIED BOTANY-II		
Course type: Theory		
Subject Code:		
Total hours: 90 Hours/Week: 6 [Th.: 6(Lecture 4+Practical 2)] Credits: 5		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfvashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802, 9486702263, sehimaravi@gmail.com

Objectives:

- To be familiar with the basic concepts and principles of plant systematics.
Learn the importance of plant anatomy in plant production system

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Know-ledge Category (KC)
CLO1	Understand the fundamental concepts of plant anatomy and embryology.	3[20]	1, 2, 8	U, An	F, P
CLO2	Analyze and recognize the different parts of plants and their internal structures.	3[20]	1, 2, 8	Ap	M
CLO3	Understand the various physiological processes in relation to water.	3[20]	1, 2, 8	An, U, Ap	F, P
CLO4	Understand morphological concepts	3[20]	1, 2, 8	An, Ap	C, P
CLO5	Analyze the economic importance of plants	3[20]	1, 2, 8	Ap	P, M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	MORPHOLOGY OF FLOWERING PLANTS					
1.1	Structure and modification of root and stem.	3	3[30]	Lec	Ess	1,6,10
1.2	Leaf types - simple and compound. Phyllotaxy and types.	3	3[30]	Lec	Sem	1,6,10
1.3	Inflorescence - Racemose, Cymose and Special types.	3	3[20]	Lec/Sp	GD	1,6,10
1.4	Types of fruits – simple, aggregate and compound.	3	3[20]	Lec	GD	1,6,10
2	TAXONOMY					
2.1	Vegetative and floral characters	4	3[20]	Lec	Ess	1,6,10
2.2	economic importance of the following families: Rutaceae, Caesalpiniaceae,	3	5[50]	Lec	Sem	1,6,10
2.3	Asclepiadaceae, Euphorbiaceae and Poaceae	4	5[50]	Lec/Sp	GD	1,6,10
3	ANATOMY					
3.1	Tissue and tissue systems: Simple and complex tissues	3	2[30]	Lec	Ess	1,8
3.2	Anatomy of monocot and dicot roots.	3	2[30]	Lec	Sem	1,8
3.3	anatomy of monocot and dicot stems	3	2[20]	Lec/Sp	GD	1,8
3.4	anatomy of dicot and monocot leaves.	3	2[20]	Lec	Ess	1,8
4	EMBRYOLOGY					
4.1	Structure of mature anther and ovule - Types of ovules	4	1[40]	Lec	Ess	2,3,7
4.2	structure of embryo sac, pollination - double fertilization	4	1[30]	Lec	MCQ	2,3,7
4.3	structure of dicotyledonous and monocotyledonous seeds.	3	1[30]	Lec	GD	2,3,7
5	PLANT PHYSIOLOGY					
5.1	Absorption of water	3	3[20]	Lec	Ess	4,5,9
5.2	photosynthesis - light reaction - Calvin cycle.	3	3[30]	Lec	MCQ	4,5,9

5.3	Transpiration – mechanism of stomata opening and closing, factors affecting transpiration.	4	3[30]	Lec	Ess	4,5,9
5.4	Growth hormones - auxins and cytokinins and their applications.	3	3[20]	Lec	Sem	4,5,9

References

1. Sharma, O.P. 2017. Plant Taxonomy. (II Edition). The McGraw Hill Companies.
2. Bhojwani, S.S. Bhatnagar, S.P and Dantu, P.K. 2015. The Embryology of Angiosperms (6th revised and enlarged edition). Vikas Publishing House, New Delhi.
3. Maheshwari, P. 1963. Recent Advances in Embryology of Angiosperms. Intl. Soc. Plant Morphologists, New Delhi.
4. Salisbury, F. B.C.W. Ross.1991. Plant Physiology. Wassworth Pub. Co. Belmont.
5. Ting, I.P. 1982. Plant Physiology. Addison Wesley Pb. Philippines.
6. Lawrence, G. H. M. 1985. An Introduction to Plant Taxonomy, Central Book Depot, Allahabad.
7. Bhojwani, S.S and Bhatnagar, S.P. 2000. The Embryology of Angiosperms (4th revised and enlarged edition). Vikas Publishing House, New Delhi.
8. Pandey, B.P. 2012. Plant Anatomy. S Chand Publishing.
9. Jain, VK. 2006. Fundamentals of Plant Physiology, S. Chand and Company Ltd.
10. Rajni Gupta. 2012. Plant Taxonomy: Past, Present and Future. Vedams (P) Ltd. New Delhi.
11. Jain, V.K. 2006. Fundamentals of Plant Physiology, S.Chand and Company Ltd., New Delhi.
12. Verma, S.K. 2006. A Textbook of Plant Physiology, S.K.Chand & Co., New Delhi.

Course Title: ALLIED BOTANY PRACTICALS -II		
Course type: Practical - II		
Subject Code:		
Total hours: 90 Hours/Week: 6 [Pract.: 3(Practical 2+Turotial 1)] Credits: 5		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfvashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802, 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To be familiar with the basic concepts and principles of plant systematics.
- Learn the importance of plant anatomy in plant production systems.
- Understand the mechanism underling the shift from vegetative to reproductive phase.
- To learn about the physiological processes that underlie plant metabolism.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Know-ledge Category (KC)
CLO1	Understand the fundamental concepts of plant anatomy and embryology.	3[20]	1, 2, 8	U, An	F, P
CLO2	Analyze and recognize the different parts of plants and their internal structures.	3[20]	1, 2, 8	Ap	M
CLO3	Understand the various physiological processes in relation to water.	3[20]	1, 2, 8	An, U, Ap	F, P
CLO4	Understand morphological concepts	3[20]	1, 2, 8	An, Ap	C, P

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	TAXONOMY					
1.1	To describe in technical terms, plants belonging to any of the family prescribes and to identify the family.	10	4[50]	Lec	Ess	1
1.2	To dissect a flower, construct floral diagram and write floral formula.	10	4[50]	Lec	Ess	1
2	PLANT PHYSIOLOGY					
2.1	Demonstration experiments 1. Ganong's Light screen 2. Ganong's respiroscope	10	3[50]	Lec	Ess	2,3
3	ANATOMY					
3.1	To make suitable micro preparations of anatomy materials prescribed in the syllabus.	5	1[50]	Lec	Ess	1
4	SPOTTERS					
4.1	Angiosperm anatomy and Embryology	5	2[50] 4[50]	Lec	Ess	1

References

1. Subramaniam, N.S. 1996. Laboratory Manual of Plant Taxonomy. Vikas Publishing House Pvt. Ltd., New Delhi.
2. Noggle G.R and G.J. Fritz. 2002. Introductory Plant Physiology. Prentice Hall of India, New Delhi.
3. Steward, F.C. 2012. Plant Physiology Academic Press, US

Course Title: Skill Enhancement Course (SEC)- 2 Mushroom Cultivation		
Course type: Theory		
Subject Code: 23GBS2		
Total hours: 30 Hours/Week: 2 [Th.: 2(Lecture 2)] Credits: 1		
Pass-out Policy: Min. Contact Hours: 18		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 ypselvashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To learn and develop skills in mushroom cultivation.
- To understand and appreciate the role of mushrooms in Nutrition, Medicine and health.
- To cultivate mushroom cultivation in small scale industry.
- To learn about diseases and post harvest technology.
- To study new methods and strategies to contribute to mushroom production.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Recall various types and categories of mushroom.	5[20]	1,2,10	R, U	C
CLO2	Explain about various types of food technologies associated with mushroom industry.	5[20]	1,2,10	R, An	C, M
CLO3	Apply techniques studied for cultivation of various types of mushroom.	5[20]	1,2,10	Ap	P
CLO4	Analyze and decipher the environmental factors and economic value associated with mushroom cultivation	5[20]	1,2,10	An, E	F, M
CLO5	Develop new methods and strategies to contribute to mushroom production.	5[20]	1,2,10	U, Ap	M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	MUSHROOM CULTIVATION					
1.1	Introduction: Morphology, Types of Mushroom	2	1[50]	Lec	Ess	1,2,7
1.2	Identification of edible and poisonous mushroom	2	2[30]	Lec	MCQ	1,2,7
1.3	Nutritive values	2	2[25]	Lec	Ess	1,2,7
1.4	Life cycle of common edible mushrooms	2	1[25]	Lec/Sp	GD	1,2,7
2	MUSHROOM CULTIVATION					
2.1	Mushroom cultivation	2	2[10]	Lec	Ess	1,7,9
2.2	Prospects and scope of Mushroom cultivation in small scale Industry.	2	3[10]	Lec	MCQ	1,7,9
3	LIFE CYCLE OF MUSHROOMS					
3.1	Life cycle of <i>Pleurotus spp</i> and	2	1[20]	Lec	Ess	7,10
3.2	<i>Agaricus spp.</i>	2	1[20]	Lec	MCQ	7,10
4	PRODUCTION AND HAVESTING OF MUSHROOM					
4.1	Spawn production	2	5[40]	Lec/Sp	GD	6,7
4.2	Growth media	2	5[40]	Lec	MCQ	6,7
4.3	Spawn running	2	5[20]	Lec/Sp	GD	6,7
4.4	Harvesting of mushrooms and marketing.	3	5[20]	Lec	Ess	6,7
5	DISEASES AND POST HARVEST					
5.1	Diseases and post harvest technology	3	4[40]	Lec	Ess	1, 5,10
5.2	Insect pests, nematodes, mites, viruses, fungal competitors and other important diseases.	2	4[30]	Lec	MCQ	1, 5,10

Reference texts

1. Handbook of Mushroom Cultivation. 1999. TNAU publication.
2. Marimuthu, T., Krishnamoorthy, A.S., Sivaprakasam, K. and Jayarajan. R. 1991. Oyster Mushrooms, Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore.
3. Swaminathan, M. 1990. Food and Nutrition. Bappco, The Bangalore Printing and Publishing Co. Ltd., No. 88, Mysore Road, Bangalore - 560018.
4. Sing. 2005. Modern Mushroom Cultivation, International Book Distributors, Dehradun.
5. Verma, 2013. Mushroom: edible and medicinal: cultivation conservation, strain improvement with their marketing. Daya Publishing House.
6. Handbook of Mushroom Cultivation. 1999. TNAU publication.
7. Marimuthu, T., Krishnamoorthy, A.S., Sivaprakasam, K. and Jayarajan. R. 1991. Oyster Mushrooms, Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore.
8. Swaminathan, M. 1990. Food and Nutrition. Bappco, The Bangalore Printing and Publishing Co. Ltd., No. 88, Mysore Road, Bangalore - 560018.
9. Nita Bahl. 2002. Handbook on Mushroom 4th edition Vijayprimlani for oxford & IBH publishing co., Pvt., Ltd., New Delhi. Dr.C. Sebastian Rajesekaran Reader in Botany Bishop Heber College, Trichy – 17.
10. Suman. 2005. Mushroom Cultivation Processing and Uses, M/s. IBD Publishers and Distributors, New Delhi.

Course Title: Value Added Course II Digital Empowerment through AI, Multimedia and Cyber Security		
Course type: Theory		
Subject Code: 23SE21		
Total hours: 30 Hours/Week: 2 Credits: 1		
Pass-out Policy: Min. Contact Hours: 18		
Total Score %: 100 Int.: 25 Ext.: 75		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Dr. B. Shamina Ross Associate Professor Mobile: 9443137232 shaminas@hotmail.com	Expert 1 Mrs. P. Ezhil Roja Assistant Professor Mobile: 9944479273 roja_z@yahoo.com	Expert 2 Dr. C. Thinkal Dayana Assistant Professor Mobile: 9715919193 thinkaldayana@gmail.com

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	understand the evolution of computers, computing concepts and the various applications of computers	1(10), 6(10)	1, 8, 5	R, U	F, C

CLO2	understand Internet Application, World Wide Web, Web Browsers and e-mail service	5(6), 6(7), 8(7)	1,5, 6, 7	U	F, C,M
CLO3	analyze features and types of E-commerce model and applications and Multimedia Technology concepts	6(7), 9(6), 10(7)	1, 5, 7	An	F, C
CLO4	evaluate the basics of AI, Robotics and Computer Vision	7(7), 9(7), 10(6)	5, 8, 10	E	F, C, M
CLO5	understand the basic concepts of Cyber Security, types of security threats and safety measures	6(17), 10(9)	1, 5	U	F, C, M

Module	Course Description					
	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference	
1	EVOLUTION OF DIGITAL SYSTEM					
1.1	Introduction and Evolution of Computers	2	1[33]	Lec	CA	1
1.2	Generations of Computers	1	1[17]	FC	HrA	1
1.3	Computing Concepts, The Computer System	2	1[33]	OO	OT	1
1.4	Applications of Computers	1	1[17]	RF	SA	1
2	COMMUNICATION AND COLLABORATION IN DIGITAL WORLD					
2.1	Introduction, Applications of Internet	2	2[33]	Lec	HoA	1
2.2	Understanding the World Wide Web	1	2[17]	Se m	ST	1
2.3	Web Browsers	2	2[33]	SI	CA	1
2.4	E-mail Service	1	2[17]	GT	OT	1
3	E-COMMERCE AND MULTIMEDIA					
3.1	E-Commerce: Introduction, Features of E-Commerce	1	3[17]	Lec	ST	2
3.2	Types of E-commerce Model, Business Application of E-commerce	1	3[17]	Se m	CT	2

3.3	Uses of E-commerce, Traditional Commerce Vs E-Commerce, Advantages of E-Commerce, Disadvantages of E-Commerce	2	3[33]	GT	CA	2
3.4	Multimedia: Introduction, Elements of Multimedia, Applications of Multimedia, Advantages of Multimedia and Disadvantages of Multimedia.	2	3[33]	SI	HoA	3
4	ARTIFICIAL INTELLIGENCE					
4.1	Introduction, Goals of AI, History of AI, Applications of AI, Intelligence	2	4[33]	GT	CT	4
4.2	Robotics: Robot Locomotion, Application of Robotics.	2	4[33]	Se m	HrA	4
4.3	Computer Vision: Task of computer Vision	1	4[17]	BS	CA	4
4.4	Application Domains of Computer Vision	1	4[17]	SI	Qui	4
5	CYBER SECURITY					
5.1	Introduction, Types of Cyber Security	2	5[33]	Lec	SA	5
5.2	Importance of Cyber Security	1	5[17]	GD	HrA	5
5.3	Types of Cyber Security Threats	1	5[17]	FC	MCQ	5
5.4	Benefits of Cyber Security, Cyber Security Measures	2	5[33]	GT	CT	5

Reference Books

1. E. Balagurusamy, “*Fundamentals of Computers*”, Tata McGraw Hill Education, Private Limited, 2009. New Delhi.
2. David Whiteley, “*e-commerce-Strategy, Technology and Applications*”, Tata McGraw-Hill Publishing Company Limited, First Edition, Reprint 2007
3. Ralf Steinmetz, Klara Nahrstedt, “*Multimedia: Computing Communications & Applications*” Pearson Education, January, 2002
4. Eugene Charniak, Drew McDermott, “*Introduction to Artificial Intelligence*”, Pearson Education, January, 2002.
5. Anad Shinde, “*Introduction to Cyber Security*”, Guide to the World of Cyber Security Paperback-5, February 2021.

Course Title: M - 1 Entrepreneurial Opportunities in Botany		
Course type: Theory		
Subject Code: 23GBS5		
Total hours: 30 Hours/Week: 2 [Th.: 2(Lecture 2)] Credits: 2		
Pass-out Policy: Min. Contact Hours: 18		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- Enable students to understand about establishment of various ventures after graduates in Botany using medicinal plants, Biotechniques and marketing of bioproducts.
- Create a mindset among students to start their own companies for income generation.
- The students may understand about various fields of botany.
- Develop the concept of Entrepreneurial Opportunities in Botany
- Describe the new strategies to describe marketing and business management strategy.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Relate to how various fields of botany could be understood with an entrepreneurial approach.	7[20]	2, 7	U, E	F, C
CLO2	Explain the concept of Entrepreneurial Opportunities in Botany.	7[20]	2, 7	An, E	C
CLO3	Make of the knowledge gained to start new venture using Plant tissue culture and plant products for commercial exploitations	7[20]	2, 5	R, An, E	C, M
CLO4	Decipher effective ways of making bioproducts like organic acids, solvents, beverages, enzymes, antibiotics, mushrooms, biogas and etc.	7[20]	1, 2, 5	U, An, E	C, P
CLO5	Develop new strategies to describe marketing and business management strategy including the role of IPR and bioethics regulations for licensing.	7[20]	2, 5	C, E	M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	PLANT CELLS					
1.1	Introduction to Entrepreneurship and its scope.	2	1[100]	Lec	Ess	3,6,7,8
1.2	Identification of new ventures using plant resources, Mechanism of product selection and commercialization	2	3[30]	Lec	Sem	3,6,7,8
1.3	General concept about the Govt. formalities, rules & regulation, Entrepreneurship skill development.	4	3[30]	Lec/Sp	GD	3,6,7,8
2	TOOLS AND TECHNIQUES					
2.1	Production of commercially viable plants through Plant tissue culture technique	2	4[20]	Lec	Ess	2,3,4
2.2	Production of secondary metabolites, solvents, organic acids, beverages, enzymes, antibiotics.	2	4[40]	Lec	MCQ	2,3,4
3	NEW VENTURE CREATION					
3.1	Production of Biofertilizers, Vermicompost, Establishment of medicinal, herbal and zodiac gardens, Terrace & Kitchen garden	4	4[30]	Lec	Sem	3,6,10
3.2	Spirulina and Azolla cultivation, Mushroom cultivation, Bonsai, Bouquet making, Terrarium	2	4[30]	Lec	Sem	3,6,10
4	PRODUCT DEVELOPMENT AND COMMERCIALIZATION					
4.1	Product commercialization and business strategy	2	3[50]	Lec/Sp	GD	1,2,5,7
4.2	Dyes, Cosmetics and Perfumes, Gums, Resins & Latex, Areca Leaf Plates, cups & bags, Jute Products	2	4[50]	Lec/Sp	GD	1,2,5,7
5	BIO-BUSINESS PLANS, IPR AND BIOETHICS					
5.1	Marketing and Business management strategy, Bank loan, Intellectual property rights	2	5[20]	Lec/Sp	GD	2,5,7,10
5.2	Patent laws - Bioethics and current legal issues	2	4[20]	Lec/Sp	GD	2,5,7,10
5.3	Marketing and public perceptions in product development – Technology licensing and branding concerns.	4	4[20]	Lec/Sp	GD	2,5,7,10

References

1. Gurinder Shahi. 2004. Bio-Business in Asia: How countries Can Capitalize on the Life Science Revolution, Pearson Prentice Hall, New Delhi, India.
2. Karthikeyan, S. and Arthur Ruf. 2009. Biobusiness, MJP Publications. Chennai, India.
3. Richard Oliver. 2000. The coming Biotech age: The Business of Biomaterials, McGraw Hill Publications, New York, USA.
4. Adams, C.R. Banford, K.M. and Early, M.P. 1993. Principles of Horticulture.
5. Sathe, T.V. 2004. Vermiculture and Organic farming, Daya Publishers.
6. Robin Lowe and Sue Marriott 2009. Enterprise: Entrepreneurship and Innovation: Concepts, Contexts and Commercialization, Routledge Publisher, London, UK.
7. Peter F. Drucker, 2009. Innovation and Entrepreneurship, Harper Collins Publisher, New York, US.
8. Russell, T. 2012. Nature Guide: Trees: The world in your hands(Nature Guides). Mukherjee D. Gardening in India, Oxford IBH publishing co, New Delhi.
9. Kumar, N. 1997. Introduction to Horticulture, Rajalakshmi Publications, Nagercoil.
10. Webster, J and Weber, R. 2007. Introduction to Fungi, 3rd Ed. Cambridge University Press, Cambridge

Third Year Semester V (NCrF Level 5.5)

List of Courses	Name	Credits	No. of Hours
Core Course (CC - 8)	Plant morphology, Taxonomy & Economic Botany	5	6
Core Course (CC - 9)	Project	5	6
Major Elective (CCE - 1)	Cultivation of algae	4	6
Major Elective (CCE - 2)	Cell Biology, Genetics & Plant Breeding	4	6
Skill Enhancement Course SEC- 3	Botanical garden and Landscaping	1	2
Value Added Course (VAC III)	VAC III- Indian Knowledge System and Human Rights	1	2
M- 2	Fermentation technology	2	2
	Total	22	30

Course Title: Plant morphology, Taxonomy & Economic Botany (Core Course -8)		
Course type: Theory		
Subject Code: 23GB51		
Total hours: 90 Hours/Week: 6 [Th.: 6(Lecture 4+Turotial 2)] Credits: 5		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %: 100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfvashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- Have extensive knowledge of the morphology (vegetative structures and floral structures) of flowering plants.
- Know about the basic concepts of classification of plants.
- Understand major evolutionary trends in Angiospermic plants.
- To know the characteristic features of the selected families.
- To know the economic importance of plants.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Define the concepts in plant morphology and rules of ICN in botanical nomenclature.	3[20]	1,2,8	R, U, E	F, C
CLO2	Classify systems of plant classification and recognize the importance of herbarium and virtual herbarium.	3[20]	1,2,8	R, An, E	F, C, P
CLO3	Describe the core concepts of economic Botany and relate its applications in human life.	3[20]	1,2,8	An, E	F, M, C
CLO4	Analyze the characters of the families according to the Bentham and Hooker's system of classification.	3[20]	1,2,8	An, E	F, M
CLO5	Assess terms and concepts related to Phylogenetic Systematics.	3[20]	1,2,8	An, E	F, C

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	MORPHOLOGY					
1.1	Root system – modifications (any five).	2	1[20]	Lec	GD	1,2,3
1.2	Shoot system – modifications – (Aerial, sub-aerial and underground).	3	1[20]	Lec	GD	1,2,3
1.3	Leaf-Types-simple and compound- phyllotaxy, modifications (phyllode, pitcher), tendrils, stipules.	2	1[20]	Lec	GD	1,2
1.4	Inflorescences – definition and types – racemose, cymose, mixed and special types.	2	1[20]	Lec	GD	1,2
1.5	Fruits - classification.	4	3[20]	Lec	GD	1,2,3
2	SYSTEMS OF CLASSIFICATION					
2.1	Artificial, Natural and Phylogenetic system of classification.	3	4[20]	Lec	GD	1,3
2.2	An outline of Bentham and Hooker system of classification.	3	4[20]	Lec	GD	1,3
2.3	Herbarium technique–collection, pressing, drying, mounting and preservation of plant specimens.	2	4[20]	Lec	GD	1,3
2.4	Botanical Survey of India.	2	4[20]	Lec	GD	1,3
2.5	Botanical nomenclature–rules, typification and author citation.	2	4[20]	Lec	GD	1,3
3	FAMILIES					
3.1	Study of the following families based on the Natural system and their economic importance: Anonaceae,	3	4[20]	Lec	Ess	1,2,3
3.2	Nymphaeaceae, Rutaceae,	2	4[20]	Lec	MC Q	1,2
3.3	Caesalpinaceae, Cucurbitaceae,	2	4[20]	Lec	MC Q	1,2
3.4	Asteraceae,	2	4[20]	Lec	MC Q	1,2

3.5	Apocynaceae and Asclepiadaceae.	3	4[20]	Lec	Sem	1,2,3
4	FAMILIES					
4.1	Solanaceae, Acanthaceae, Lamiaceae	3	4[40]	Lec	Sem	1,2,3
4.2	Amaranthaceae, Euphorbiaceae, Liliaceae,	4	4[40]	Lec	Sem	1,2,3
4.3	Orchidaceae and Poaceae.	3	4[20]	Lec	Sem	1,2,3
5	ECONOMIC IMPORTANCE					
5.1	Source, morphology of the useful part and uses of the economically important products of the following – Cereal (Rice), Pulses (Black gram)	3	3[20]	Lec	Sem	1,2,3
5.2	Sugar (Sugarcane), Beverage (Coffee),	5	5[30]	Lec	Sem	1,2,3
5.3	Oil seed (Groundnut), spices (Cardamom) and Fibre (Cotton).	5	5[30]	Lec	Sem	1,2,3

References

1. Lawrence, G.H.M. 1985. An Introduction to Plant Taxonomy, Central Book Depot, Allahabad.
2. Porter, C.L. 1982. Taxonomy of Flowering Plants, Eurasia Publications House, New Delhi
3. Solbrig, O.T. 1970. Principles and Methods of Plant Biosystematics. The MacMillan Co-collier-MacMillan Ltd., London.
4. Solbrig, O.T and Solbrig, D.J. 1979. Population Biology and Evolution, Addison-Wesley Publishing Co. Ind USA.
5. Takhtajan, A.L. 1997. Diversity and Classification of Flowering Plants. Columbia University Press, New York.
6. Woodland, D.W. 1991. Contemporary Plant Systematics. Prentice Hall. New Jersey.
7. Rajni Gupta. 2012. Plant Taxonomy: Past, Present and Future.
8. Vedams (P) Ltd. New Delhi, Vashishta, B.R., Sinha, A.K. & Singh, V.P. 2008. Botany for degree students. Part - I. Algae. S. Chand & Co., New Delhi.
9. Hutchinson, J. 1973. The Families of Flowering plants, Oxford University press, London.
10. Gamble, J.S., Fisher, L.E.F. 1967. The Flora of The presidency of Madras (Vol-III) BSI, Calcutta
11. Davis, P.H and Heywood, V.M. 1965. Principles of Angiosperm Taxonomy, Oliver and Boyd Edinburgh.
12. Clive AS. 1989. Plant Taxonomy and Biosystematics, Chapman and Hall Inc. New York.
13. Harborne, J.B and Turner, B.L. 1984. Plant Chemosystematics, Acad. Press, London.
14. Lawrence, G.H. 1955. Taxonomy of Vascular Plants, MacMillan Co., USA.
15. Jones, S.B. Jr. and Luchsinger, A.E. 1986. Plant Systematics (2nd edition). McGraw-Hill Book Co., New York. Chapman V.J. and Chapman D.J., 2013. The Algae. Alpha Numera.

Course Title: CCE-1 Cultivation of Algae		
Course type: Theory		
Subject Code: 23GBEA		
Total hours: 90 Hours/Week: 6 [Th.: 6(Lecture 4+Turotial 2)] Credits: 4		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfvashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To impart sufficient information about the culture and cultivation of algae under laboratory and outdoor conditions.
- To study the media composition for algae cultivation and high value products and its applications.
- To know about the important seaweeds and its cultivation practices.
- To study the SLF production and applications in agriculture crops.
- To understand about the Environment Impact Assessment of algal cultivation.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Obtain an in-depth knowledge on culture and mass cultivation of algae and its different methods.	7[20]	2, 5	An, U	F, M
CLO2	Exploration and recommendation of the commercial potential of algal products.	7[20]	2, 7	An, E	C
CLO3	Understand the applied facet of algology and acquire a complete knowledge about the cultivation methods in algae.	7[20]	2, 5	U, E	F, C, M
CLO4	Describe the preparation of seaweed liquid fertilizers and their applications in agriculture and horticulture.	7[20]	2, 5	R, E	C, F
CLO5	Acquiring the information about algal applications in different industries and agriculture fields in the current scenario.	7[20]	2, 5, 7	An, E	M, C

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	MICROALGAE					
1.1	Morphology, life history and mass culture of microalgae: <i>Spirulina</i>	4	1[30]	Lec	Ess	1,2,5,6
1.2	<i>Chlorella, Dunaliella</i>	5	3[30]	Lec	Sem	1,2,5,6
1.3	<i>Botryococcus</i>	3	3[30]	Lec/Sp	GD	1,2,5,6
2	ALGAL PRODUCTS					
2.1	High value products: Single Cell Protein (SCP)	3	2[20]	Lec	Ess	1,2,5,6
2.2	Phycocyanin, β -carotene	5	2[10]	Lec	MCQ	1,2,5,6
2.3	Astaxanthin –biofuel	3	2[10]	Lec	MCQ	1,2,5,6
2.4	media composition - scale up - lab to land - raceway ponds and photobioreactor	5	2[10]	Lec	MCQ	1,2,5,6
3	MACROALGAE					
3.1	Marine macroalgae: Morphology, life history and mass cultivation of <i>Gracilaria</i>	4	3[10]	Lec	Sem	7,8,9,10
3.2	<i>Sargassum</i>	5	3[10]	Lec	Sem	7,8,9,10
3.3	<i>Ulva</i>	3	3[10]	Lec	Sem	7,8,9,10
4	ECONOMIC IMPORTANCE					
4.1	Polysaccharides: agar	3	4[5]	Lec/Sp	GD	1,5,7,8
4.2	carrageen, alginate	5	4[5]	Lec/Sp	GD	1,5,7,8
4.3	economic importance - seaweed as food, feed	3	4[5]	Lec/Sp	GD	1,5,7,8
4.4	Seaweed Liquid Fertilizer (SLF)	3	4[5]	Lec/Sp	GD	1,5,7,8
5	SEAWEEDES					
5.1	Role of seaweeds in aquaculture	3	5[40]	Lec/Sp	GD	7,8,9,10
5.2	Environment Impact Assessment of algal cultivation.	3	5[40]	Lec/Sp	GD	7,8,9,10

References

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 - Sharma, O.P. 1990. Text Book of Algae Tata McGraw Hill Publishing Co., Ltd., New Delhi.
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 - Chapman, V.J. and Chapman, D.J., 1973. The Algae. 2nd Ed. ELBS & MacMillan, 498 pp.,
 - Fritsch F.E. 1935. The Structure and Reproduction of Algae 1945. Cambridge University Press, U.K. Vol. I-791 pp., Vol. II-939 pp.,
 - Round, F.E. 1973. Biology of the Algae. 2nd Ed. Edward Arnold, London. 278 pp.,
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Course Title: CCE- 2 Cell Biology, Genetics & Plant Breeding		
Course type: Theory		
Subject Code: 23GB53		
Total hours: 90 Hours/Week: 6 [Th.: 6(Lecture 4+Turotial 2)] Credits: 4		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To enable students to gain insights into cell wall organization and its functions.
- To familiarize with various cell organelles and their functions.
- To gain knowledge in classical genetics.
- To know about sex linked inheritance.
- To have knowledge about plant breeding techniques for crop improvement.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Enumerate the structure and functions of cells, cellular structures and organelles.	3[20]	1, 2, 8	R, E	F, M
CLO2	Explain about cell cycle, cell division and laws of inheritance with suitable examples.	3[20]	1, 2, 8	R, E	F, C, M

CLO3	Elucidate concepts of sex determination and sex linked inheritance.	3[20]	1, 2, 8	U, An, E	C, M, P
CLO4	Analyze the importance of genes interactions at population and evolutionary levels.	3[20]	1, 2, 8	An, E	F, M, C
CLO5	Develop conceptual understanding of plant genetic resources, plant breeding, gene bank and gene pool.	3[20]	1, 2, 8	U, E	F, M, P

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	CELL: THE UNIT OF LIFE					
1.1	Differences between Prokaryotic cell and Eukaryotic cell.	2	1[20]	Lec/S p	GD	1,6,9
1.2	A typical plant cell structure. Cell boundaries - cell wall - middle lamella, primary wall, secondary wall	3	1[20]	Lec/S p	GD	1,6,9
1.3	Structure, chemistry and functions of cell wall, pits- (simple and bordered), Plasmodesmata	2	1[20]	Lec/S p	GD	1,6,9
1.4	Plasma membrane - structure (fluid mosaic model) functions.	2	1[20]	Lec/S p	GD	1,6,9
1.5	Properties of Cytoplasm - endocytosis and exocytosis.	4	1[20]	Lec	Sem	1,6,9
2	CELL ORGANELLES					
2.1	Structure and functions of Endoplasmic reticulum, Ribosomes,	3	1[20]	Lec	Sem	1,6,10
2.2	Mitochondria, and Chloroplast	3	1[20]	Lec	Sem	1,6,10
2.3	Ultrastructure and functions of Nucleus, nuclear envelope, nuclear pore complex and nucleolus.	2	1[20]	Lec	Sem	1,6,10
2.4	Chromosome structure - Euchromatin, heterochromatin.	2	1[20]	Lec	MCQ	1,6,10
2.5	Cell cycle, Cell division, Mitosis and Meiosis- their significance.	2	2[100]	Lec	MCQ	1,6,10
3	GENETICS					

3.1	Mendelian genetics – monohybrid, dihybrid crosses.	3	3[10]	Lec	Sem	2,7
3.2	Laws of Mendel	2	3[10]	Lec	Sem	2,7
3.3	Reciprocal cross - Back cross and Test cross.	2	3[10]	Lec/S p	Sem	2,7
3.4	Incomplete dominance - <i>Mirabilis jalapa</i> .	2	3[10]	Lec	Sem	2,7
3.5	Interaction of factors – Complementary genes, Supplementary genes, inhibitory genes, epistasis (dominant and recessive), and multiple alleles.	3	3[10]	Lec	Sem	2,7
3.6	Multiple alleles (self sterility in <i>Nicotiana</i>).	2	3[10]	Lec	Sem	2,7
3.7	Linkage and Crossing over.	2	3[10]	Lec	Sem	2,7
4	GENETICS					
4.1	Sex linked inheritance – Haemophilia and colour blindness.	2	4[20]	Lec	MCQ	2,6,7
4.2	Polyploidy types and significance. Mutation-types and significance.	2	4[20]	Lec	MCQ	2,6,7
4.3	Chromosomal aberration – addition, deletion, inversion, duplication and translocation.	2	4[20]	Lec	MCQ	2,6,7
4.4	Maternal inheritance – Plastid Inheritance in <i>Mirabilis jalapa</i> .	2	4[20]	Lec	MCQ	2,6,7
4.5	Population genetics – Hardy-Weinberg principle.	2	4[20]	Lec	MCQ	2,6,7
5	PLANT BREEDING					
5.1	Principles involved in plant breeding. Plant introduction and acclimatization.	2	5[25]	Lec	MCQ	1,4,5,10
5.2	Methods of crop improvement: selection (mass, pure line and clonal), hybridization techniques.	2	5[25]	Lec	MCQ	1,4,5,10
5.3	Heterosis – Interspecific and intergeneric, causes and effects.	2	5[25]	Lec	MCQ	1,4,5,10
5.4	Hybrid vigour. Mutation in plant breeding, polyploidy in plant breeding and its applications.	3	5[25]	Lec	MCQ	1,4,5,10

Reference texts

1. Verma, P.S and V.K. Agarwal. 2002. Cytology. S. Chand & Co. Ltd., New Delhi-55.
2. Sinnott, EW., Dunn, L.L and Dobzhansky, T. 1997. Principles of Genetics, Tata Mc Graw Hill Publishing Co. New Delhi.
3. Cohn.N.S.1979, Elements of Cytology, Freeman Book Co.
4. Singh, R. J. 2016. Plant Cytogenetics, 3rd Edition. CRC Press, Boca Raton, Florida, USA.

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6. De Robertis and De Robertis. 1990. Cell and Molecular Biology, Saunders College, Philadelphia, USA.
7. Gardner, E.J., Simmons, M.J and Snustad, D. 1991. Principles of Genetics, John Wiley Sons Inc., 8th Edn., New York.
8. Hackett, P.B., Fuchs, J.A and Messing, J.W. 1988. An Introduction to Recombinant. DNA Techniques: Basic Experiments in Gene Manipulation. The Benjamin/Cummings Publishing Co. Inc., Menlo Park, California.
9. Cooper, G.M and Hausman, R.E. 2009. The Cell: A Molecular Approach. 5th edition. ASM Press & Sunderland, Washington, D.C. Sinauer Associates, MA.
10. Becker, W.M., Kleinsmith, L.J., Hardin. J and Bertoni, G. P. 2009. The World of the Cell. 7th edition. Pearson Benjamin Cummings Publishing, San Francisco.
11. Klug, W.S., Cummings, M.R., Spencer, C.A. 2009. Concepts of Genetics. 9th edition. Benjamin Cummings, U.S.A.
12. Lewin. 2007. Gene IX. Jones and Barlett Pub. ISBN. O 7637 52223.
13. Strickberger, M.W. 1999. Genetics. Prentice Hall of India Pvt Ltd, New Delhi

Course Title: Skill Enhancement Course (SEC)- 3 Botanical garden & Landscaping		
Course type: Theory		
Subject Code: 23GBS3		
Total hours: 30 Hours/Week: 2 [Th.: 2(Lecture 2] Credits: 1		
Pass-out Policy: Min. Contact Hours: 18		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselvashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To know about the fundamental concepts of gardening and landscaping.
- To provide an overview of various gardening styles and its scope in recreation and bio-aesthetic planning.
- To illustrate the significance of garden adornments and propagation structures.
- To inculcate entrepreneurial skills in students for creative landscaping design using CAD software.
- To create the design outdoor and indoor gardens and inculcate entrepreneurial skills for landscaping.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Recognize fundamental concepts of gardening and landscaping.	7[20]	2, 5	R, An	F
CLO2	Explain about significance of garden adornments and propagation structures.	7[20]	2, 7	Ap, U	F, C
CLO3	Apply techniques of landscaping for aesthetic purposes and gardening for recreation.	7[20]	2, 5	Ap, C	P, M
CLO4	Distinguish between formal, informal and free style gardens and their applications.	7[20]	2, 5	Ap, C, E	F
CLO5	Develop and design outdoor and indoor gardens and inculcate entrepreneurial skills for landscaping.	7[20]	2, 7	C, Ap	C, M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	GARDENING					
1.1	Principles of gardening, garden components, adornments, lawn making.	2	1[50]	Lec	Ess	1,6,9
1.2	Methods of designing rockery, water garden, etc.	2	4[30]	Lec	MCQ	1,6,9
1.3	Special types of gardens, their walk-paths, bridges, constructed features.	2	4[25]	Lec	Ess	1,6,9
1.4	Greenhouse. Special types of gardens, trees, their design, values in landscaping, propagation, planting shrubs and herbaceous perennials	2	4[25]	Lec	MCQ	1,6,9
1.5	Importance, design values, propagation, plating, climbers and creepers, palms, ferns, grasses and cacti succulents.	2	2[100]	Lec/ Sp	GD	1,6,9
2	FLOWER ARRANGEMENT					
2.1	Flower arrangement: importance, production EXPERIMENTS and cultural operations, constraints, postharvest practices.	2	2[10]	Lec	Ess	1,6,10

2.2	Bioaesthetic planning, definition, need, round country planning, urban planning and planting avenues, schools, villages.	2	2[10]	Lec	Sem	1,6,10
2.3	Beautifying railway stations, dam sites, hydroelectric stations, colonies, river banks, planting material for play grounds.	1	5[10]	Lec/ Sp	GD	1,6,10
3	TYPES OF GARDENS					
3.1	Vertical gardens, roof gardens	2	3[20]	Lec	Ess	2,7
3.2	Culture of bonsai, art of making bonsai. Parks and public gardens.	2	3[20]	Lec	Sem	2,7
3.3	Landscape designs	1	3[20]	Lec/ Sp	GD	2,7
3.4	Styles of garden, formal, informal and free style gardens, types of gardens.	1	3[20]	Lec	Ess	2,7
3.5	Urban landscaping, Landscaping for specific situations, institutions, industries, residents, hospitals, roadsides, traffic islands, damsites, IT parks, corporate.	2	3[20]	Lec	MCQ	2,7
4	SPECIAL TYPES OF GARDEN AND BIOAESTHETICS					
4.1	Establishment and maintenance, special types of gardens.	1	5[40]	Lec	Ess	2,6,7
4.2	Bio-aesthetic planning, eco tourism, theme parks, indoor gardening, therapeutic gardening, non-plant components, water scaping, xeriscaping, hardscaping.	2	5[40]	Lec	MCQ	2,6,7
5	MANURES					
5.1	Manures: organic and inorganic, advantages and disadvantages.	2	1[40]	Lec	Ess	1,4,5,10
5.2	Composting – vermicomposting (methods and application).	2	1[30]	Lec	MCQ	1,4,5,10

Reference texts

1. Acquaah, J. 2009. Horticulture – principles and practices, 4th edition, PHI learning Pvt. Ltd.
2. Rao Manibhushan K. 1991. Textbook of horticulture. MaC Millan India Ltd.
3. Gangulee H. C. and Kar A. K. 2004. College Botany Vol II, New Central Book Agency
4. Sharma V. K. 1999. Encyclopaedia of Practical Horticulture, Vol I –IV, Deep And Deep Publ. Pvt. Ltd.
5. Singh, J. 2018. Fundamentals of Horticulture. Kalyani Publishers.
6. Berry, F. and Kress, J. 1991. Heliconia: An Identification Guide . Smithsonian Books.
7. Butts, E. and Stensson, K. 2012. Sheridan Nurseries: One hundred years of People, Plans, and Plants. Dundurn Group Ltd.
8. Russell, T. 2012. Nature Guide: Trees: The world in your hands(Nature Guides).
9. Acquaah, J. 2009. Horticulture – principles and practices, 4th edition, PHI learning Pvt. Ltd.
10. Edment Senn Andrews. 1994. Fundamentals of Horticulture. Tata. McGraw Hill Publishing Co., Ltd., Delhi.

Course Title: Value Added Course III Indian Knowledge System and Human Rights		
Course type: Theory		
Subject Code: 23SE31		
Total hours: 30 Hours/Week: 2 Credits: 1		
Pass-out Policy: Min. Contact Hours: 18		
Total Score %:100 Int.: 25 Ext.: 75		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Dr. G. Anish S. Georshia Assistant Professor of English 9788822491 anishgeorshia@scottchristian.org	Expert 1 Dr. Sidney Shirly Associate Professor of English 9488210754 drsidneyshirly@gmail.com	Expert 2 Dr. SanthoshaKumari Assistant Professor of History 9489001312 santhoshakumarai@gmail.com

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	understandthe diverse cultural heritage of India.	3(10), 8(10)	1, 5, 8, 9	U	F
CLO2	analyze the historical evolution of Indian society and the conservation of traditional knowledge in modern India.	6(8), 8(12)	2, 5, 9	An	P
CLO3	understandbasic concepts and principles in Indian astrology and astronomy.	3(13), 8(7)	1, 5, 8, 9	C	C
CLO4	apply principles ofAyurveda, Siddha and Unani to achieve a balanced lifestyle.	3(5), 7(4), 8(4), 9(7)	1, 2, 4, 5, 8, 9	Ap	P
CLO5	analyze the duties and constitutional responsibilities of Indian citizens and human rights in India.	3(5), 8(5), 10(10)	1, 2, 5, 9, 10	E	M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	INTRODUCTION					
1.1	Overview of India's diversity, languages, religions, and regional variations	2	1[33]	AW	CA	2
1.2	Historical background and evolution of Indian society	2	1[33]	Ess	ST	2
1.3	Conservation and Revival of Traditional Knowledge in Modern India	2	1[34]	Rev	OT	2
2	INDIAN CULTURE					
2.1	Traditional Arts and Crafts of India	2	2[33]	TPS	OBT	2
2.2	Festivals and Celebrations in Indian Culture	1	2[17]	PT	HoA	2
2.3	Classical Dance and Music Forms of India	1	2[17]	GT	OBT	1
2.4	Culinary Traditions and Indian fashion	2	2[33]	CW	HoA	1
3	INDIAN ASTROLOGY AND ASTRONOMY					
3.1	Basic Concepts and Principles in Indian Astrology	2	3[33]	GD	SA	1
3.2	Zodiac Signs, Influence of Planetary Positions, Birth Charts and Horoscopes	1	3[17]	KW L	Qui	1
3.3	Applications and Relevance of Indian Astronomy	1	3[17]	Soc	ST	2
3.4	Ancient Indian Mathematics and Development of number systems	2	3[33]	BS	CT	2
4	INDIAN AYURVEDA, SIDDHA AND UNANI					
4.1	Introduction to Ayurveda: Principles and Doshas	2	4[33]	Rev	OBT	2
4.2	Key Concepts of Ayurvedic Medicine	2	4[33]	CW	MC Q	2
4.3	Importance of Siddha and Unani	2	4[34]	Rep	Qui	2
5	HUMAN RIGHTS IN INDIA					

5.1	Human Rights: Definition and Evolution	1	5[17]	Lec	Ess	2
5.2	Fundamental Human Rights and Constitutional Values in the Indian Constitution	1	5[17]	KW L	HoA	2
5.3	Protection of Civil Liberties and Freedoms – Safeguarding Social and Economic Rights	2	5[33]	Sem	OT	2
5.4	Women’s and Children’s Rights and Rights of Minorities	2	5[33]	GT	HrA	2

Reference Books:

1. Bhatia, Tej K. “Indian Culture and Heritage.” New Delhi, PrabhatPrakashan, 2018.
2. Thapar, Romila. “The Penguin History of Early India: From the Origins to AD 1300.” Penguin Books, 2003.
3. Choudhry, G.K. “How to Judge a Horoscope: Volume II.” New Delhi, Sagar Publications, 2002.
4. Sarma, P.S. “Astronomy in India: A Historical Perspective.” Springer, 2014.
5. Pingree, David. “Jyotihśāstra: Astral and Mathematical Literature.” Otto HarrassowitzVerlag, 1981.
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7. Frawley, David, and Vasant Lad. “The Yoga of Herbs: An Ayurvedic Guide to Herbal Medicine.” Lotus Press, 2001.
8. Gupta, L. C. “Fundamentals of Ayurvedic Medicine.” Chaukhamba Sanskrit Pratishtan, 2002.
9. Sahni, Julie. “Classic Indian Cooking.” William Morrow Cookbooks, 1980.
10. Harle, J.C. “The Art and Architecture of the Indian Subcontinent.” Yale University Press, 1994.
11. Craven, Roy C. “Indian Art: A Concise History.” Thames & Hudson, 2010.
12. Anand, Meenakshi, and A. G. Noorani. “Human Rights in India: Historical, Social, and Political Perspectives.” Oxford University Press, 2017.
13. Kapur, Ratna. “Gender, Alterity and Human Rights: Freedom in a Fishbowl.” Routledge, 2017.

Course Title: M- 2 Fermentation Technology		
Course type: Theory		
Subject Code: 23GBS6		
Total hours: 30 Hours/Week: 2 [Th.: 2(Lecture 2)] Credits: 2		
Pass-out Policy: Min. Contact Hours: 18		
Total Score %: 100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 ypselvashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To appreciate the significance of microbes synthesizing fermented products.
- To gain insights on safety and quality control in large scale production of fermentative products.
- To design and operation of industrial practices in mass production of fermented products.
- To know about the various fermentation technology.
- To learn about the bioproduct recovery.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Enumerate the significance of industrially useful microbes.	5[20]	2, 7	An, E	F, C, M
CLO2	Explain the design and operation of industrial practices in mass production of fermented products.	5[20]	2, 7	U, An, E	F, C
CLO3	Explain the process of maintenance and preservation of microorganisms.	5[20]	2, 7	E	F, C
CLO4	Analyze the various aspects of the fermentation technology and apply for fermentative production.	5[20]	1, 2, 10	An, E	F, C, M
CLO5	Validate the experimental techniques for microbial production of enzymes: amylase and protease, bio product recover.	5[20]	2, 7	An	C, M, P

Module	Course Description					
	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference	
1	MICROBIAL CULTURE					
1.1	Preparation of microbial culture	2	1[10]	Lec	Ess	1,2,5,6
1.2	Preparation and sterilization of fermentation media.	2	1[30]	Lec	Sem	1,2,5,6,7,8,9,10,12
1.3	Isolation and improvement of industrially important microorganisms.	2	1[30]	Lec/Sp	GD	3,5
2	MICROBIAL GROWTH AND PRODUCT FORMATION					
2.1	Maintenance and preservation of microorganisms	2	3[20]	Lec	Ess	1,2,5,6
2.2	Metabolic regulations and overproduction of metabolites.	2	3[10]	Lec	MCQ	1,2,5,6
2.3	Kinetics of microbial growth and product formation.	2	3[10]	Lec	MCQ	1,2,5,6
3	FERMENTATION					

3.1	Scope and opportunities of fermentation technology.	2	4[30]	Lec	Sem	7,8,9,10,12
3.2	Principles of fermentation: Submerged, solid state	2	4[30]	Lec	Sem	7,8,9,10,12
3.3	Batch, fed-batch and continuous culture.	2	4[30]	Lec	Sem	7,8,9,10,12
4	FERMENTATIVE PRODUCTION					
4.1	Fermentative production of vinegar, alcohol (ethanol, wine, beer)	2	4[25]	Lec/Sp	GD	7,8,9,10,12,13
4.2	Acids (citric acid and gluconic acid)	2	4[25]	Lec/Sp	GD	7,8,9,10,12,13
4.3	Amino acids (lysine and glutamic acid)	2	4[25]	Lec/Sp	GD	7,8,9,10,12,13
4.4	Antibiotics (penicillin and streptomycin).	2	4[25]	Lec/Sp	GD	7,8,9,10,12,13
5	MICROBIAL PRODUCTION OF ENZYMES					
5.1	Microbial production of enzymes: Amylase and Protease.	2	5[50]	Lec/Sp	GD	7,8,9,10,12,13
5.2	Bioproduct recovery.	2	5[50]	Lec/Sp	GD	7,8,9,10,12,13

References

1. Waites M.J. 2008. Industrial Microbiology: An Introduction, 7th Edition, Blackwell Science, London, UK.
2. Prescott S.C., Dunn C.G., Reed G. 1982. Prescott & Dunn's Industrial Microbiology, 4th Edition, AVI Pub. Co., USA.
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5. Waites M.J., Morgan N.L., Rockey J.S. and Higton G. 2001. Industrial Microbiology: An Introduction. 1st Edition, Blackwell Science, London, UK.
6. Pelczar M.J., Chan E.C.S. and Krieg N.R. 2003. Microbiology. 5th Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi.
7. Peter F Stanbury, Allan Whitaker, Stephen J Hall. 2016. Principles of Fermentation Technology. Butterworth-Heinemann Press. UK.
8. Peppler, H. J. D. Perlman. 2014. Microbial Technology: Fermentation Technology. Academic Press.
9. T. El-Mansi, C. Bryce, Arnold L. Demain, A.R. Allman. Fermentation Microbiology and Biotechnology. Second Edition. 2006. CRC Press, USA.
10. Hongzhang Chen. Modern Solid State Fermentation: Theory and Practice. 2013. Springer Press, Germany.
11. John E. Smith. Biotechnology. 2009. Cambridge University Press. UK.
12. Celeste M. Todaro, Henry C. Vogel. 2014. Fermentation and Biochemical Engineering Handbook. William Andrew Press. Norwich, NY.
13. Lancini, G. R. Lorenzetti. 2014. Biotechnology of Antibiotics and other Bioactive Microbial Metabolites. Springer publications, Germany.

Semester VI
(NCrF Level 5.5)

List of Courses	Name	Credits	No. of Hours
Core Course (CC - 10)	Plant Anatomy & Embryology	5	6
Core Course (CC - 11)	Plant Physiology & Plant Biochemistry	5	6
Core Course Elective (CCE - 3)	Plant Biotechnology & Molecular Biology	4	6
Core Course Elective (CCE - 4)	Entrepreneurial Botany	4	6
Skill Enhancement Course (SEC- 4)	Herbal technology	1	2
Value Added Course (VAC IV)	VAC IV- Environment and Sustainable Development	1	2
M- 3	Botany for competitive examinations	2	2
	Total	22	30

Course Title: Plant Anatomy & Embryology (Core Course - 10)		
Course type: Theory		
Subject Code: 23GB52		
Total hours: 90 Hours/Week: 6 [Th.: 6(Lecture 4+Tutorial 2)] Credits: 5		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator J. Lohidas 9443483496 lohiscott@yahoo.co.in	Expert 1 S. Jeeva 9952202112 solomonjeeva@gmail.com	Expert 2 Dr. S. Karuppusamy (Assistant Professor) The Madura College, Madurai 8838841004, ksamytaxonomy@gmail.com

Objectives: This course enables the students to

- To know fundamental concepts of plant anatomy and embryology.
- To understand the internal tissue organization of various plant organs.
- To differentiate normal and abnormal secondary growth.
- To comprehend the structural organization of flower with relevance to the process of pollination and fertilization.
- To know embryology of plants.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Relate to the fundamental concepts of plant anatomy and embryology.	2[20]	1, 2	An, Ap	F, C
CLO2	Describe the internal tissue organization of various plant organs.	2[20]	1, 2	R, An, E	F, M
CLO3	Elucidate the stages of normal and abnormal secondary growth.	2[20]	1, 2	An, E	F, M, P
CLO4	Compare the structural organization of flower in relation to the process of pollination and fertilization.	2[20]	1, 2	An, E	M, P;
CLO5	Access the various anatomical adaptations in plants.	2[20]	1, 2	R, An, E	M, C, P

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	PLANT CELLS					
1.1	Cell wall - structure, and function	3	2[10]	Lec	Ess	3,6,10,13,14,15,16
1.2	Tissues - Definition, types - Simple tissue system - parenchyma, collenchyma and sclerenchyma (fibers and sclereids).	5	2[30]	Lec	Sem	3,6,10,13,14,15,16
1.3	Complex tissue system - xylem and phloem.	2	2[30]	Lec	GD	3,6,10,13,14,15,16
1.4	Meristem: definition, structure, function and classification.	3	2[40]	Lec	Sem	3,6,10,13,14,15,16
1.5	Apical organization and theories: Apical cell theory, Histogen theory and Tunica-Corpus theory. Root apex: Histogen theory and Korper-Kappe theory.	2	2[20]	Lec	Ass	3,6,10,13,14,15,16,4
2	DICOT AND MONOCOT ANATOMY - I					
2.1	Primary structure of root and stem (Dicot and monocot).	2	2[20]	Lec	Ess	8
2.2	Normal secondary growth in dicot stem and root.	3	2[10]	Lec	MC Q	8

2.3	Epidermal tissue system: epidermis, cuticle, trichome, bulliform cells, periderm and silica cells.	2	2[10]	Lec	MC Q	3,6,10,13,1 4,15,16
2.4	Ground tissue systems: cortex, endodermis, pericycle, pith and pith rays.	3	2[10]	Lec	Ess	3,6,10,13,1 4,15,16
2.5	Vascular tissue systems: different types of vascular bundles and their arrangement in root and stem.	2	2[20]	Lec	Ass	3,6,10,13,1 4,15,16
3	DICOT AND MONOCOT ANATOMY - II					
3.1	Nodal anatomy: leaf trace, leaf gap, types (unilacunar, trilacunar and multilacunar).	2	3[10]	Lec	Sem	3,6,10,13,1 4,15,16
3.2	Anomalous secondary growth of stem - <i>Boerhaavia</i> and <i>Dracaena</i> .	2	3[10]	Lec	Sem	3,6,10,13,1 4,15,16
3.3	Leaf - anatomy of dicot and monocot leaf.	2	3[10]	Lec	Sem	3,6,10,13,1 4,15,16
3.4	Periderm structure: Phellem, Phellogen, Phelloderm and lenticels.	2	3[10]	Lec	Sem	3,6,10,13,1 4,15,16
3.5	Stomatal types	2	3[10]	Lec	Ass	3,6,10,13,1 4,15,16
4	EMBRYOLOGY - I					
4.1	Structure of anther - development of male gametophyte.	2	4[20]	Lec	GD	1,2,5,7,11
4.2	Ovule: Structure of mature ovule, types of ovules	2	4[20]	Lec	GD	1,2,5,7,11
4.3	Female gametophyte – megasporogenesis (monosporic, bisporic and tetrasporic)	3	4[20]	Lec	GD	1,2,5,7,11
4.4	Development of female gametophyte (<i>Polygonum</i> type).	3	4[20]	Lec	GD	1,2,5,7,11
4.5	Organization and ultra-structure of mature embryo sac.	3	4[20]	Lec	GD	1,2,5,7,11
5	EMBRYOLOGY - II					
5.1	Double fertilization and triple fusion, significance.	3	4[20]	Lec	GD	1,2,5,7,11
5.2	Endosperm and its types - free nuclear, cellular, helobial, endosperm haustoria.	3	4[20]	Lec	GD	1,2,5,7,11
5.3	Polyembryony - types, apomixis.	3	4[20]	Lec	GD	1,2,5,7,11
5.4	Parthenogenesis and parthenocarpy.	1	4[20]	Lec	GD	1,2,5,7,11

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Course Title: Plant Physiology & Plant Biochemistry (Core Course 11)		
Course type: Theory		
Subject Code: 23GB62		
Total hours: 90 Hours/Week: 6 [Th.: (Lecture 4 + Tutorial 2)] Credits: 5		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator M. Reginald Appavoo 9443281255 regihelen7@yahoo.co.uk	Expert 1 J. Irene Wilsy 8903539741 irenewilsy@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- relate to water relation of plants with respect to various physiological phenomenon.
- know the pathways of photosynthesis.
- familiarize with respiration and nitrogen metabolism.
- know about plant growth regulators.
- familiarize with plant biochemistry.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Relate to water relation of plants with respect to various	3[20]	1, 8	R, U	C

	physiological phenomenon.				
CLO2	Explain the process and significance of photosynthesis and respiration.	3[20]	1, 8	E	F, M
CLO3	Elucidate properties of nutrients and their deficiency symptoms in plants.	3[20]	1, 8	U, E	F, C, M
CLO4	Analyze the biological role of plant growth regulators, carbohydrates, proteins, lipids, nucleic acids and enzymes.	3[20]	1, 8	An, E	F, M
CLO5	Decipher the phenomenon of seed dormancy and germination in plants.	3[20]	1, 8	An	F, M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	WATER RELATIONS					
1.1	Properties of water-imbibition, diffusion, osmosis and plasmolysis	4	1[20]	Lec	Ess	1,2,5
1.2	Ascent of sap, mechanism of water absorption – Active and passive, apoplast and symplast pathway	4	1[20]	Lec	MCQ	1,2,5
1.3	Transpiration – types and factors affecting transpiration and significance	4	1[20]	Lec	MCQ	1,2,5
1.4	Opening and closing of stomata - mechanisms and theories of transpiration.	4	1[20]	Lec	MCQ	1,2,5
2	PHOTOSYNTHESIS					
2.1	Radiant energy, Photosynthetic unit, photosynthetic pigments and their role. Photo systems	4	2[10]	Lec	Sem	3,5,18
2.2	Light reaction, electron transport system in the chloroplast	4	2[10]	Lec	Sem	3,5,18
2.3	Dark reaction - C ₃ cycle, C ₄ cycle, CAM pathway, Photorespiration	4	2[20]	Lec	Sem	3,5,18
3	RESPIRATION AND NITROGEN METABOLISM					
3.1	Respiratory Quotient, Aerobic respiration - Glycolysis, Krebs's Cycle	4	2[20]	Lec	Sem	3,8
3.2	Electron Transport System, Oxidative phosphorylation. Anaerobic - fermentation.	4	2[20]	Lec	Sem	3,8
3.3	Biological nitrogen fixation, nitrogen cycle	4	2[20]	Lec	Sem	3,8
4	GROWTH & STRESS PHYSIOLOGY					

4.1	Pant growth regulators, mode of action and practical applications of auxins, gibberellins, cytokinins, ethylene and abscisic acid	4	3[30]	Lec	MCQ	8,13
4.2	Photo morphogenesis – photoperiodism – vernalization – dormancy - phytochromes	4	3[30]	Lec	MCQ	8,13
4.3	Concepts of plant responses to stresses (water, salt, temperature).	4	3[30]	Lec	MCQ	8,13
5	PLANT BIOCHEMISTRY					
5.1	Classification, properties and biological role of - carbohydrates	4	4[30]	Lec	MCQ	6,7,9
5.2	Proteins, lipids and nucleic acids	2	4[30]	Lec	MCQ	6,7,9
5.3	Enzyme – properties – classification – nomenclature of enzymes – mode of enzyme action – factors influencing enzyme action.	2	4[30]	Lec	MCQ	6,7,9

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Course Title: CCE- 3 Plant Biotechnology & Molecular Biology		
Course type: Theory		
Subject Code: 23GB63		
Total hours: 90 Hours/Week: 6 [Th.: 6 (Lecture 4+Tutorial 2)] Credits: 4		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %: 100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfvashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To know various aspects of biotechnology
- To know the concept and techniques of plant tissue culture.
- To familiarize with the gene transfer techniques.
- To know about DNA replication and repair.
- To familiarize with gene regulation.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Recognize the fundamentals concepts of plant biotechnology and genetic engineering.	3[20]	1, 2, 8	R, U	F, C
CLO2	Explain various steps in transcription, protein synthesis and protein modification.	3[20]	1, 8	R, U, An	F
CLO3	Elucidate gene cloning and evaluate different methods of gene transfer.	3[20]	1, 8	An, E	F, C
CLO4	Analyze the major concerns and applications of transgenic technology.	3[20]	1, 8	An	C, M, P
CLO5	Develop their competency on different types of plant tissue culture.	3[20]	1, 2, 8	U, An, Ap	M, P

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	GENETIC MATERIALS					
1.1	Nature and function of genetic materials.	2	1[20]	Lec	Ess	1,2,7
1.2	Nucleic acid – base pairing – Chargaff’s rule	3	1[20]	Lec	MCQ	1,2,7
1.3	DNA – structure. Types, denaturation - renaturation	2	1[20]	Lec	MCQ	1,2,7
1.4	RNA structure and types	2	1[20]	Lec	MCQ	1,2,7
1.5	DNA repair mechanism.	4	1[20]	Lec	MCQ	1,2,7
2	GENE CODE					
2.1	Genetic code – characters – codons and anticodons.	3	2[20]	Lec	Ess	1,7
2.2	Protein synthesis - Transcription – post transcriptional changes, translation.	3	2[20]	Lec	MCQ	1,7
2.3	Enzymology – RNA polymerase, DNA polymerase	2	2[20]	Lec	MCQ	1,7
2.4	S1 nucleases	2	2[20]	Lec	MCQ	1,7
2.5	Gene regulation in Prokaryotes – <i>lac</i> operon and <i>trp</i> operon.	2	2[20]	Lec	MCQ	1,7
3	RECOMBINANT TECHNOLOGY					
3.1	Vectors - plasmid, bacteriophage, viral vectors, cosmids.	3	3[20]	Lec	Ess	7,10
3.2	Restriction enzymes.	2	3[20]	Lec	MCQ	7,10
3.3	Recombinant DNA technology	2	3[20]	Lec	MCQ	7,10
3.4	Gene transfer – indirect method - <i>Agrobacterium</i> mediated gene transfer. Direct method – Biolistic method	2	3[20]	Lec	MCQ	7,10,

3.5	Transgenic plants - insect resistance (BT cotton), Pros and cons of GM food.	3	3[20]	Lec	MCQ	7,10
4	BIOTECHNOLOGY					
4.1	Definition, history and scope.	1	4[40]	Lec	Sem	6,7
4.2	Application of plant biotechnology in various fields.	1	4[40]	Lec	Sem	6,7
4.3	Agriculture - Biofertilizers, Biopesticides.	2	4[20]	Lec	Sem	6,7
4.4	Medicine – Antibiotics (Penicillin) Recombinant vaccines and insulin.	2	4[40]	Lec	Sem	6,7
4.5	Environment – Bioremediation and Biofuel.	2	4[40]	Lec	Sem	6,7
4.6	Industry – ethanol production (yeast), citric acid production (<i>Aspergillus niger</i>) and Proteases production (<i>Bacillus spp</i>).	2	4[40]	Lec	Sem	6,7
5	PLANT TISSUE CULTURE					
5.1	Introduction, scope and importance, concept of totipotency aseptic techniques in plant tissue culture.	3	5[40]	Lec	Sem	1,4,5,10
5.2	Composition of media (MS), sterilization, explant preparation and inoculation.	5	5[30]	Lec	Sem	1,4,5,10
5.3	Callus induction and micropropagation. Synthetic seed technology.	5	5[30]	Lec	MCQ	1,4,5,10

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Course Title: CCE – 4 Entrepreneurial Botany		
Course type: Theory		
Subject Code: 23GBEB		
Total hours: 90 Hours/Week: 6 [Th.: 2] Credits: 4		
Pass-out Policy: Min. Contact Hours: 54		
Total Score %:100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To enable students to develop innovative ideas to exploit the economically useful plant products for commercial purposes.
- To inculcate entrepreneurial values to start a new business. To enlighten people about bioventure.
- To comprehend the molecular processes.
- To expose the students a fundamental of the various value added products.
- To introduce the entrepreneurial opportunities.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Recognize the significance of government agencies for entrepreneurship development.	8[20]	5, 9	An	C, M
CLO2	Explain about entrepreneurial values, risk assessment and solutions	8[20]	6, 10	An, E	F, C, M
CLO3	Make use of entrepreneurial opportunities.	8[20]	5, 6, 9, 10	U, An	F, M

CLO4	Analyze and decipher the significance of bioventure and value added products.	8[20]	5, 9	An, E	C, M
CLO5	Devise innovative methods for making value added products.	8[20]	5, 9	E	P, M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	INTRODUCTION					
1.1	Need - definition and concept	3	1[30]	Lec/Sp	GD	1,2,3
1.2	Types and characterization	3	1[30]	Lec/Sp	GD	1,2,3
1.3	Entrepreneurial values- motivation and barriers-entrepreneurship as innovation	3	1[40]	Lec/Sp	GD	1,2,3
1.4	Risk assessment and solutions	3	5[40]	Lec/Sp	GD	1,2,3
2	BIOVENTURE					
2.1	Industry - overview of <i>Spirulina</i> , <i>Pleurotus</i> , Natural dyes, Banana fibers, Wine, Hydroponics	4	2[10]	Lec	Sem	3,4,5
2.2	Drumstick and coconut - Straight Vegetable Oil (SVO) and Pure Plant Oil (PPO)	4	3[25]	Lec	Sem	3,4,5
2.3	Methods and marketing - fresh and dry flowers for aesthetics.	4	3[25]	Lec	Sem	3,4,5
3	VALUE ADDED PRODUCTS:					
3.1	Canning of fruits - process and equipment, fruit and vegetable based products (squash) - ready to serve (RTS) (syrup, pulp, paste, ketchup, soup, vegetable sauces, jam and jellies)	4	3[30]	Lec	Sem	1,2,8
3.2	Palmyrah Palm products, Perfumes from Rose/Jasmine	4	3[20]	Lec	Sem	1,2,8
3.3	Bamboo and cane based products, nutraceuticals, standards and quality management.	4		Lec	Sem	1,2,8
4	ORGANIZATIONS AND AGENCIES:					

4.1	TIIC, DIC, NABARD, MICROSTAT, DBT - case study - sarvodaya – SIDCO	5	4[50]	Lec	GD	1,2,8
4.2	Micro Small and Medium Enterprises – support structure for promoting entrepreneurship – various government schemes.	5	2[50]	Lec	GD	1,2,8
5	ENTREPRENEURIAL OPPORTUNITIES					
5.1	Understanding a market and assessment, selection of an enterprise, business planning, mobilization of resources	5	5[30]	Lec	Sem	3,5,7
5.2	Break Even Analysis, project proposal (guidelines, collection of information and preparation of project report),	5	5[30]	Lec	Sem	3,5,7
5.3	steps in filing patents, trademarks and copyright, Intellectual Property Rights, export and import license	4	5[30]	Lec	Sem	3,5,7

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1. Taneja, S. and Gupta, S.L. 2015. Entrepreneurship development, New venture creation, Galgeha publication company, New Delhi. ISSN: 2321-8916.
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Course Title: Skill Enhancement Course (SEC)- 4 Herbal Technology		
Course type: Theory		
Subject Code: 23GBS4		
Total hours: 30 Hours/Week: 2 [Th.: 2] Credits: 1		
Pass-out Policy: Min. Contact Hours: 18		
Total Score %: 100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 ypsolvashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To provide students with knowledge of herbal drug industry, the quality of raw material, and guidelines for quality maintenance.
- To gain an insight into the commercially important secondary products and significance of bioprospecting.
- To understand various plants based drugs used in ayurvedha, unani, homeopathy, siddha etc.
- To apply the knowledge to cultivate medical plants.
- To know the pharmacological importance of medicinal plants.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Define and describe the principle of cultivation of herbal products.	5[25]	1, 2, 7	An	F, C
CLO2	List the major herbs, their botanical name and chemical constituents.	5[25]	2, 7	An, E	F
CLO3	Apply techniques for monitoring drug adulteration through the biological testing.	5[25]	2, 7	An, Ap	C, P
CLO4	Analyze and decipher the significance of various methods of harvesting, drying and storage of medicinal herbs.	5[25]	1, 2, 7	An, E	C, M
CLO5	Develop the skills for cultivation of plants and their value added processing / storage	5[25]	1, 2, 7	C, An, Ap	M, P

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	HERBAL TECHNOLOGY					
1.1	Definition and scope; Herbal medicines: history and scope	2	1[40]	Lec	Ess	3,6,7,8
1.2	Traditional systems of medicine, and overview of AYUSH (Traditional Indian Systems of Medicine)	2	1[30]	Lec	Sem	3,6,7,8
1.3	Cultivation - harvesting - processing - storage of herbs and herbal products.	3	5[100]	Lec/Sp	GD	3,6,7,8
2	VALUE ADDED PLANT PRODUCTS					
2.1	Herbs and herbal products recognized in India; (specify any two).	2	2[50]	Lec	Ess	2,3,4
2.2	Major herbs used as herbal medicines, nutraceuticals, cosmetics and biopesticides, their Botanical names, plant parts used, major chemical constituents (specify any two for each).	3	2[50]	Lec	MCQ	2,3,4
3	PHARMACOGNOSY					
3.1	Systematic position, botany of the plant part used and active principles of the following herbs: Tulsi, Curcuma, Indian Gooseberry	3	4[10]	Lec	Sem	3,6,10
3.2	Catharanthus roseus, Withamnia somnifera, Centella asiatica.	2	4[10]	Lec	Sem	3,6,10
4	ANALYTICAL PHARMACOGNOSY					
4.1	Morphological and microscopic examination of herbs	2	4[3]	Lec/Sp	GD	1,2,5,7
4.2	Evaluation of drug adulteration - types, methods of drug evaluation	3	4[30]	Lec/Sp	GD	1,2,5,7
4.3	Biological testing of herbal drugs – Qualitative Phytochemical tests for secondary metabolites (alkaloids, flavonoids, steroids, triterpenoids, phenolic compounds) and their importance	3	4[30]	Lec/Sp		
5	CULTIVATION OF PLANTS AND THEIR VALUE ADDED PROCESSING					
5.1	Cultivation of Plants and their value added processing / storage / quality control for use in herbal formulations – Aloe gel,	2	5[20]	Lec/Sp	GD	2,5,7

5.2	Nilavembu kudi neer (<i>Andrographis paniculata</i>) and <i>Centella asiatica</i> (memory capsules).	3	4[20]	Lec/Sp	GD	2,5,7,10
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References

1. AYUSH (www.indianmedicine.nic.in). About the systems—An overview of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy. New Delhi: Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), Ministry and Family Welfare, Government of India.
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3. Sivarajan, V.V. and India, B. 1994. Ayurvedic Drugs and Their Plant Sources. Oxford & IBH Publishing Company, 1994 - Herbs - 570 pages.
4. Miller, L. and Miller, B. 2017. Ayurveda & Aromatherapy: The Earth Essential Guide to Ancient Wisdom and Modern Healing. Motilal Banarsidass; Fourth edition
5. Kokate, C.K. 2003. Practical Pharmacognosy. Vallabh Prakashan, Pune.
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7. Arber, Agnes. 1999. Herbal Plants and Drugs. Mangal Deep Publications, Jaipur.
8. Varzakas, T., Zakyntinos, G, and Francis Verpoort, F. 2016. Plant Food Residues as a Source of Nutraceuticals and Functional Foods. Foods 5: 88.
9. Aburjai, T. and Natsheh, F.M. 2003. Plants Used in Cosmetics. Phytotherapy Research 17 :987-1000.
10. Patri, F. and Silano, V. 2002. Plants in cosmetics: Plants and plant preparations used as ingredients for cosmetic products - Volume 1. ISBN 978-92-871-8474-0, pp 218.

Course Title: Value Added Course IV Environment and Sustainable Development		
Course type: Theory		
Subject Code: 23SE41		
Total hours: 30 Hours/Week: 2 Credits: 1		
Pass-out Policy: Min. Contact Hours: 18		
Total Score %: 100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator Dr. JebittaM Shirlin Assistant Professor Department of Zoology Mobile: 9578380560	Expert 1 Dr.V. Robin Perinba Smith Head & Associate Professor Department of Zoology Mobile: 9443001098	Expert 2 Dr. J. Georgina Assistant Professor Department of Zoology Mobile: 9524632400

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Understand the various environmental attributes	2(4), 3(4) 4(4), 5(3),7(3),	GA 4	U	F

		8(2)			
CLO2	Evaluate the impacts of over-exploitation and degradation of natural resources	7(8), 8(3), 4(5) 2(4)	GA 4	An	C
CLO3	Remember various global environmental issues	1(5), 2(5),3(5), 10(5)	GA 8	E	P
CLO4	create emphasis on energy conservation and need for sustainable development	7(6), 2(6), 3(8)	GA 9	Ap	M
CLO5	Create substantial goals for sustainable development	4(10), 5(5), 10(5)	GA 10	C	M

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	INTRODUCTION					
1.1	Definition, scope and importance	1	1[25]	SI	ST	1
1.2	Multi-disciplinary nature of environmental studies	1	1[25]	KWL	ST	1
1.3	Need for public awareness	1	2[25]	Sem	ST	1
1.4	Concept of sustainable development	1	5[25]	GD	ST	1
2	RENEWABLE AND NON-RENEWABLE RESOURCES					
2.1	Renewable and non-renewable resources	1	1[25]	Lec	CT	1
2.2	Land resources, forest resources, water resources	1	1[25]	Lec	HoA	1
2.3	Mineral resources, energy resources, food resources	1	1[25]	Lec	HoA	1
2.4	Conservation of resources	1	1[25]	RP	HoA	1
3	ECOSYSTEM					
3.1	Ecosystem: Concept, structure and function	2	1[25]	BS	MC Q	2
3.2	Food chains, food web sand energy flow in an ecosystem	2	1[25]	Lec	MC Q	2
3.3	Biodiversity: Definition, values, levels of biological diversity and mega-diversity centers	2	1[13] 2[12]	BS	OBT	2
3.4	Endangered and endemic species of India. Threats and conservation of biodiversity	2	2[25]	Sem	OBT	2
4	ENVIRONMENTAL POLLUTION					
4.1	Environmental pollution: Air, water, soil and noise pollution-causes, effects and controls	2	1[12] 2[13]	Sem	SA	3
4.2	Solid waste management, control measures of urban and industrial waste	2	4[25]	CS	Qui	3
4.3	Disaster management: Floods, earthquake,	2	4[25]	CS	Qui	3

	cyclone and landslides					
4.4	Environmental policies and practices	1	5[25]	Rep	HoA	3
5	CLEAN ENERGY					
5.1	Clean energy technologies	2	2[25]	GT	MC Q	3
5.2	Bio-energy and conversion systems	2	3[25]	FW	OT	3
5.3	Green building with eco-friendly materials	2	4[25]	MPr	OBT	3
5.4	Zero waste management	1	4[12] 5[13]	SP	HoA	3

Reference Books

1. Sharma, P.D. 2009. Ecology and Environment, Rastogi Publication, India.
2. Barthwl, R.R. 2002. Environmental Impact Assessment, New Age International Publishers, New Delhi, India.
3. United Nations Environment Programme (UNEP). 1995. Global Biodiversity Assessment, Cambridge University Press.

Course Title: M- 3 Botany for Competitive Examinations		
Course type: Theory		
Subject Code: 23GBS7		
Total hours: 30 Hours/Week: 2 [Th.: 2] Credits: 2		
Pass-out Policy: Min. Contact Hours: 18		
Total Score %: 100 Int.: 40 Ext.: 60		
Minimum Pass %: 40 [No min. for Int.]		
Course Creator V.P. Selva Shamal 9597385274 vpselfashamal@gmail.com	Expert 1 T.S. Shynin Brintha 9443452865 shyninb24@gmail.com	Expert 2 Dr. V. Manimekalai (Associate Prof. & Head) Sri Parasakthi College for Women (Autonomous), Courtallum - 627 802 9486702263, sehimaravi@gmail.com

Objectives: This course enables the students to

- To develop the student for competitive examination.
- To select the important topics as far as possible, with reference to the examination point of view. It gives a comprehensive account of botany.
- To understand not only the basics of botany and also gives the broader perspective to prepare for the competitive examinations.
- The essays give a detailed account of each aspect of botany to help students preparing for IAS, IFS and state civil services.
- General understanding of plants around us, the different biophysical and biochemical processes that occur within them and their importance to human life.

CLO No.	Course Outcome <i>Upon completion of this course, the students will be able to</i>	% of PLO Mapping with CLO	CLO & PLO Mapped with GA	Cognitive Level (CL)	Knowledge Category (KC)
CLO1	Identify and define different groups of plants with their taxonomic position Compare the different groups of plants and evaluate their economic importance	2[20]	1, 2	U, An, E	F, M, C
CLO2	List down the general characters of Bryophytes, Pteridophytes and Gymnosperms Classify the types of fossils and recognize the fossil beds of Tamil Nadu Analyse and trace the origin of different plant groups using Geological Time scale	2[20]	1, 2	An, E	F, P, M
CLO3	Appreciates the morphology of plant and analyse different modifications of plant organs. Explore the major Herbaria of the world and recognize the importance.	2[20]	1, 2	AN, U, E	F, C, M
CLO4	Differentiate Prokaryotic and Eukaryotic cell. Evaluate the significance of cell division. Justify the cause for the sex linked inheritance. Tabulate the different cell organelles with their functions.	2[20]	1, 2	R, AN, U, E	F, C, M
CLO5	Define and appreciates biodiversity. Identify the cause and solve environmental related issues. Design eco friendly approaches to protect earth and generate new conservation strategies.	2[20]	1, 2	R, AN, U, E	F, M, C

Module	Course Description	Hours	%CLO mapping with Module	Learning Activities	Assessment tasks	Reference
1	PLANT WORLD					
1.1	Plant science and its branches	1	1[20]	Lec/Sp	GD	1,2,3
1.2	Five kingdom classification	2	1[20]	Lec/Sp	GD	1,2,3
1.3	Outline of Kingdom plantae General characters	1	1[20]	Lec/Sp	GD	1,2,3
1.4	Economic importance of Algae	2	1[20]	Lec/Sp	GD	1,2,3
1.5	Fungi and Lichens.	2	1[20]	Lec/Sp	GD	1,2,3
2	GENERAL CHARACTERS OF PLANT GROUPS					
2.1	General characters and Economic importance of Bryophytes	1	2[25]	Lec/Sp	GD	2,3,4
2.2	Pteridophytes and Gymnosperms	2	2[25]	Lec/Sp	GD	2,3,4
2.3	Palaeobotany - Types of fossils	2	2[25]	Lec/Sp	GD	2,3,4
2.4	Geological time scale, Fossil beds of Tamil Nadu.	1	2[25]	Lec/Sp	GD	2,3,4
3	PLANT MORPHOLOGY AND TAXONOMY					
3.1	Root system and shoot system. Modifications (Pneumatophore, Stilt root, Epiphytic root, Cladode, Phylloclade, Pitcher and Phyllode)	2	3[20]	Lec/Sp	GD	4,5
3.2	Parts of a flower - Fruits types(Outline) Parthenocarp- Pollination – types, Seed dispersal – types, Seed Germination types.	2	3[20]	Lec/Sp	GD	4,5
3.3	Taxonomy – definition. Types of classification- Taxonomic hierarchy, ICN, Binomial nomenclature and BSI. Herbarium and Major Herbaria of the world.	1	3[20]	Lec/Sp	GD	4,5
4	CYTOLOGY AND GENETICS					

4.1	Cell –Prokaryotic and Eukaryotic – Cell organelles with functions	2	4[40]	Lec	Sem	6,7
4.2	DNA and RNA (Basic concepts) -Cell division and its significance -Mitosis and Meiosis (outline)	1	4[40]	Lec	Sem	6,7
4.3	Mendelism – Monohybrid and Dihybrid cross, Sex linked inheritance	1	4[20]	Lec/Sp	GD	6,7
5	ECOLOGY AND BIODIVERSITY:					
5.1	Ecosystem – abiotic and biotic components. Energy flow in an ecosystem	1	5[40]	Lec	Ess	1,10, 11
5.2	Aforestation, Deforestation - Chipko movement - Forest Conservation act	1	5[30]	Lec	MC Q	1,10, 11
5.3	Pollution types and effects- Eutrophication, Global warming ,Ozone depletion, Climate change.	1	5[30]	Lec	MC Q	1,10, 11
5.4	Biodiversity and types- Hot spots, Mega diversity countries, Conservation – <i>ex situ</i> and <i>in situ</i> methods. Endangered plants and Red data Book	2	5[30]	Lec	MC Q	1,10, 11
5.5	Rio -Earth summit. Biodiversity Management Policies - IUCN, UNEP, WWF, ICSU, WCMC.	2	5[30]	Lec/Sp	GD	1,10, 11

Reference texts

1. Pullaiah, T & D, Varalakshmi Narayana, P, Suresh. 2021. Botany for Competitive Examinations: (Useful for UPSC-Indian Forest Service, Civil Services, PCS, ASRB CSIR - NET, ICAR-NET and Other Competitive Exams.) Astral Cracker.
 2. Mitra, S. 2016. Botany for competitive examinations, Academic Publishers.
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 7. De Robertis and De Robertis. 1990. Cell and Molecular Biology, Saunders College, Philadelphia, USA.
 8. Gardner, E.J., Simmons, M.J and Snustad, D. 1991. Principles of Genetics, John Wiley Sons Inc., 8th Edn., New York.
 9. Salisbury, F. B.C.W. Ross.1991. Plant Physiology. Wassworth Pub. Co. Belmont.
 10. Sharma, P.D. 2017. Ecology and Environment- Rastogi Publication, Meerut.
 11. Vardhana, R. 2009. Economic Botany. 1st ed. Sarup Book Publishers Pvt Ltd. New Delhi.
 12. Power, C. B and Dagainawa, H.F. 2010. General Microbiology: Himalaya Publishing House Pvt Ltd,
 13. Rangasamy, G. 2006. Disease of crop plants in India (4th edition). Tata Mc Graw Hill New Delhi.
 14. Singh, V., Pande, P.C and Jain, D.K. 2021. A Text Book of Botany. Rastogi Publications, Meerut.
- Bhojwani, S.S. Bhatnagar, S.P and Dantu, P.K. 2015. The Embryology of Angiosperms (6th revised and enlarged edition). Vikas Publishing House, New Delhi.entre