CSSR & SRRM DEGREE & PG COLLEGE
(Autonomous)

Kamalapuram - 516289, Kadapa, A.P.

II-Minutes of the Meeting Board of Studies

Department of Botany

Dated: 05/01/2025

AGENDA

1. To approve the Applied Botany as a major paper for I B.Sc. Honours (Botany) from II semester.
2. To approve the course structure, Continuous Internal Assessment **(CIA)**, Semester End Examination **(SEE)** Patterns (Theory & Practicals).
3. To approve course outcomes, revised syllabus, Blue Print, Model Question Paper,(Theory & Practicals)for
   (i) **Non-vascular Plants** (Algae, Fungi, Lichens and Bryophytes) (Major Paper-III) for IYear, Semester -II, B.Sc. Honours (Botany) in the academic year 2024-25

   and

   (ii) **Origin of Life and Diversity of Microbes** (Major Paper-IV) for I Year, Semester -II BSc. Honours (Botany)for the academic year 2024-2025.
4. To approve other academic activities of the department.
5. Any discussions with approval of the chair.

S. Reddy

RESOLUTION

In BoS meeting, all the panel members have discussed and unanimously approved the following agendas:

1. The members of BoS Unanimously approved to take Paper-III Non-vascular Plants and Paper-IV Origin of Life and Diversity of Microbes Applied as a Major Paper for B.Sc. Honours (Botany) and made minor modifications as mentioned below.

2. The Members also approved the pattern of course structure, Continuous Internal Assessment, Semester Practical Examination and Semester End Pattern, course outcomes, revised syllabus Paper (Theory & Practicals), Blue Print, Model Question Paper (Theory & Practicals).

The Modified syllabus by the panel members in the BoS Meeting are:

Sl. No.	Semester, Group& Title of the Paper	Modifications	Remarks
1	**Non-vascular Plants**(Algae, Fungi, Lichens and Bryophytes)	**UNIT-V:** Removed the topic Anthoceratopsida: *Anthoceros*,	In this unit syllabus is large.
2	**Origin of Life and Diversity of Microbes**	**UNIT-II:** Removed the topic: Chlamydiae, Phytoplasma	The syllabus in this unit is large.

S. Medha

Course Structure

Year	Semester	Course	Program Code	Title of the Course	No. of Hrs/Week	No. of Credits	IA	EA	TOTAL
I	II	3		Non-vascular Plants –(T)	3	3	30	70	100
				Non-vascular Plants –(P)	2	1	-	50	50
		4		Origin of Life and Diversity of Microbes –(T)	3	3	30	70	100
				Origin of Life and Diversity of Microbes – (P)	2	1	-	50	50

S. Head

Continuous Internal Assessment:

In each semester, for every subject there are two Internal Examination with 30 marks each and time duration of 1 Hour. The Thirty marks are divided as:

Sl. No	Name of the Activity	Marks Allotted
1	**Internal Examination**	20
2	**Co Circular Activities:** Seminar/Assignment/JAM/Group Discussion	5
3	**Extra Circular Activities:** NSS/NCC/Sports/Clean & Green Activities/Community Services	5

Theory - Semester End Examinations:

The semester end theory examination is for 70 marks with the time duration of 3 Hours.

Practical -Semester End Examinations:

The semester end Practical examination is for 50 marks with the time duration of 3 Hours

Sl. No	Name of the Activity	Marks Allotted
1	**Record**	5
2	**Viva voice**	3
3	**Practical**	42

S. Mallik

Semester-II

Course 3: Non-Vascular Plants (Algae, Fungi, Lichens and Bryophyte

Course Outcomes: On completion of this course students will be able to:

1. Compile the general characteristics of algae and their significance in nature.
2. Compare and contrast the characteristics of different groups of algae.
3. Summarise the important features of fungi and their economic value.
4. Distinguish the characteristics of different groups of fungi.
5. Elaborate the features and significance of amphibians of plant kingdom
6. Explain the diversity among non-vascular plants.

Syllabus of Theory:

Unit-1: Introduction to Algae **8Hrs.**

1.1 General Characteristics of algae: Occurrence and distribution, cell structure, pigments, flagella and reserve food material.
1.2 Classification of algae: F.E.Fritsch (1935)
1.3 Thallus organization and life cycles in algae.
1.4 Ecological and economic importance of algae.

Unit-2: Biology of selected Algae **10Hrs.**

2.1 Occurrence, structure, reproduction and life cycle of:
(A) Chlorophyceae: *Spirogyra* (B) Phaeophyceae: *Ectocarpus*
2.2 Occurrence, structure, reproduction and life cycle of:
(A) Xanthophyceae: *Vaucheria* (B) Rhodophyceae:*Polysiphonia*
2.3 A brief account of Bacillariophyceae
2.4 Culture and cultivation of *Chlorella*

Unit-3: Introduction to Fungi **8Hrs.**

3.1 General characteristics of fungi and Ainsworth (1973) classification.
3.2 Thallus organization and nutrition in fungi.
3.3 Reproduction in fungi (asexual and sexual); Heterothallism and parasexuality.
3.4 conomic importance of fungi.

Unit-4: Biology of selected Fungi **10Hrs.**

4.1 Occurrence, structure, reproduction and life cycle of:
(A) Mastigomycotina: *Phytophthora* (B) Zygomycotina: *Rhizopus*
4.2 Occurrence, structure, reproduction and life cycle of:
(A) Ascomycotina: *Penicillium* (B) Basidiomycotina: *Puccinia*
4.3 Occurrence, structure and reproduction of lichens; ecological and economic importance of lichens.
4.4 Mycorrhiza

Unit-5: Biology of Bryophytes **9Hrs.**

5.1 General characteristics of Bryophytes; Rothmaler (1951) classification.
5.2 Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life cycle of
(A) Hepaticopsida: *Marchantia*
(B) Bryopsida: *Funaria*
5.3 General account on evolution of sporophytes in Bryophyta.
5.4 Economic importance of Brayophyta.

Text Books:

1. Prof.B.Raja kumar, Prof.H.Ramakrishna,Prof.R.R.Venkata raju,Prof K.V.Mallaiah:Telugu Akadami,Hydrabad
2. Hait,G., K.Bhattacharya & A.K.Ghosh (2011) A Text Book of Botany, Volume-I, New Central Book Agency Pvt. Ltd., Kolkata

Reference Books:

1. Dr.B.R.C.Murthi Dr.M. Raghuram k.Ramakrishna Vivek Publication
2. Gilbert M. Smith Volum II Bryophytes and PterodoPhytes
3. S.M.Reddy University valum I
4. haw, A.J.& B.Goffinet (2000) Bryophyte Biology.Cambridge University Press, New York.

Suggested activities and evaluation methods:

Unit-1: Activity: Algae specimen collection from any water bodies in their locality, recording the characteristics, identification and classifying them according to Fritsch system.
Evaluation method: Evaluating the presentation or report summarizing findings.
Unit-2: Activity: Microscopic observations and recording distinguishing characters of any six algal forms excluding the genera in the syllabus.
Evaluation method: Conducting a Quiz or an exam/ evaluating the chart or drawings or summarized data on similarities and differences.
Unit-3: Activity: Collection or laboratory culture of fungi and reporting the important features.
Evaluation method: Evaluating the report/conducting JAM/Quiz/Group discussion.
Unit-4: Activity: Microscopic observations and summarizing the salient features of the fungal genera and lichen forms in the syllabus.
Evaluation method: Conducting a Quiz or an exam/ evaluating the chart or drawings or concise data on similarities and differences.
Unit-5: Collection, characterization, identification and classification of any four bryophytes from their native locality or college campus.
Evaluation method: Assessment of observations and documentation accuracy/presentation or report summarizing findings based on a rubric.

Semester -II

Practical syllabus

Course 3: Non-vascular Plants (Algae, Fungi, Lichens, and Bryophytes)

I. Course Outcomes: On successful completion of this practical course, student shall be able to:

1. Identify some algal and fungal species based on the structure of thalli and reproductive organs.
2. Decipher the lichens and Bryophytes based on morphological, anatomical and reproductive features.

II. Laboratory/field exercises:

Study/ microscopic observation of vegetative, sectional/anatomical and reproductive structures of the following using temporary or permanent slides/ specimens/ mounts:

1. **Algae:** *Spirogyra, Ectocarpus, Vaucheria and Polysiphonia;* a centric and a pennate diatom.
2. Demonstration of culture and cultivation of *Chlorella*
3. Identification of some algal products available in local market.
4. **Fungi:** *Phytophthora, Rhizopus, Penicillium* and *Puccinia*
5. Identification of some fungal products available in the local market.
6. **Lichens:** Crustose, foliose and fruiticose
7. **Bryophyta:** *Marchantia* and *Funaria.*

Practical model Question paper

I B.Sc., Practical Examination (2024-2025)

Subject: Botany (Honours) Max.Marks: 50

Semester-II Time: 3hour

Paper-I: Non-Vascular plants.

Date: Session:

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1. **Identify any 2 algae from the mixture (material 'A') given with specific comments about identification** **10 M**
2. **Take the T.S. of material 'B' (Fungi), make a temporary mount and make comments about identification** **10 M**
3. **Take the T.S. of material 'C' (Bryophyta), make a temporary mount and make comments about identification.** **10 M**
4. **Identify D, E, F, with specific reasons.** **4x3=12 M**
5. **Record + Viva-voce** **5+3 = 8M**

Total: 50 M

S. Mallik

Semester - II

Course 4: Origin of Life and Diversity of Microbes

I. Course Outcomes: On completion of this course students will be able to:

1. Illustrate diversity of viruses, multiplication and economic value.
2. Discuss the general characteristics, classification and economic importance of special groups of bacteria.
3. Explain the structure, nutrition, reproduction and significance of eubacteria.
4. Evaluate the interactions among soil microbes.
5. Compile the value and applications of microbes in agriculture.

II. Syllabus of Theory:

Unit-1: Origin of life and Viruses — 10 Hrs.

1.1 Origin of life, concept of primary Abiogenesis; Miller and Urey experiment.; discovery of microorganisms, Pasteur experiments, germ theory of diseases.
1.2 Shape and symmetry of viruses; structure of TMV and Gemini virus.
1.3 Multiplication of TMV; A brief account of prions, viroids and virusoids; Transmission of plant viruses and their control.
1.4 Significance of viruses in vaccine production, bio-pesticides and as cloning vectors.

Unit-2: Special groups of Bacteria — 7 Hrs.

2.1 Five kingdom classification of R.H. Whittaker
2.2 General characteristics, outline classification and economic importance of following special groups of bacteria:
a) Archaebacteria B) Actinomycetes
2.3 General characteristics, outline classification and economic importance of following special groups of bacteria:
A) Mycoplasma B) Cyanobacteria
2.4 Culture and cultivation of *Spirulina*

Unit-3: Eubacteria — 8 Hrs.

3.1 Occurrence, distribution and cell structure of eubacteria.
3.2 Classification of Eubacteria based on nutrition.
3.3 Reproduction- Asexual (Binary fission and endospores) and bacterial recombination (Conjugation, Transformation, Transduction).
3.4 Economic importance of Eu-bacteria with reference to their role in Agriculture and industry (fermentation and medicine).

Unit-4: Soil microbes – interactions — 10Hrs.

4.1 Distribution of soil microorganisms in soil.
4.2 Factors influencing the soil microflora - Role of microorganisms in soil fertility.
4.3Interactions among microorganisms, mutualism, comensalism, competition, Comensalism, parasitism, predation.
4.4 Microorganisms of rhizosphere, phyllosphere and spermophere; microbial interactions and their effect on plant growth.

S.H.

Unit-5: Microbes in agriculture **10 Hrs.**

5.1 Mass production, mode of applications, advantages and limitations of bacterial inoculants (*Rhizobium, Azotobacter, Azospirillum*, Cyanobacteria).
5.2 Role of Frankia and VAM in soil fertility.
5.3 Microbial biopesticides: mode of action, factors influencing, target pests; microbial herbicides.
5.4 Micro remediation with reference Bacteria

III. Text Books:

1. Prof.B.Rajakumar, Prof.H.Ramakrishna, Prof.R.R.Venkataraju, Prof.K.V.Mallaiah: Telugu Akadami, Hydrabad
2. Dubey, R.C. & D. K. Maheswari (2013) A Text Book of Microbiology, S.Chand & Company Ltd., New Delhi

IV. Reference Books:

1. Dr.B.R.C.Murthi Dr.M. Raghuram K.Ramakrishna Vivek Publication
2. Prescott, L. Harley, J. and Klein, D. (2005) Microbiology, Tata McGraw –Hill Co. New Delhi.
3. Gyaneshwar, A.D., G.J. Parekh, and V.S. Reddy (2004) Agricultural Microbiology: Plant-Soil Interactions, Research Signpost, Kerala, India
4.

V. Suggested activities and evaluation methods:

Unit-1: Activity: Collecting scientific literature on historical developments in microbiology.
Evaluation method: Evaluating the report based on a rubric.
Unit-2: Activity: Group discussion on various groups of special bacteria.
Evaluation method: Assessment of active participation, soft skills, communication skills, collaborative skills, time management etc., of a group or a student based on a rubric.
Unit-3: Activity: Presentation or poster summarizing the classification of Eu-bacteria based on nutrition.
Evaluation method: Assessment based on accuracy and understanding.
Unit-4: Activity: Microscopic observation of bacterial samples from soil/ phylloplane in their native place/ college campus.
Evaluation method: Evaluating the report on characteristics and classification of eubacteria.
Unit-5: Activity: Culture and mass production of bioinoculants.
Evaluation method: Skills performed in establishing the culture and mass production.

Semester-II
Practical syllabus

Course 4: Origin of Life and Diversity of Microbes

I. Course Outcomes: On successful completion of this practical course, student shall be able to:

1. Take all necessary precautions in the microbiology laboratory.
2. Handle the instruments and prepare media for laboratory work.
3. Identify various microbes through microscopic observations

II. Laboratory/Field exercises:

1. Microbiology good laboratory practices and biosafety.
2. Study the principle and applications of important instruments (autoclave, hot air oven, incubator, Inoculation loop, Inoculation needle, membrane filter, laminar air flow system, colony counter. biological safety cabinets, BOD incubator, pH meter) used in the microbiology laboratory.
3. Study of Viruses (Gemini and TMV) using electron micrographs/ models.
4. Gram staining technique of Bacteria.
5. Microscopic study of Cyanobacteria using temporary/permanent slides.
6. Microscopic study of Eubacteria using temporary/permanent slides.
   Study of Archaebacteria and Actinomycetes using permanent slides/ electron micrographs/diagrams.

Practical model Question paper

Practical syllabus

I B.Sc.,Practical Examination (2023-2024)

Subject: Botany (Honours) — Max.Marks: 50
Semester-II — Time: 3hour
Paper-Paper: Origin of life Diversity of Microbes — Date:
Session:

1. A.Give on account on Gram staining Bacteria	15M
2. B. account on Eubaceri cell structure	15M
3. Identify C,D,E, & F with specific reasons.	4X3=12 M
4. Record + Viva-voce	5+3 = 8M
	Total 50 M

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I B.Sc. Honours (Botany)

Semester-II

Paper-III: Non-Vascular plants.

&

Paper-IV: Origin of life Diversity of Microbes

Duration: 3 Hrs **BLUE PRINT** **Total Marks: 70**

SECTION-A

Answer any **Five questions.** Each question carries **4 Marks.** **5×4 = 20 M**

Topics	Questions Given	Allotted Marks
UNIT-1	1	4
	2	
UNIT-2	3	4
	4	
UNIT-3	5	4
	6	
UNIT-4	7	4
	8	
UNIT-5	9	4
	10	

SECTION-B

Answer **ALL the** Questions. Each question carries **10 MARKS.** **5×10 = 50 M**

Topics	Questions Given	No. of Questions to be Answered	Allotted Marks
UNIT-1	11	1	10
	12		
UNIT-2	13	1	10
	14		
UNIT-3	15	1	10
	16		
UNIT-4	17	1	10
	18		
UNIT-5	19	1	10
	20		

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MODEL QUESTION PAPER

I B.Sc. Botany Honours

Semester-II

Paper-III Non-Vascular plants

Time: 3 Hours Max Marks:70

Section-A

I. Answer any FIVE questions. Each Question Carries 4 Marks (5 X 4= 20M)

1.Cell structure of Algae
2.Pigments in Algae
3.Vaucheria Thallus
4.Cystocarp- Polysiphonia
5.Heterothallism
6.Parasexuality
7.Cleistothecium – penicillium
8.Basidiospores in puccinia
9.Marchantia thallus
10.Funaria plant

Section-B

II. Answer All question. Each Question Carries 10 Marks (5 X 10= 50 M)

11. Write the classification of algae according to F.E .Fritsch

(OR)

12. Explain about the ecological and economic importance of algae

13. Describe the life cycle of spirogyra

(OR)

14. Explain about the culture and cultivation of chorella

15. Write the general characteristics of fungi

(OR)

16.Write about ecological and economic importance of fungi

17.Describe the life cycle of Rhizopus

(OR)

18.Describe the structure and reproduction of lichens

19.Describe the Marchantia life history

(OR)

20.Describe the vertical section of funaria capsule v.s. with a labelled diagram

MODEL QUESTION PAPER

I B.Sc.Botany Honours
Semester-II

Paper Origin of life Diversity of Microbes

Time: 3 Hours

Max Marks:70

Section-A

I. Answer any FIVE questions. Each Question Carries 4 Marks **(5 X 4= 20M)**

1.Pasteur experiments
2.Discovery of microorganisms
3.Archae bacteria
4.Prions
5.Transduction
6.Conjugation
7.Mutualism
8.Parasitism
9.Mass production
10.Mode of applications

Section-B

II. Answer Allquestion. Each Question Carries 10 Marks **(5 X 10= 50 M)**

11.Give an account on origin of life

(OR)

12.Write about significances of viruses in vaccine production, Biopesticides and cloning vectors

13.Explain general characteristics, outline classification and economic importance of Actinomyates

(OR)

14.Explain about the Culture and cultivation of spirulina

15.Describe the distribution and cell structure of Eubactria

(OR)

16.Discuss about the economic importance of Eubacteria with reference to their role in agriculture and industry

17.Explain about the factors influencing soil of micro flora and role microorganisms in soil fertility

(OR)

18.Write about the micro organisms of rhizophere, phyllospher and spermospher.

19.Explain about the Role of Frankia and VAM in soil fertility.

(OR)

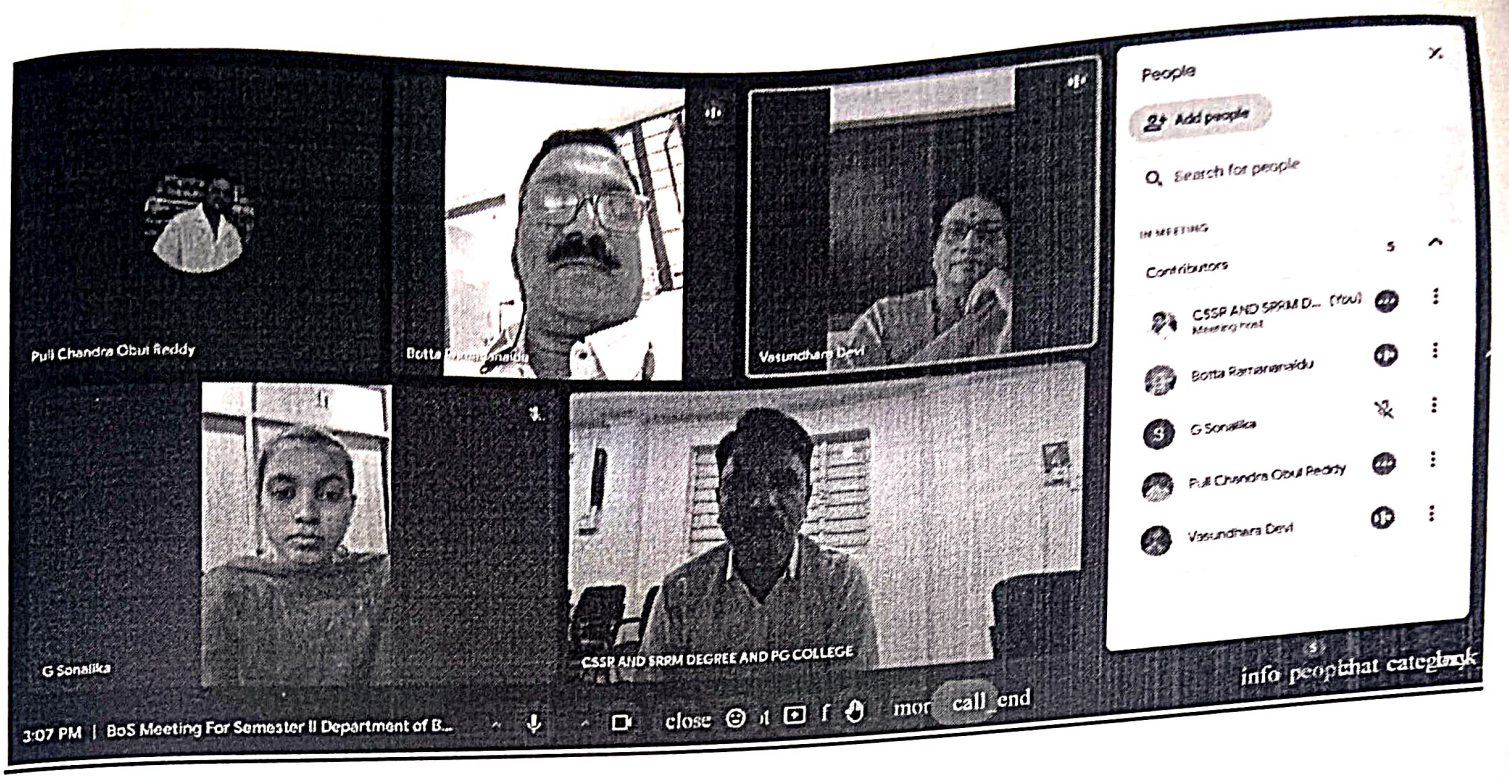
20.Write an essay on Microbial pesticides

S. Reddy

List of BoS Members

Sl. No.	Category	Name of the Faculty	Designation	Position	Signature
1	In charge of the Department	S.Md Haneef	Head of the Department	Chairperson	S. Md H
2	Two experts from outside the Parent University nominated by Academic Council	Dr.BV. Ramana Naidu KSN Government Degree College, Ananthapuram Ph: 9347573296 Email id: venkataramananaidubotta@gmail.com	Lecturer	Subject Expert	Vartual (online)
		Dr. J. Vasundhara Department of Botany Government Degree College Banaganpalle Ph: 9293196382 Email id: vasu3k@gmail.com	Lecturer	Subject Expert	Vartual (online)
3	One Expert Nominated by Vice Chancellor	**Dr.P. Chandra Obul Reddy** Department of Botany Yogi Vemana University Kadapa Ph: 9908592005 Email id: pcoreddy@gmail.com	Professor	Subject Expert	Vartual (online)
4	One representative from Industry/ Corporate allied areas nominated by the Principal	**Rama Subba Reddy.C** Shakthi Engineering Equipment Hyderabad Ph: 07947105250	Industrialist	Member	
5	Alumni nominated by the Principal	G. Sonallika	Alumni	Member	Vartual (online)

S. Md H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Vasundhara Devi
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