



Baba Ghulam Shah Badshah University Raipuri (J&K)

University Notification No. 06 of 2018, dated: 3-7-2018

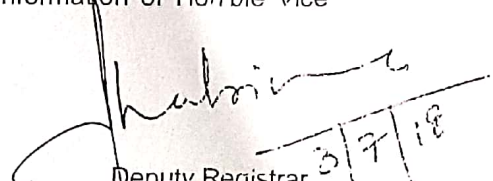
As approved by Hon'ble Vice Chancellor in anticipation of confirmation by Academic Council, the Course Structure and Syllabi of M.Phil. Arabic, Botany, Computer Science, Economics, English & Zoology for semester 1st and pre-Ph.D. in Arabic, Botany, Computer Science, English, Economics, Islamic Studies, Education, Mathematics, Management Studies, Urdu, Biotechnology, Zoology and Electrical Engineering are hereby notified for information of all the concerned. The validity of the above syllabi is for a period of one year i.e. 2018.

Sd/-
Registrar

No. BGSEU/Acad/18/123
Dated: 3-7-2018

Copy to:

1. Dean Academic Affairs
2. Controller of Examinations
3. Dean, School of Mathematical & Computer Sciences
4. Dean, School of Engineering & Technology
5. Dean, School of Biosciences & Biotechnology
6. Dean, School of Management Studies
7. Dean, School of Education
8. Dean, School of Islamic Studies & Languages
9. Coordinator Botany
10. Coordinator Zoology & Biotechnology
11. Head, Department of Arabic / Urdu / Islamic Studies
12. Head, Department of Computer Sciences
13. Head, Department of Mathematics Sciences
14. Head, Department of English
15. Head, Department of Electrical & Renewable Energy Engineering
16. Deputy Controller of Examinations
17. Private Secretary to Hon'ble Vice Chancellor for the kind information of Hon'ble Vice Chancellor
18. All Concerned
19. Office Copy


Deputy Registrar
(Academic Affairs)

3/7/18



Department of Botany
School of Biosciences & Biotechnology
Baba Ghulam Shah Badshah University,
Rajouri, J&K – 185234

The Dean
Academic Affairs
BGSB University
Rajouri,

Ref. No BGSBU/BBB/18/385
Date: 4/4/18

Sub: Syllabi of M. Phil. and Pre Ph. D courses in Botany, 2018

(Through Dean, School of Biosciences and Biotechnology)

Sir,

Kindly find enclosed herewith the syllabi of M. Phil. and Pre Ph. D courses in Botany, 2018 (one copy each).

This is for further necessary action at your end.

Thanking you

Yours faithfully,

4/4/2018
COORDINATOR
M.Sc Programme in
BOTANY

Dean
School of Biosciences & Biotechnology
BGSB University, Rajouri

M.Phil. (Botany) Examination -2018

Course Code: M. Phil. Bot - 01

Course Title: Research methodology and techniques

Credits: 04

Maximum Marks: 100

Duration of Exam: 3 hours

Unit 1: Basics of research methodology

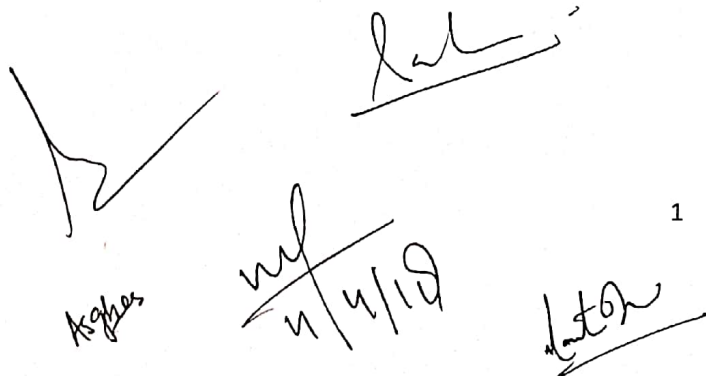
- 1.1 Introduction: meaning and definition, objectives of research, types of research.
- 1.2 Research problem: definition, necessity and techniques of defining research problems, formulation and objectives of research problem.
- 1.3 Research design: meaning, need and features of good research design, types of research design, basic principles of experimental design (RBD and CRD).
- 1.4 Thesis writing: Manuscript preparation, Citation style; Introduction to SPSS (Statistical Package for Social Science).

Unit 2: Survey and documentation

- 2.1 Methods of survey: physiognomic, phytosociological and grid methods; advantages and disadvantages.
- 2.2 Sampling methods: introduction and types, Sampling designs: census and sample survey, their characteristics and techniques.
- 2.3 Field Techniques: Herbarium preparation: collection, recording information, pressing, poisoning, drying, and preservation of herbarium specimens.
- 2.4 Presentation and interpretation of field data, Forest mapping and change detection using Remote Sensing and GIS.

Unit 3: Microscopy and Spectroscopy

- 3.1 Principles and application of light, Phase-contrast and Fluorescence Microscopy.
- 3.2 Principles, working and application of Scanning and Transmission Electron Microscopy.
- 3.3 Principles, working and application of UV – Visible Spectroscopy.
- 3.4 Principles, working and application of Atomic Absorption and Plasma Emission Spectroscopy.

The bottom of the page contains several handwritten marks. On the left, there is a large checkmark and the signature 'K. S. S. S.'. In the center, there is a signature 'm' and the date '11/11/19'. On the right, there is a signature 'L. S. S.' and the number '1'.

M. Phil. (Botany) Examination -2018

Course Code: M. Phil. Bot - 02
Course Title: Lichen Systematics, techniques
and importance
Credits: 04

Maximum Marks: 100
Duration of Exam: 3 hours

Unit 1: Plant classification: overall view

- 1.1 History, objectives and principles of plant taxonomy.
- 1.2 Taxonomic hierarchy: species concept – classical and biological; genus and family concept.
- 1.3 Artificial, Natural and Phylogenetic systems of classification.
- 1.4 Process of Speciation, reproductive isolation, modes of speciation (sympatric, allopatric and parapatric).

Unit 2: Lichen systematic

- 2.1 Early lichen system: parasitic lichens, parasymbionts and lichen parasites.
- 2.2 Lichenised and non lichenized fungi.
- 2.3 Taxonomic categories in lichenology: ascolichens, basidiolichens and Lichen imperfectii.
- 2.4 Ultrastructure of lichenized symbionts (phycobionts, mycobionts).

Unit 3: Modern aids used in lichen taxonomy

- 3.1 Isolation of lichens: Preparation of material for extraction, methods of extraction.
- 3.2 Procedures for lichen identification: Colour test, Fluorescence and Microcrystallisation.
- 3.3 Lichen mass spectrometry and Chromatography for identification of lichens.
- 3.4 Identification after previous isolation of lichen components: Melting points, Spectral properties and Chromatographic comparisons.

Unit 4: Methods of isolating and culturing lichen symbionts and thalli

- 4.1 Isolation techniques and culture of fungal and algal symbiont
- 4.2 Synthesizing Lichens
- 4.3 Resynthesis of lichens: introduction and developmental stages
- 4.4 Factors influencing lichen synthesis in laboratory

Unit 5: Lichens: economic importance

- 5.1 Lichens as primary colonizers in ecological succession; role of lichens in paedogenesis.
- 5.2 Lichens as source of food, fodder, spices and condiments.
- 5.3 Lichens as source of medicines, natural dyes and cosmetics
- 5.4 Lichens as pollution indicators, biomonitors and in climate change studies.

Note for paper setter: The question paper will have 10 questions, two from each unit. The candidate will be required to attempt five questions in all, selecting one from each unit. Each question carries equal marks.

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4/4/18

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Asghar

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Rahul

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M.Phil. (Botany) Examination -2018

Course Code: M. Phil. Bot - 03
Course Title: Modern Biology
Credits: 04

Maximum Marks: 100
Duration of Exam: 3 hours

Unit 1 Plant Molecular Systematics

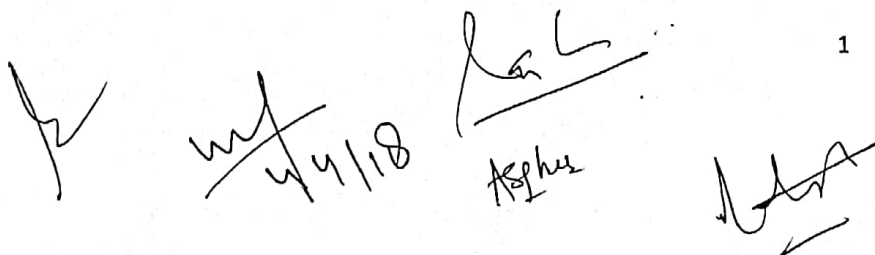
- 1.1 Acquisition of molecular data: DNA sequence data, Polymerase Chain Reaction, DNA Sequencing reaction, Types of DNA sequence data.
- 1.2 Restriction site analysis: Restriction Fragment Length Polymorphism, Allozymes, Microsatellite DNA.
- 1.3 Random Amplified Polymorphic DNAs (RAPD) and Amplified Fragment Length Polymorphism (AFLP)
- 1.4 Modern approaches used in the classification; Biopiracy vis-à-vis IPR regime and its role to check biopiracy, barcoding and its application in checking biopiracy..

Unit 2 Stress Physiology

- 2.1 Salinity stress: effects on growth and photosynthesis of plants; various adaptations of Plants to avoid and overcome salinity stress (ion homeostasis and salt tolerance).
- 2.2 Water deficit: effects of water deficit on plant growth and development, resistance to water deficit (avoidance and tolerance), stomatal signaling during water stress and role of ABA.
- 2.3 Heavy metal toxicity: effects of heavy metals on plants, mechanism of heavy metal detoxification, role of phytochelatins in heavy metal stress tolerance.
- 2.4 Ozone toxicity; effects of ozone on plants, ozone tolerance mechanisms in plants.

Unit 3 Advance Biological Chemistry and Biotechnology

- 3.1 Protein- Structure and function; Flexibility of Protein structure, Stability of folded confirmation. Protein allosterism.
- 3.2 Mechanism of protein folding- different models and Folding Funnel Model, Introduction of proteomics technology, Protein Microarrays- Introduction and applications.
- 3.3 Chemical synthesis and sequencing of DNA: The phosphoramidite method, Dideoxynucleotide procedure, Primer walking and pyrosequencing, Ligation sequencing
- 3.4 Functional genomics- Microarray technology, Serial analysis of gene expression,

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M. Phil. (Botany) Examination -2018

Course Code: M. Phil. Bot - 04

**Course Title: Microbiology, Mycology and
Plant Pathology**

Credits: 04

Maximum Marks: 100

Duration of Exam: 3 hours

Unit 1: Viruses: biology and diversity

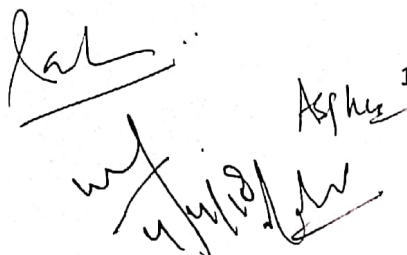
- 1.1 General characteristics; origin and nature; symptomatology; diversity, genome organization: single stranded RNA, double stranded RNA, single stranded DNA and double stranded DNA viruses, virus like agents: viroids, prions- structure and importance.
- 1.2 Viruses: nomenclature and taxonomy; International Committee on taxonomy of viruses; basis of classification.
- 1.3 Isolation and purification of viruses; infection cycle with reference to RNA and DNA containing viruses (*Tobacco mosaic virus*, TMV); mechanism of virus replication (TMV).
- 1.4 Virus transmission (general account): mechanical, seeds mediated; insects: aphids, whitefly, hoppers, nematodes.

Unit 2: Bacteria: diversity, nutrition and reproduction

- 2.1 Bacterial classification and its basis; International Code of Nomenclature for Bacteria- salient features.
- 2.2 Archaeobacteria: major groups - methanogenic, extreme halophiles, thermoacidophiles- diversity of form (general account); ultrastructure of cell and cell wall; phytoplasm- general characteristics.
- 2.3 Nutritional types of bacteria; nutritional mutants and their importance in genetic and physiological studies.
- 2.4 Modes of bacterial reproduction and recombination: asexual and sexual- conjugation, transformation and transduction.

Unit 3: Fungi: diversity and biology

- 3.1 General characteristics of fungi and their distinctiveness in living organisms; Fungal cell and its structure. Thallus organization in fungi: unicellular, coenocytic and multicellular.
- 3.2 Reproduction in fungi, Factor affecting asexual spore formation, maturation, spore dispersal mechanisms, dormancy and germination. Fungal nutrition, use of fungi in immobilized cell technology (outline only).
- 3.3 Role of mycorrhizae in ecosystems-AM in agriculture and horticulture- Mycorrhizae in managed environment: interactions with other microorganisms and pollutants.
- 3.4 Chemistry, production and synthesis of fungal toxins with reference to *Helminthosporium* toxin; Factors responsible for fungal growth and mycotoxin production in agricultural commodities.



4/11/2018