BSC SEM-I P-I

COURSE CODE:17.010

Name of Department – Botany

Name of Course(paper)- B.Sc Ist Semester, Paper-I-Bacteria, Virus, Lichen and Mycoplasma.

Course objective (2 or 3 lines):- To aware students about bacteria, plant viruses, Mycoplasma and Lichens.

Course outcome (minimum 5 points):-

i. Students learn beneficial and harmful aspects of bacteria.
ii. What is structure, How viruses reproduce, How their transmission occurs, what are the symptoms of viral diseases which occurs in local regions and how it could be managed.
iii. What is structure, How mycoplasma groups and reproduce.
iv. What plant diseases are caused by Mycoplasma.
v. Students learn about distribution, internal structure, reproduction and economic use of lichens.

Assessment Method: - Class test, quiz, Records, class discussion.

Text Book:-

1) A text book of Botany by Satish Kumar.
2) A text book of fungi, Bacteria and viruses by H.C. Dubey.
3) A text book of Botany by Singh V., Pande P.C. and Jain D.K.

BSC SEM-I P-II

COURSE CODE:17.020

Name of Department – Botany

Name of Course(paper)- B.Sc Ist Semester, Paper-II-Fungi

Course objective (2 or 3 lines):-

(a) To aware the students about the heterotrophic, eukaryotic group of plants in the evolutionary tree.

(b) To explore the distribution of the group in the environment.

(c) To know the economic roles of fungi in the daily life.

Course outcome (minimum 5 points):-

a) Students could achieve the knowledge of different fungal form.
b) Students could be aware about the role of fungi in the progressive theory of ex solution.
c) Students would have the knowledge of fungi as a group or existing either individually or in association with other groups.
d) To discuss the economic roles that could be applied.
e) The possible roles of fungi in industry and human life could be explored.

Assessment Method: - Class test, quiz, Records, class discussion.

Text Book:-

a) A text book of Botany by Satish Kumar.
b) A text book of Botany by H.N. Srivastav.

BSC SEM-I P-III

COURSE CODE:17.030

Name of Department – Botany

Name of Course (paper)- B.Sc Ist Semester, Paper-Algae

Course objective (2 or 3 lines):-

a) To give fundamental knowledge of lower chlorophylous plants.
b) How these plants is differentiated from other group of plants.
c) To know the conditions favourable for their growth of occurrence.

Course outcome (minimum 5 points):-

a) Students are able to identify these plants.
b) Students achieve the knowledge of occurrence of these plants in the local area.
c) Students know the use of some of these plants in increasing or maintaining the soil fertility of crop plant.
d) Students know the role of some of these plants in reducing the pollution in the holy river Ganga.
e) Students know that some of the plants can be used as rich protein sources.

Assessment Method: -

i. Discussion.
ii. Internal exam (Practical).
iii. Class records etc.

Text Book:-

BSC SEM-I PRACTICAL

COURSE CODE:17.040

Name of Department – Botany

Name of Course: (Practical)- B.Sc Ist Semester

Paper-

Course objective (2 or 3 lines):-

a) To study the different microbial forms through their pictures of the cell and other forms etc.
b) To study the structure of cell wall of bacteria by gram staining.
c) To study local genera of algae and fungi from their natural sources and assign their systematic position on the basis of their habitat, internal and external features.
d) To study certain specimens of the microbes in their natural hosts.

Course outcome (minimum 5 points):-

1) The students through practical classes could be familiar about the natural forms of the microbial system. (bacteria, fungi, algae)
2) The students could be aware of the existence of the microbial forms in the versatile places in the nature.
3) The microbial system like bacteria, fungi and viruses could also be studied in their pathological forms.
4) Practical classes will help the identification and classification of naturally existing bacteria, fungi and algae.

Assessment Method: -

Text Book:-

1) Practical Botany –B.P. Pandey
2) Practical Botany –Bendre Kumar.

BSC SEM-II P-I

COURSE CODE:17.050

Name of Department – Botany

Name of Course (paper)- B.Sc IInd Semester, Paper-I- Bryophyta

Course objective (2 or 3 lines):-

Introduction of array of diversity and development of Bryophytes via. Liverworts, Hornworts and Mosses.

To have a illustrated and concise count of representative types and their comparative morphology, Gametophyte and sporophyte are unravelled the elements of unity in diversity.

Course outcome (minimum 5 points):- The students will be able to

1) Recognise a moss or liverwort.
2) Describe the four features Bryophytes share with other land plants.
3) Be able to distinguish mosses, leafy liverworts and thallose liverworts.
4) Describe vegetative and sexual reproduction in Bryophytes.
5) Describe the general spore dispersal mechanism in liverworts & mosses.

Assessment Method: -

Quiz, class test, discussion, etc.

Text Book:-

1) Botany for degree students- Bryophyta by B.R. Vashishta, Anil Kumar & A.K. Sinha.
2) An introduction to bryophyte – A. Rashid.

Refrence Book:

1) Simplified Course in Botany –B.P. Pandey
2) College Botany vol. II –H.C. Gangulee & A.K. Kar.
3) Cryptogamic Botany vol. I & II –GM Smith, McGraw Hill, New York.

BSC SEM-II P-II

COURSE CODE:17.060

Name of Department – Botany

Name of Course (paper)- B.Sc IInd Semester, Paper-II- Pteridophyta

Course objective (2 or 3 lines):-

a) To discuss the systematic position of pteridophyta in the evolutionary tree.
b) To have the knowledge of different types of habit and habitat of pteridophyta.
c) To know about the economic roles of pteridophyta in nature.

Course outcome (minimum 5 points):-

1) Students could have the knowledge of external and internal structure of different pteridophytes.
2) Distribution patterns of pteridophytes could be known.
3) Economic roles of pteridophytes could be known.
4) Their roles as connecting link between bryophyta and gymnosperms could be known.
5) To explain the economic roles of different genera.

Assessment Method: -

Quiz, class test, Class discussion, etc.

Text Book:-

1) Botany for degree students pteridophyta - Vashishta
2) An introduction to bryophyte – A. Rashid.

Reference Book:

1) Simplified Course in Botany –B.P. Pandey
2) College Botany –B.P. Pandey.
3) Pteridophyta -Rashid.

BSC SEM-II P-III

COURSE CODE:17.070

Name of Department – Botany

Name of Course (paper)- B.Sc IInd Semester, Paper-III- Gymnosperm

Course objective (2 or 3 lines):-

1) To aware the students about fundamental knowledge of Gymnosperm.
2) To know the systematic position of different genera in the evolutionary.
3) To explore the economic role of different Gymnospermic in the nature.

Course outcome (minimum 5 points):-

1) Students to achieve the knowledge about the very prominent group of plants.
2) Students to achieve the systematic position of different genera in the evolutionary tree.
3) Students to achieve the significance of various of gymnosperm.
4) Students get knowledge about Fossils and process of fossilization.
5) Students get knowledge about Fossils and living Gymnosperm.

Assessment Method: -

Essay, class test, Project and debate.

Text Book:-

1) Gymnosperm: HN Srivastava.
2) Gymnosperm: Singh Pandey and Jain.

BSC SEM-II PRACTICAL

COURSE CODE:17.080

Name of Department – Botany

Name of Course (paper)- B.Sc IInd Semester, Practical

Course objective (2 or 3 lines):-

a) To aware the students the increasing hiarchy of the evolutionary tree from the bryophyte to angiosperms through their characters.
b) To study the specimens of the bryophyte, pteridophyta and gymnosperm (in the course) including their morphological and anatomical features and assign and identify their systematic position.
c) To aware the students the economic important genera of the above three groups.

Course outcome (minimum 5 points):-

a) The students have the knowledge of connecting link in the form of bryophyte from aquatic to terrestrial form.
b) They could also explore the evolution of stellar system in the different pteridophytic members.
c) They could see the well developed stellar system in the gymnosperm which has naked flowers.
d) The morphological and anatomical features of the specimens of above three groups proves the amphibious nature of bryophyte, well developed stealer system in pteridophyta and well developed land plant in the form of gymnosperm.

Assessment Method: -

Essay, class test, Project and debate.

Text Book:-

1) Practical Book –Bendre Kumar
2) Practical Botany –B.P. Pandey
3)

BSC SEM-III P-I

COURSE CODE:17.090

Name of Department – Botany

Name of Course- Angiosperm (Paper-I, Sem-III)

Course objective (2 or 3 lines):-

Course gives knowledge about seed plant group which produce food and other economic product for animals including Human beings and also provide environmental balance.

Course outcome (minimum 5 points):-

- Students will be able to get scientific knowledge about seed bearing plant available in their locality.
- Students will be able to access the knowledge of characteristic feature, naming system and identification of flowering plants.
- Students will be able to use their knowledge on diversified flowering plant exemplified by their taxonomic resources level.
- Students will be able to improve their knowledge of plant products, their utility such as fruit, vegetables, flowers and wood etc.
- Student will be able to explicate the role of Angiospermic plant in natural balance and their support.

Assessment Method: -

1) Questions answer among students by oral method after class teaching.
2) Field tour and Herbarious study.

Text Book:-

1) Plant Taxonomy –O.P. Sharma.
2) Plant Taxonomy –H.P. Pandey.

Reference:-

1) Plant Taxonomy –GHM Lawrence.
2) Flora of UP –JF Dathee.

BSC SEM-III P-II

COURSE CODE:17.100

Name of Department – Botany

Name of the Course- B.Sc-Sem-III

Paper-II: Cytology

Course objective (2 or 3 lines):-

a) To aware the students the cell as basic unit of life.
b) To discuss the internal structure of all and all organelles.
c) To discuss the roles of different cell organelles.

Course outcome (minimum 5 points):-

a) Cellular organisation for prokaryotic and eukaryotic forms could be known.
b) The nature of division of labour inside the cell and body could be explained.
c) The assigned roles of different cell organelles could be known.
d) Factors affecting cell could be known.
e) Different of all divisions could be discussed.

Assessment Method: -

Quiz, class-test, project.

Text Book:-

3) Plant Taxonomy –O.P. Sharma.
4) Plant Taxonomy –H.P. Pandey.

Reference:-

1) Introductory Cytology –Dr. Veer Bala Rastogi.
2) Cytology –C.B. Power.

BSC SEM-III P-III

COURSE CODE:17.110

Name of Department – Botany

Name of the Course- B.Sc-Sem-III

Paper-III: Plant Anatomy

Course objective (2 or 3 lines):-

To provide knowledge about basic internal structural units plant system.

Course outcome (minimum 5 points):-

i) Students achieve knowledge about simple and complex tissues of dicot and monocot stem and root.
ii) Structure of dicot and monocot stem and root.
iii) Theories related to Apical meristem in root and shoot.
iv) Internal structure of dicot and monocot leaf.
v) Students knew about Anomalous characters of different genus.

Assessment Method: -

Quiz, class-test, class discussion.

Text Book:-

i) Structure and reproduction of Angiosperms by R.P. Singh.
ii) New modern Botany (plant anatomy and embryology of Angiosperms by S.K. Gupta.

BSC SEM-III PRACTICAL

COURSE CODE:17.120

Practical

B.Sc- IIIrd Semester

Course objective (2 or 3 lines):-

1) To study the local angiospermic flora in details and assigning their taxonomical position including all the characters as habit to floral diagram (in taxonomical terms).
2) To aware the students about the structure of the cell and cell organelles & its function through models and photographs.
3) To explore the knowledge about different parts as well as anomalous behaviour present in roots & stems.

Course outcome (minimum 5 points):-

1) Students are able to identify the various angiospermic plants available in the local region.
2) Students are able to classify them according to Natural system of classification in taxonomical forms (with technical terms).
3) Students achieve the knowledge of structure and function of various cellular structures.
4) Students are able to identify various anatomical modification present in stem or root due to internal or environmental factors.
5) Students are able to in listing their experimental findings in records.

BSC SEM-IV P-I

COURSE CODE:17.130

Name of Department – Botany

Name of the Course(paper)- B.Sc-Sem-IV

Paper-I: Plant Resources and utilization

Course objective (2 or 3 lines):-

To aware students about, Economic importance of Fiber, Wood, medicinal plants and oil yielding plants.

Course outcome (minimum 5 points):-

i) Students know about, which part of plant is used for economic importance, How it can be extmeted for useful product.
ii) Students studied Extmetion and purification of sugar.
iii) Students studied identification of wood, their durability and their product.
iv) Student studied about plants and their plants which are medically beneficial to living beings.
v) Students learn about plant and their parts which produce oil and how it is beneficial for country.

Assessment Method: -

Quiz, class-test, records, class discussion.

Text Book:-

i) Diversity of Angiosperms –systematic, development and reproduction by Singh V, Pande P.C and Jain D.K.
ii) New introduction Botany by Dr. S.K. Gupta.

BSC SEM-IV P-II

COURSE CODE:17.140

Name of Department – Botany

Name of the Course(paper)- B.Sc-Sem-V

Paper-II: Genetics

Course objective (2 or 3 lines):-

a) To introduce the students clear about concept of gene.
b) To make the students clear about the structure and function of genes.
c) To aware the students for the different variations in the nature of the gene.

Course outcome (minimum 5 points):-

a) The students could be familiar with the miracles of the most important bio molecule i.e. DNA.
b) A relationship of genes could be explored for their functions in different functions carelitions.
c) Different types of genes could be explode for their functions in different functional conditions.
d) Variations in the genetic material could be assigned due to their changed conditions under various environmental conditions.

Assessment Method: -

Quiz, class-test, records, class discussion.

Text Book:-

1) Genetics –Dr. Veer bala Rastogi.
2) Genetics –strickberger.

BSC SEM-IV P-III

COURSE CODE:17.150

Name of Department – Botany

Name of the Course(paper)- B.Sc-Sem-IV

Botany IIIrd Plant Reproduction

Course objective (2 or 3 lines):-

1) To categorised the angiospermic plants on the basis of the floral characters.
2) To aware the students about various mode of reproduction in Angiospermic plants.

Course outcome (minimum 5 points):-

1) Students to achieve various angiospermic plants on the basis of floral characters.
2) Students to achieve the various steps of reproduction in Angiospermic.
3) Students to achieve the knowledge about various mechanisms and their application of reproduction.
4) Students to achieve knowledge about different modes of reproduction of angiospermic plants in other fields as plants Tissue culture.
5) Students to achieve knowledge of fruits and their dispersal.

Assessment Method: -

Essay, class-test, project, records.

Text Book:-

1) Embryology of Angiosperms 6th eds. By S.S. Bhojwani, S.P. Bhatnagar and P.K. Dantu.
2) Introduction to the embryology of Angiosperm by P. Maheshwari.

BSC SEM-IV PRACTICAL

COURSE CODE:17.160

Practical

B.Sc- IVth Semester

Course objective (2 or 3 lines):-

1) To explore the economic importance of fibres wood, medical & oil yielding plants & their parts.
2) To aware the students, the structure of nucleic acids, genes through different models and photography's. To study the different types of non-allelic interactions present in the system.

Course outcome (minimum 5 points):-

1) Students are able to identify most durable wood and their age can be determined for economic purposes.
2) The different parts of fibre yielding plants could be comparatively assessed for their quality & durability.
3) The different plant parts of medicinal importance could be explored quality wise for control of different diseases.
4) The quality & utility of different oil yielding plants could be assessed.

BSC SEM-V P-I

COURSE CODE:17.170

B.Sc Semester V

Name of Department – Botany

Name of the Course(paper)- Plant Physiology

Course objective (2 or 3 lines):-

i) To explore the knowledge of internal functioning of plants.
ii) To give the knowledge of role of various elements in the several of plant life.

Course outcome (minimum 5 points):-

i) Students gain the knowledge of role of various internal functions of plant and how these functions are correlated with various environmental factors.
ii) Students achieve the knowledge of importance of water in plant body structure and its functions.
iii) Students are able to know the role of various elements in the growth of plants and their deficiency symptom.

Assessment Method: -

Through discussion, practical records, internal exams.

Text Book:-

1) Plant physiology –H.N. Singh.
2) Plant physiology –S.K. Verma and Mohit Verma Biochemistry.

BSC SEM-V P-II

COURSE CODE:17.180

Name of Department – Botany

Name of the Course (paper) - B.Sc Semester V

Paper-II-Biochemistry

Course objective (2 or 3 lines):-

To aware students about structure of proteins, biological role of carbohydrates, enzymes and lipids.

Course outcome (minimum 5 points):-

i) Students understand basic structure of proteins.
ii) Students knew about classification and properties of carbohydrates.
iii) Students learn about enzymes classification, enzymes properties and factors affecting enzymatic activities.
iv) Students understand about fatty acid properties and their oxidation.
v) Students learn about mechanism of nitrogen fixation, factors affecting it and microbes involved in it and microbes used as bio fertilizers.

Assessment Method: -

Quiz, class-test, records, class discussion.

Text Book:-

i) Plant physiology –H.N. Singh.
ii) Plant physiology –S.K. Verma and Mohit Verma Biochemistry.

BSC SEM-V P-I II

COURSE CODE:17.190

Name of the Course (paper) - B.Sc Semester V

Paper-III-Plant biotechnology

Course objective (2 or 3 lines):-

The objective of the course is to give students basic knowledge of classical and modern plant biotechnology processes. Understanding of biotechnological processes has also applicative value in pharmaceutical and food industry in agriculture and in ecology.

Course outcome (minimum 5 points):- The students will be able to-

1) Describe the concepts and principles in plant biotechnology.
2) Apply the concept of plant growth media and culturing of plant cell, tissue and organs.
3) Describe cellular titopotency, differentiation, organogenesis, somatic seeds.
4) Explain the tools and techniques of Genetic engineering, Recombinant DNA technology & cloning vectors.
5) Describe the genomics and cDNA library, molecular markers used in plant biotechnology.

Assessment Method: -

Quiz, class-test, group discussion, etc.

Text Book:-

1) Dubey, R.C. – A text book of biotechnology.
2) P.K. Gupta – Plant Biotechnology.

Refrence Book:-

1) Chrispeels M.J. Sadava D.E. plants, Genes and Crop Biotechnology, Jones and Bartlett.
2) Razdan M.K. –Introduction to plant tissue Culture.
3) Heldt, H.W. –Plant Biochemistry and Molecular Biology.

BSC SEM-V P-I V

COURSE CODE:17.200

Name of Department – Botany

Name of the Course (paper) - B.Sc Semester V

Paper-IV-Ecology

Course objective (2 or 3 lines):-

1) To aware the students fundamental knowledge of Ecology.
2) To aware various environment components.
3) To aware the students about how vegetation are vary according to climatic condition.

Course outcome (minimum 5 points):-

1) Students to achieve atmosphere, light, Temperature, soil.
2) Students to know about various adaptations of plants.
3) Students to achieve various components of Environments and their effect.
4) Students to achieve knowledge of various climates.
5) Students to achieve various types of forest and grassland.

Assessment Method: -

Essay, class-test, Project and debate.

Text Book:-

1) Ecology & Environmental –PD Sharma.
2) Plant Ecology –KN Bhatia

BSC SEM-V PRACTICAL

COURSE CODE:17.210

Practical

B.Sc- Vth Semester

Course objective (2 or 3 lines):-

1) Demonstration of laboratory instruments and experiment of osmosis, diffusion transpiration, photosynthesis as well as respiration.
2) Estimation of protein Carbohydrate, enzymes and lipids by various methods.
3) Preparation of plant growth media and culturing of plant cell, tissues and organs.
4) Study of local vegetation and calculation of frequency, density, abundance, dominance and life forms.

Course outcome (minimum 5 points):-

1) Students get knowledge of various physiological and ecdogical instruments.
2) Students get knowledge of estimation of various bio molecules by standardized methods.
3) Students get the knowledge of importance of totipotency.
4) Students aware about the impact of various environmental factors on vegetation.

BSC SEM-VI P-I

COURSE CODE:17.220

Name of Department – Botany

Name of the Course (paper) - B.Sc Semester VIth

Paper-I- Microbiology

Course objective (2 or 3 lines):-

To aware students about micro organisms, their distribution and application of microbes for living beings.

Course outcome (minimum 5 points):-

i) Students knew about application of microbiology.
ii) Students learn habitat of microbes.
iii) Student understands techniques of isolation and culture of microbes.
iv) Students learn about Immunity, Structure of antigen end antibody and their Interaction.
v) Students got basic knowledge about use of microbes industrial level, role of microbes in fermentation, vaccines and antibiotics.

Assessment Method: -

Essay, class-test, Class discussion, Examination.

Text Book:-

1) A text book of microbiology by R.C. dubey.
2) Prescott's Microbiology by Joanne Willey & Linda Sherwood & Christopher, J Wolverton.

BSC SEM-VI P-II

COURSE CODE:17.230

Name of Department – Botany

Name of Course- Environmental Pollution (paper-II, Sem- VI) - Semester VIth

Course objective (2 or 3 lines):-

Course develops a concept about Environment and their component. Knowledge about Pollution causing by various pollutants that decline the normal surrounding of living beings.

Course outcome (minimum 5 points):-

i) Students will be able to learn about environment and their component.
ii) Students will be able to developed knowledge to and aware the society.
iii) Students will be able to improve their knowledge about various kinds of pollution and their effects.
iv) Students will be able to access identify relevant topic and evaluate the scientific technique.
v) Students will be able to explain how people save their environment, develop greenery and role of tree plantation etc.

Assessment Method: -

1) Question-answer method among the student after class teaching.
2) Field study.

Text Book:-

1. Ecology & Environment –P.D. Sharma.
2. Environment Biology -Shukla & chandel

Reference:-

1) Plant environment – R.F. Daubemire
2) Environmental biology –B. Mukharjee
3) Ecology –E.P. Odem.

BSC SEM-VI P-III

COURSE CODE:17.240

Name of Department – Botany

Name of the Course- Molecular Genetics

Course objective (2 or 3 lines):-

i) To give the knowledge of role of Genetics material in various metabolic processes and how these process are regulated by genes in a cell (a basic unit of life) from time to time.

ii) To give the knowledge about the various natural and artificial agents affecting the structure and function of genes, resulting in to different types of health problems.

Course outcome (minimum 5 points):-

Students achieve the knowledge of the followings

i) How the genes expressed and how their functions are regulated.

ii) About the injurious agents present in the environment and how they affect the genetic material of living beings.

iii) About the jumping genes i.e. how the genes are replaced.

Assessment Method: -

Through discussion, Practical records, internal exams.

Text Book:-

1) Genetics –Dr. Veer Bala rastogi
2) Genetics –P.K. Gupta

BSC SEM-VI P-IV

COURSE CODE:17.250

Name of Department – Botany

Name of the Course- B.Sc VIth Sem.

Paper IVth –Plant Growth

Course objective (2 or 3 lines):-

The objective of the course is to give students knowledge about plant growth and development. The physiological process of growth, juvenility, maturity, leaf and shoot growth patterns, floral initiation and department, embryogenesis, fruit set, dormancy and senescence.

Course outcome (minimum 5 points):-

The students will be able to-

1. Define growth and development.
2. Describe the kinetics of plant growth.
3. Explain seed dormancy, seed germination, seed viability and factors of their regulation.
4. Explain the concept of photoperiodisms & vernalization.
5. Explain different types of plant hormones and their effect.

Text Book:-

1. A text book of plant physiology & biochemistry S.K. Verma & Mohit Verma.
2. Fundamental of plant physiology by V.K. jain.

Reference Book:-

1. Introduction plant Physiology –by Noggle and Fritz.
2. Plant Physiology –by S.N. Pandey & B.K. Sinha.
3. Plant Physiology –by Robert M. Devlin.

BSC SEM-VI PRACTICAL

COURSE CODE:17.260

Practical

B.Sc- VIth Semester

Course objective (2 or 3 lines):-

1) Demonstration of laboratory instruments and preparation of cutture media, sterilizatuion, isolationcy microbes by different techniques.
2) Measurement of water pollination by estimation of BOD, COD, CO_2 by titration methods. Students also do testing of various types of soil.
3) To aware the students the structure of gene & its expression, various types of RNA through modds and photographs.
4) Measurement of plant growth by various methods & role of phytohermones on various activities of plant

Course outcome (minimum 5 points):-

1) Students achieve the knowledge of various microbiological laboratory instruments.
2) Students are able to distinguish between polluted and non-polluted water and also knew the idea about palatable and non-palatable water.
3) Students given the knowledge of measurement of various plant growth phases and they also get the knowledge of physiological role of various phytohermones.