

B.Sc. BOTANY
SYLLABUS - 2017

SCHOOLS OF EXCELLENCE
with
CHOICE BASED CREDIT SYSTEM (CBCS)

SCHOOL OF BIOLOGICAL SCIENCES

St. JOSEPH'S COLLEGE (Autonomous)

Special Heritage Status Awarded by UGC

Accredited at "A" Grade (3rd cycle) by NAAC

College with Potential for Excellence Conferred by UGC

DBT-STAR & DST-FIST Sponsored College

TIRUCHIRAPPALLI - 620 002, INDIA

B.Sc. BOTANY
COURSE PATTERN - 2017 SET

Sem	Part	Code	Subject Title	Hrs	Cdt	
I	I	Language	17UGT110001	Language I: (Tamil-I/Hindi-I/French-I/Sanskrit-I)	4	3
	II	English	17UGE120101	General English I	5	3
	III	Core	17UBO130201	Algae and Bryophytes	5	3
			17UBO130202	Fungi, Plant Pathology and Lichens	5	3
			17UBO130203	Lab Course 1	3	2
	Allied	17UBO130401	Allied I: Zoology I - General Zoology	4	3	
		17UBO130402	Allied I: Lab. Course: Zoology 1	2	2	
	IV	NMC	17UCE140801	Communicative English	-	5
Val. Edn.		17UFC141001	Essentials of Humanity	2	2	
Total for Semester I				30	26	
II	I	Language	17UGT210002	Language II: (Tamil-II/Hindi-II/French-II/Sanskrit - II)	4	3
	II	English	17UGE220102	General English II	5	3
	III	Core	17UBO230204	Pteridophytes, Gymnosperms and Paleobotany	4	3
			17UBO230205	Anatomy and Embryology	4	3
			17UBO230206	Lab Course 2	3	2
	Allied	17UBO230403	Allied I: Zoology II – Agricultural Entomology	4	3	
		17UBO230404	Allied I: Lab. Course: Zoology II	2	2	
	IV	NMC	17UCE240802	Computer Literacy / SAP	2	2
V. Edn.		17UFC241002	Fundamentals of Human Rights	2	2	
Total for Semester II				30	23	
III	I	Language	17UGT310003	Language III: (Tamil-III/Hindi-III/French-III/Sanskrit-III)	4	3
	II	English	17UGE320103	General English III	5	3
	III	Core	17UBO330207	Taxonomy of Angiosperms	5	4
			17UBO330208	Plant Breeding and Evolution	3	2
			17UBO330209	Lab Course 3	3	2
	Allied	7UBO330405A	Allied II: Chemistry for Biologists I OR	4	3	
		17UBO330405B	Allied II: Biometrics & Computer Applications I			
			Allied II: Lab. Course 1	2	-	
IV	NMC	17UCE340901	Environmental Studies	2	2	
	Val. Edn.	17UFC341003A	Formation of Youth - I OR	2	2	
		17UFC341003B	Religious Doctrine - I			
Total for Semester III				30	21	

IV	I	Language	17UGT410004	Language-IV: (Tamil-IV/Hindi-IV/French-IV/Sanskrit-IV)	4	3	
	II	English	17UGE420104	General English IV	5	3	
	III	Core	17UBO430210	Cell Biology and Genetics	5	4	
			17UBO430211	Molecular Biology	5	4	
			17UBO430212	Lab Course 4	3	2	
		Allied	17UBO430406A	Allied II: Chemistry for Biologists II OR		4	3
	17UBO430406B		Allied II: Biometrics & Computer Applications II				
	17UBO430407A		Allied II: Lab Course 2	OR	2	2	
	17UBO430407B		Allied II: Lab Course 2				
	IV	Val. Edn.	17UFC441004A	Formation of youth -II	OR	2	2
17UFC441004B			Religious Doctrine –II				
Total for Semester IV					30	23	
V	III	Core	17UBO530213	Biophysics and Biostatistics	6	3	
			17UBO530214	Ecology and Climate Change	5	3	
			17UBO530215	Lab. Course 5	3	2	
			17UBO530216	Microbiology and Immunology	5	3	
			17UBO530217	Lab. Course 6	3	2	
	Addl Core	17UBO540218	Self paced learning – Economic Botany (Partially online Course)		-	2	
		17UBO530501	Stem Cell Science	(EXTRA-CREDIT)		(2)	
		17UBO530502	Horticulture & Landscaping (EXTRA-CREDIT)			(2)	
	Core Elec.	17UBO530301A	Biopesticides	OR	4	4	
		17UBO530301B	Medicinal Botany				
	IV	S B Elec.	17UBO540601	(BS): Mushroom Culture		2	2
			IDC	17USS540701A	Soft Skills		2
		17USS540701B		National Cadet Corps (For NCC Cadets)			
Total for Semester V					30	23	
VI	III	Core	17UBO630219	Internship		2	
			17UBO630220	Plant Physiology	5	3	
			17UBO630221	Lab. Course 7	3	2	
			17UBO630222	Genetic Engineering & Biotechnology	5	3	
			17UBO630223	Biochemistry	4	3	
			17UBO630224	Lab. Course 8	3	2	
			17UBO630225	Comprehensive Examination		-	2
			17UBP630226	Project		-	2
	Core Elec.	17UBO630302A	Bio-instrumentation	OR	4	4	
		17UBO630302B	Bionanotechnology				
		17UBO630303A	Biological Techniques	OR	4	4	
		17UBO630303B	Wood Technology				
	IV	S B Elec.	17UBO640602	(WS) Herbal Technology		2	2
Total for Semester VI					30	29	
I-V	V		17UCW651101	Community service Work (SHEPHERD) & Gender Studies		5	
TOTAL FOR ALL SEMESTERS					180	150+ (4)	

பொதுத்தமிழ் - 1

கற்றலின் உறுதிப்பாடு

1. சமூக மாற்றச் சிந்தனைகளை உள்ளடக்கியதற்கால இலக்கியப்பரப்பை அறிதல்
2. புதுக்கவிதை, சிறுகதை, உரைநடை ஆகியவற்றின் இலக்கியத்திறன் கண்டறிதல்.
3. சந்திப்பிழையின்றி எழுதும் திறன் பெறுதல்

அலகு-1 மகாகவி பாரதியார் கவிதைகள்
பாரதிதாசன் கவிதைகள்
நாமக்கல் கவிஞர் கவிதைகள்
உரைநடை- முதல் மூன்று கட்டுரைகள் (12 மணி நேரம்)

அலகு-2 பாவலரேறு பெருஞ்சித்திரனார் பாடல்கள்
கண்ணதாசன் கவிதைகள்
இலக்கியவரலாறு (பக். 239- 300)
இலக்கணம் -வலிமிகும் இடங்கள் (14 மணி நேரம்)

அலகு-3 சமூகக்கவிதைகள்
இலக்கியவரலாறு (பக்.300 -362)
சிறுகதை- முதல் ஆறு சிறுகதைகள் (14 மணி நேரம்)

அலகு-4 அரசியல் கவிதைகள்
இலக்கணம் - வலி மிகா இடங்கள் (10 மணி நேரம்)

அலகு-5 மொழிபெயர்ப்புக்கவிதைகள்
சிறுகதை 7 முதல் 12 முடிய உள்ள சிறுகதைகள்
உரைநடை- 4 முதல் 6 முடிய உள்ள கட்டுரைகள் (10 மணி நேரம்)

பாடநூல்

1. பொதுத்தமிழ்- செய்யுள் திரட்டு- தமிழாய்வுத்துறை வெளியீடு-2017 -2020
2. சமூகவியல் நோக்கில் தமிழ் இலக்கியவரலாறு, தமிழாய்வுத்துறை வெளியீடு, தூயவளனார் கல்லூரி திருச்சிராப்பள்ளி-2
3. உரைநடைநூல் - தமிழாய்வுத்துறை வெளியீடு.
4. சிறுகதைத்தொகுப்பு : (நாட்டுடைமையாக்கப்பட்ட படைப்பாளர்களின் சிறுகதைகள்) , தமிழாய்வுத்துறை வெளியீடு.

SEM : I
17UGH110001

Hours/Week: 4
Credits: 3

HINDI PAPER – I

Assurance of Learning

- To enable the students to develop their effective communicative skills in Hindi.
- To introduce the socially relevant subjects in Modern Hindi Literature
- To appreciate the features of Modern Hindi Prose.

UNIT – I

8 hours

Dr Abdul Kalam, Ling Badaliye, Vachan Badaliye, Baathcheeth-Aspathal Mein

UNIT – II

12 hours

Hamara Rajchinha, Noun Ling, Kaarak Chinha, Chaar Baayee, Baathcheeth, Dookan Mein

UNIT – III

12 hours

Moun hee mantra hai, Vachan, Kaarak, Vishwamitra Ka yagna, Baathcheeth, Hotel mein

UNIT – IV

14 hours

Veer Shivaji, Pronoun, Danush Yagna, Baathcheeth-Maidaan mein

UNIT – V

14 hours

Rajatilak Kee Thaiyaree, Adjectives, Baathcheeth-Pareeksha ke baare mein

Books Recommended

1. Dakshina Bharathi Hindi Prachar Sabha, Thiagaraya Nagar, Chennai – 600 017, Subhodh Hindi Patamala-2, Bharath Milap, Bharath-1, 2016.
2. Ramdev, Vyakaran Pradeep, Hindi Bhavan, 63, Tagore Nagar, Allahabad 2, 2016.

FRANÇAIS – I

Assurance of Learning

- Introduire la langue et la culture française aux étudiants
- Comparer la culture de l'Inde et de la France
- Familiariser l'étudiant avec le vocabulaire, la grammaire et les conversations

UNIT I : A l'aéroport Kamaraj domestic de Chennai (10 heures)

Saluer, demander et dire le nom, présenter quelqu'un, se présenter, souhaiter la bienvenue a quelqu'un, demander et dire l'identité de quelqu'un.

Grammaire : Etre, s'appeler, pronoms sujets, interrogation

UNIT II : A l'Université (10 heures)

Demander comment on se porte, présenter quel qu'un, prendre congé, exprimer, l'appréciation.

Grammaire : Articles définis et indéfinis, genre des noms, adjectifs, présent de l'indicatif : verbes réguliers en er, être avoir, apprendre, prépositions a, en, au, aux.

UNIT III : Au café (10 heures)

Dire ce qu'on aime, donner des informations, exprimer l'admiration, demander des informations sur quelqu'un.

Grammaire : Adjectifs interrogatifs, présent de l'indicatif : avoir, verbes en er , savoir, qu'est ce que c'est?, adjectifs possessifs, négation ,adjectifs irréguliers

UNIT IV : A la plage (15 heures)

Proposer une sortie, accepter, refuser la proposition

Grammaire : phrases au singulier et au pluriel, pronom indéfini- on, il y a, adjectifs démonstratifs, négation, interrogation, présent de l'indicatif : faire, voir, aller, sortir, connaître

UNIT V : Un concert et chez Nalli (15 heures)

Inviter, accepter, exprimer son incapacité d'accepter, complimenter, parlé au téléphone, demander le prix, protester contre le prix.

Grammaire : Présent de l'indicatif : verbes en er, venir, pouvoir, vouloir, articles contracte, avec, a chez, le futur, interrogation est ce que, adverbes interrogatifs, adjectifs possessifs, accord de l'adjectif, adjectifs exclamatifs, très/trop, présent de l'indicatif : acheter-regarder, l'impératif.

Manuel :

1. K.Madanagobalane, **Synchronie-1**, Samhitâ Publication, 2011.

Livre de référence :

1. Annie Berthet /B_atrix Sampsonis/ Catherine Hugot /V_ronnique M Kizirian / Monique Waendendries, **Alter Ego A1**, Hachette, 2006.
2. Yves Loiseau/R_gineM_rieux, Connexions 1, Didier, 2011.

SEM : I
17UGS110001

Hours/week: 4
Credits: 3

SANSKRIT PAPER – I

Assurance of Learning

- To introduce Sanskrit Aksharas.
- To improvise the writing skills.
- To introduce Present tense forms

UNIT – I

8 hours

Akharavivaranam – Svaras & Vyanjanaani – Samyukta Aksharani.

UNIT –II	12 hours
Shabdadayah – Aakaaraanta, ikaar aantah. ukaaraantah. Shabdadayah – Aakaaraanta, iikaar aantah. uukaaraantah.	
UNIT – III	12 hours
Anuvaada Prayogah.	
UNIT – IV	14 hours
Lat Lakarh – Parasmai – Pada Prayogah = Vakyarupah.	
UNIT – V	14 hours
Subhaashitaani	

Books Recommended

1. Kulapathy, K. M., Saral Sanskrit Balabodh, Bharathiya Vidya Bhavan, Munshimarg, Mumbai-400 007, 2014
2. R.S. Vadhyar & Sons, Book-Sellers and Publishers, Kalpathi, Palghat- 678003, Kerala, South India, Shabdha Manjari, 2014
3. Balasubramaniam R., Samskrita Akshara Siksha, Vangals Publication, 14th Main Road, JP Nagar, Bangalore -78, 2015.

Sem : I
17UGE120101

Hours/Week: 5
Credits: 3

GENERAL ENGLISH-I

Assurance of Learning

To help students

- use words and phrases related to self, home, friends and relatives in meaningful contexts
- develop positive self-esteem and thereby communicate confidently
- use language to perform basic functions like describing, clarifying, suggesting, and giving directions

Unit-I:

01. Personal Details
02. Positive Qualities
03. Listening to Positive Qualities
04. Relating and Grading Qualities
05. My Ambition
06. Abilities and Skills
07. Self-Improvement Word Grid
08. What am I doing?
09. What was I doing?
10. Unscramble the Past Actions
11. What did I do yesterday?

Unit-II:

12. Body Parts
13. Actions and Body Parts
14. Value of Life
15. Describing Self
16. Home Word Grid
17. Unscramble Building Types
18. Plural Form of Naming Words
19. Irregular Plural Forms
20. Plural Naming Words Practice
21. Whose Words?

Unit-III:

22. Plural Forms of Action Words
23. Present Positive Actions
24. Present Negative Actions
25. Un/Countable Naming Words
26. Recognition of Vowel Sounds
27. Indefinite Articles
28. Un/Countable Practice
29. Listen and Match the Visual
30. Letter Spell - Check
31. Drafting Letter

Unit-IV:

32. Friendship Word Grid
33. Friends' Details
34. Guess the Favourites
35. Guess Your Friend
36. Friends as Guests
37. Introducing Friends
38. What are We Doing?
39. What is (s)he / are they Doing?
40. Yes / No Question
41. What was s/he doing?
42. Names and Actions
43. True Friendship
44. Know your Friends
45. Giving Advice/Suggestions
46. Discussion on Friendship
47. My Best Friend

Unit-V:

48. Kinship Words
49. The Odd One Out
50. My Family Tree
51. Little Boy's Request
52. Occasions for Message
53. Words denoting Place
54. Words denoting Movement
55. Phrases for Giving Directions
56. Find the Destination
57. Giving Directions Practice
58. SMS Language
59. Converting SMS
60. Writing Short Messages
61. Sending SMS
62. The family debate
63. Family Today

Textbook

Joy, J.L. & Peter, F.M. *Let's Communicate 1*, New Delhi, Trinity Press, 2014. Print.

Extensive Reader

Dodd, E F. *Six Tales From Shakespeare*. London: Macmillan, 1987. Print. (First three tales)

Semester I
17UBO130201

Hours/week: 5
Credits: 3

ALGAE AND BRYOPHYTES

Assurance of Learning

The student would understand the salient features of algae and bryophytes, comprehend the structure and reproduction of simple organisms and acquire the basic knowledge on the evolutionary relationship between algae and bryophytes.

Unit I Algae

General characteristics of algae. Classification (F.E. Fritsch). General characteristics of the various classes as per Fritsch's system. Cell structure of prokaryotic algae (cyanophyceae cell) and eukaryotic algae (chlorophycean cell).

Unit II

Thallus organization, mode of reproduction, algal life cycle patterns (haplontic, diplontic, haplo-diplontic and diplobiontic). Mass culture (*spirulina*), economic importance and BGA in *Azolla* as fodder and biofertilizer.

Unit III

Detailed study of the following genera: occurrence, distribution, common species, structure and reproduction of *Oscillatoria*, *Oedogonium*, *Caulerpa*, *Cyclotella*, *Sargassum* and *Polysiphonia* (developmental studies on sex organs not required).

Unit IV Bryophytes

General characteristics. Classification (Rothmaler, 1951), vegetative reproduction and economic importance. Evolution of gametophytes and sporophytes among bryophytes.

Unit V

Detailed study of the following genera: occurrence, distribution, common species, structure and reproduction of *Marchantia*, *Anthoceros* and *Funaria* (developmental studies on sex organs not required).

Text Book

Pandey, BP. 2005. Simplified Course in Botany. S. Chand and Company, New Delhi.

Reference

1. Sharma, OP. 1992. Text Book of Algae. Tata Mc Graw Hill, New Delhi.
2. Gangulee, HC. & Kar, AK. 1989. College Botany, Vol-II, Books & Allied Pvt. Ltd. Calcutta.
3. Prem Puri. 1981. Bryophytes – morphology growth and differentiation. Atma Ram & Sons. Lucknow.
4. Singh V, Pande PC and Jain OK. A text book of Botany, Rostogi Publications, Meerut.
5. Smith, GM. 1955. Cryptogamic Botany Vol-1&II, Mc Graw Hill, New York.

Semester I
17UBO130202

Hours/week: 5
Credits: 3

FUNGI, PLANT PATHOLOGY AND LICHENS

Assurance of Learning

At the end of the course the student will acquire knowledge on characteristics of fungi and lichens, acquaint with the knowledge on structure and reproduction and acquire basic skills on plant diseases.

Unit I

Fungi: General characteristics - range of thallus organization, architecture of fungal cells and modes of nutrition. Classification (Alexopoulos and

Ainsworth, 1972) and general characteristics of the Divisions and Classes in Fungi. Economic importance.

Unit II

Fungi: detailed study of morphology and reproduction of the following genera: *Penicillium*, *Albugo*, *Peziza*, *Puccinia*, *Rhizopus*, *Cercospora*.

Unit III

Plant Pathology: classification of diseases – general symptoms and methods of control of plant diseases: mechanical, chemical and biological. Defense mechanism in plants: structural morphological and biochemical.

Unit IV

Plant Pathology: detailed study of the following plant diseases with reference to causes, symptoms, dissemination, control and preventive measures - mosaic disease of tobacco, citrus canker, late blight of potato, red rot of sugarcane, paddy blast, bunchy top of banana and little leaf of brinjal.

Unit V

Lichens: occurrence, distribution, classification, structure, vegetative and sexual reproduction (with reference to fruticose lichen - *Usnea*). Economic importance and role in succession and pollution monitoring.

Books

Singh V, Pande PC & Jain DK 2015. **A Text Book of Botany (4th e)**, Rastogi, Meerut

Reference

1. Sharma OP 1989. Text Book of fungi. Tata Mc Graw Hill, New York.
2. Vasishta BR & Sinha AK. 2003. Botany for degree students Fungi. S Chand New Delhi.
3. Mehrotra R S 1991. Plant Pathology, Tata McGraw-Hill Publishing, New Delhi
4. Hale ME, 1983 The Biology of Lichens, New Age International publishers, New Delhi.

Semester I
17UBO130203

Hours/week: 3
Credits: 2

LABORATORY COURSE - 1

(Algae, Fungi, Bryophytes, Plant Pathology and Lichens)

Detailed study of the following genera:

Algae: *Oscillatoria*, *Oedogonium*, *Caulerpa*, *Cyclotella*, *Sargassum* and *Gracilaria*.

Bryophytes: *Marchantia*, *Anthoceros* and *Funaria*.

Fungi: *Plasmodiophora*, *Albugo*, *Peziza*, *Puccinia* and *Cercospora*.

Plant Pathology

Tobacco Mosaic Virus, Citrus canker, Late blight of Potato, Red rot of Sugarcane, Bunchy Top of Banana, Little leaf of Brinjal, Paddy blast

Lichen: *Usnea*

Semester I
17UBO130401

Hours/week: 4
Credits: 3

ALLIED: ZOOLOGY-I
(General Zoology)

Assurance of Learning

At the end of the course the student would know the animal organization and to differentiate the morphology and functions of various organs, acquire knowledge on various physiological processes in human beings

Unit I

Basic principles of zoological taxonomy and nomenclature. General classification of the animal kingdom (up to phylum with examples). Salient features of all phyla. General features of the subphylum Urochordata, Cephalochordata, Hemichordata and Vertebrates (Classes: Pisces, Amphibia, Reptilia, Aves and Mammalia)

Unit II

Type study of *Plasmodium vivax*, *Leucosolenia*, *Aurelia aurita*, *Taenia solium*, *Ascaris lumbricoids* and *Asterias rubensa* – morphology and

life history. General topics – human diseases caused by protozoans; canal system of sponges.

Unit III

Principles of human physiology: Digestion - physiology of digestion, absorption and excretion of food – accessory glands and their role. Respiration: transport of oxygen and carbon dioxide, cellular oxidation, respiratory quotient, oxygen debt. Excretion: structure of a nephron, physiology of urine formation, physical characteristics and chemical composition of urine.

Unit IV

Circulation – structure and working of artery, vein and heart. Blood: haemopoiesis, types of blood cells, structure of haemoglobin; mechanism of blood clotting, functions of plasma proteins. Blood grouping, lymph and its functions. Muscles: contraction. proteins involved and theories of contraction.

Unit V

Hormones: Types, control - and general mode of action of water soluble and steroid hormones. Reproduction – male and female reproductive organs and formation of gametes, Pregnancy and birth. Nervous control: Structure of neuron; Types of neurons; nerve impulse transmission, synaptic transmission.

Books

Ekambaranantha Ayyar & Ananthakrishnan. 1985. Outlines of Zoology - Vol.I, S. Viswanathan Pvt. Ltd., Chennai.

Reference

- 1) Rajan K . 2016. Manual of Zoology. Theory and practicals, Dept. of Botany, St. Joseph's College, Tiruchirappalli.
- 2) Gerard, J. Tortord, R.L.Evans & Anagnostakos, NP. 1982. Principles of Human Physiology, Harpor Roul Publishers, New York.
- 3) Jordan, E.L. & Verma, P.S. 1976 Invertebrate Zoology, S.Chand & Co. Ltd., 6th e, New Delhi.
- 4) Kotpal, RL 1976. Modern text book of Zoology (Invertebrate), Rastogi Publications, Meerat.

- 5) Nagabhusan & Kodarkar. 1976. Text Book of Animal Physiology, Oxford & IBH.
- 6) Paul B. Weisz. 1975. The Science of Biology, Tata McGraw Hill, 4th Edn., New Delhi.

Semester I
17UBO130402

Hours/week: 2
Credits: 2

ALLIED: LABORATORY COURSE - 1
(Zoology – I)

Earthworm

External features and dissection of digestive and nervous systems –
Mounting of body and Penial setae, Ovary and Spermatheca

Pila

Structure of shell – Dissection of mantle cavity and radula, dissection of digestive system.

Representative animal for each class in vertebrate, and invertebrate phyla.
Different tissues. human blood cell identification. Campus fauna identification.

Visit to a vermin-compost farm and submission of report.

SEM : I
17UFC141001

Hours/Week: 2
Credits: 2

ESSENTIALS OF HUMANITY Assurance of Learning

- * To educate the students in the basic principles of value education and to inculcate the same values in them
- * To teach the students various dimensions of human personality and the ways to develop them.
- * To empower the students in gender sensitization, gender differences and gender roles.
- * To prepare the students for the smooth transfer from the stage of teenage to earlier adulthood.

Unit-I

Principles of Value Education - Introduction - Value Education- Characteristics of Values – Kinds of Values

Unit-II

Development of Human Personality - Personality traits - Theories of Personality - Discovering self- Defense mechanism - Power of positive thinking

Unit-III

Dimensions of Human Development - Physical development – Intellectual development - Emotional development - Social Development – Moral development - Spiritual development

Unit-IV

Responsible Parenthood - Human sexuality - Sex and love - Becoming a spouse - Responsible Parenthood

Unit-V

Gender Equality and Empowerment - Historical perspective - Education & economic development -Crimes against Women-Women's rights

Text Book:

Essentials of Humanity, Department of Foundation course, St.Joseph's College, Tiruchirappalli-2, 2016.
