PROGRAMME OUTCOMES
PROGRAMME SPECIFIC OUTCOMES
COURSE OUTCOMES

B.Sc Botany

OUTCOMES:

At the end of Under Graduate Program at St. Thomas College (Autonomous), a student will have obtained:

PO1	Critical Thinking: Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives
PO2	Effective Communication: Ability to speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology
PO3	Effective Citizenship: Ability to demonstrate empathetic social concern and equity-centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering
PO4	Environment and Sustainability: Ability to understand the issues of environmental contexts and sustainable development
PO5	Ethical Living: Ability to recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them
PO6	Social Interaction: Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings
PO7	Problem Solving and Analytical Skills: Ability to think rationally, analyze situations and solve problems adequately

Program Specific Outcomes:

At the end of B.Sc Botany. at St. Thomas College (Autonomous), Thrissur, a student will have developed:

PSO1	Understand the principles of identification, classification and evolution of various plant groups according to their morphology, anatomy and palynology.
PSO2	Understand the principles life processes, biomolecules, and heredity.
PSO3	Evaluate biodiversity loss, and develop conservation strategies.
PSO4	Classify plants according to the principles of plant systematics, apply techniques of plant breeding, plant propagation and genetic engineering.

Course Outcomes:

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BOT1B01T - ANGIOSPERM ANATOMY, REPRODUCTIVE BOTANY & PALYNOLOGY

At the end of this course, a student will have developed ability to:

CO1	Understand the significance of non-living inclusions in the cells.
CO2	Differentiate tissues in the plant body and their functions.
CO3	Compare primary and secondary anatomical structure of plants
CO4	Distinguish normal and anomalous growth by anatomical features
CO5	Develop sectioning skill for anatomical studies
CO6	Recognize the micro and megaspore development in angiosperms
CO7	Analyse the structure of embryo and pollen of angiosperms.
CO8	Perform hand sectioning of plant parts, and viability tests of pollen grains.

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BOT2B02T - MICROBIOLOGY, MYCOLOGY, LICHENOLOGY AND PLANT PATHOLOGY

At the end of this course, a student will have developed ability to:

CO1	Understand the structure and lifecycles of bacteria and viruses.
CO2	Realize the economic importance of bacteria in industry.
CO3	Demonstrate bacterial staining and culture.
CO4	Recognise characters, distribution and biology of major fungal groups.
CO5	Comprehend ecological and economic importance of fungi.
CO6	Demonstrate fungal micro slide preparation.
CO7	Know the structure, reproduction and importance of Lichens.
CO8	Examine thallus and fruiting body for identification of lichens.
CO9	Comprehend the symptoms of plant diseases and control measures
CO10	Analyze the symptoms of local plant diseases.

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BOT3B03T - PHYCOLOGY, BRYOLOGY AND PTERIDOLOGY

At the end of this course, a student will have developed ability to:

CO1	Understand structure, pigmentation, reproduction and lifecycle of algae.
CO2	Understand morphology, anatomy and reproduction of Algae
CO3	Distinguish the economic importance and commercial products of algae.
CO4	Differentiate the vegetative and reproductive structures of algae.
CO5	Comprehend morphology, anatomy, reproduction and lifecycle of bryophytes.
CO6	Describe the characters, distribution and economic importance of bryophytes.
CO7	Analysis the morphology and anatomy of bryophyte thallus and reproductive organs
CO8	Recognize the morphology, anatomy, reproduction and life cycle of pteridophytes.
CO9	Understand the evolution, ecology and economic importance of pteridophytes
CO10	Examine the anatomy of stem and reproductive organ of pteridophytes.

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BOT4B04T - METHODOLOGY AND PERSPECTIVES IN PLANT SCIENCE

At the end of this course, a student will have developed ability to:

CO1	Understand the nature of science and steps in scientific method.
CO2	Develop skills in ICT tools and bibliography.
CO3	Recognise the basic tools for data collection and its interpretation.
CO4	Comprehend the basic biostatistical tools and its applications.
CO5	Apply biostatistical tool in research projects and derive conclusions.
CO6	Understand the properties of biological solutions and separation techniques.
CO7	Preparation and analysis of solutions and buffers.
CO8	Describe the principles of microscopy and micrometry.
CO9	Explain the paraffin method of permanent slide preparation.
CO10	Demonstrate experiments in microscopy, micrometry and microtomy.

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BOT5B06T- GYMNOSPERMS, PALAEOBOTANY, PHYTOGEOGRAPHY, EVOLUTION

At the end of this course, a student will have developed ability to:

CO1	Understand morphology, anatomy, reproduction and life cycle of gymnosperms.
CO2	Demonstrate anatomy of stem, leaf and reproductive organs of gymnosperms.
CO3	Describe the formation and types of fossils with geological time scale.
CO4	Discuss the Indian contributions in paleobotany.
CO5	Analyze the anatomy of fossils pteridophytes and gymnosperms.
CO6	Explain the phytogeography and its significance.
CO7	Understand the endemism and phytochoria.
CO8	Differentiate the phtogeographical zones of India.
CO9	Comprehend the theories of evolution.
CO10	Evaluate the process of organic evolution of species and speciation.

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BOT5B07T - ANGIOSPERM MORPHOLOGY& SYSTEMATICS

At the end of this course, a student will have developed ability to:

CO1	Understand the morphology of an angiosperm plant.
CO2	Recognize the types of fruits in angiosperms.
CO3	Identify the morphological parts of the angiosperm plant for taxonomy.
CO4	Understand the components of taxonomy and systems of classification.
CO5	Identify the diagnostic features and economic importance of angiosperm families
CO6	Realize the taxonomic structure, hierarchy and character.
CO7	Elaborate the modern trends in taxonomy.
CO8	Comprehend the process of identification and nomenclature in plant taxonomy.
CO9	Differentiate and illustrate plants based on taxonomic keys.
CO10	Prepare herbarium specimens and artificial keys.

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BOT5B08T - TISSUE CULTURE, HORTICULTURE, ECONOMIC BOTANY & ETHNOBOTANY

At the end of this course, a student will have developed ability to:

CO1	Understand the principles and techniques plant tissue culture.
CO2	Explain the applications of tissue culture.
CO3	Demonstrate culture medium preparation, sterilization and inoculation.
CO4	Demonstrate potting, manuring, irrigation and seed propagation in horticulture.
CO5	Comprehend the methods of gardening and production of horticultural crops.
CO6	Demonstrate cutting, grafting, layering and create indoor and outdoor gardens.
CO7	Recognize the binomial, family and useful part major economic crops of India.
CO8	Identify the economically important local plants and their useful parts.
CO9	Understand the significance of traditional botanical knowledge and its scope.
CO10	Identify local plants with ethnobotanical significance.

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BOT5B09T - CELL BIOLOGY AND BIOCHEMISTRY

At the end of this course, a student will have developed ability to:

CO1	Understand the ultra-structure of a plant cell and its functions.
CO2	Recognize the structure of nucleus and chromosomes.
CO3	Identify the cell cycle and chromosomal aberrations.
CO4	Prepare slides of meiotic and mitotic stages.
CO5	Comprehend the structure and function of carbohydrates and lipids.
CO6	Explain the structure and function of acids and proteins.
CO7	Discuss the structure and function of nucleotides and nucleotides derivatives.
CO8	Understand the structure and function of secondary metabolites and enzymes.
CO9	Test the presence of macromolecules from samples.
CO10	Demonstrate colorimetry and spectrophotometry

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BOT6B10T - GENETICS AND PLANT BREEDING

At the end of this course, a student will have developed ability to:

CO1	Understand the Mendelian heredity and variations.
CO2	Comprehend the interaction of genes and multiple alleles.
CO3	Explain the quantitative inheritance, linkage and crossing over.
CO4	Identify the extra nuclear inheritance and population genetics.
CO5	Analyze and solve problems in gene inheritance.
CO6	Apprehend the plant genetic resources and plant introduction.
CO7	Recognize the various plant breeding techniques.
CO8	Comprehend modern tools for plant breeding.
CO9	Undertake hybridization experiments in plants.
CO10	Examine the floral biology of common crops.

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BOT6B11T - BIOTECHNOLOGY, MOLECULAR BIOLOGY & BIOINFORMATICS

At the end of this course, a student will have developed ability to:

CO1	Understand the recombinant DNA technology.
CO2	Recognize the application of biotechnology.
CO3	Demonstrate the DNA extraction of plants.
CO4	Describe the structure of Nucleic acids.
CO5	Explain the gene expression and regulation.
CO6	Elaborate types of mutation and significance.
CO7	Comprehend role and application of bioinformatics.
CO8	Understand the procedure of genomics and proteomics.
CO9	Describe the molecular phylogeny and drug designing.
CO10	Demonstrate the use of biological database for genomics.

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BOT6B12T - PLANT PHYSIOLOGY AND METABOLISM

At the end of this course, a student will have developed ability to:

CO1	Recognise the water relationships of plants and transpiration.
CO2	Understand the ascent of sap and transpiration.
CO3	Comprehend the process of absorption and mineral nutrition.
CO4	Explain the process of photosynthesis and its significance.
CO5	Recognize the process of nitrogen fixation and phloem transport.
CO6	Discuss the plant growth and development.
CO7	Elucidate the seed dormancy and germination.
CO8	Describe the process of glycolysis.
CO9	Comprehend the oxidative phosphorylation.
CO10	Demonstrate plant physiological experiments.

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BOT6B13T - ENVIRONMENTAL SCIENCE

At the end of this course, a student will have developed ability to:

CO1	Comprehend the structure and functions of ecosystems.
CO2	Understand the ecological adaptations of plants and succession.
CO3	Discuss the biodiversity and its conservation strategies.
CO4	Recognize the environmental pollution and its management.
CO5	Explain global environmental changes in climate.
CO6	Recognize the phyotechnological approaches in pollution management.
CO7	Elaborate the environmental legislations in India.
CO8	Understand the ecosystems and communities of biosphere.
CO9	Construct food web and ecological pyramids.
CO10	Conduct plant community and diversity studies.

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BOT6B14T(E1)- Elective-1: GENETIC ENGINEERING

At the end of this course, a student will have developed ability to:

CO1	Comprehend the method of gene cloning.
CO2	Understand protocols for preparation of genomic DNA.
CO3	Explain the process of Isolation and purification of RNA.
CO4	Recognize the principle and method of electrophoresis.
CO5	Discuss the method of molecular hybridization.
CO6	Describe the procedure of gene cloning and gene transfer.
CO7	Understand the production of transgenic plants.
CO8	Understand the applications of recombinant DNA technology.
CO9	Discuss the ethical, social and legal issues on recombinant DNA technology.
CO10	Demonstrate the spectrophotometry and electrophoresis.

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BOT6B14T(E2)- Elective-2: ADVANCED ANGIOSPERM SYSTEMATICS

At the end of this course, a student will have developed ability to:

CO1	Discuss the history of plant taxonomy.
CO2	Understand the methods in plant taxonomy.
CO3	Elaborate the taxonomic characters and its utilization in systematics.
CO4	Prepare herbarium specimens and taxonomic keys.
CO5	Utilize the plant taxonomic resources for plant identification.
CO6	Understand and practice ICN rules in plant nomenclature.
CO7	Review on the Angiosperm phylogeny group system of classification.
CO8	Recognize major plant families and their evolutionary trends.
CO9	Identify plants with flora and taxonomic keys.
CO10	Conduct floristic surveys for plant checklists.

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BOT6B14T(E3)- Elective-3: GENETICS AND CROP IMPROVEMENT

At the end of this course, a student will have developed ability to:

CO1	Understand crop genetics and breeding in economic plants
CO2	Discuss the plant genetic resources.
CO3	Recognize the crop improvement institutes in the world.
CO4	Apply the process of plant breeding by selection.
CO5	Recognize the process of plant breeding by hybridization.
CO6	Explain the methodology of ploidy and mutation breeding
CO7	Understand the breeding methodology for stress and drought resistance.
CO8	Describe the breeding methodology for disease and insect resistance.
CO9	Demonstrate the hybridization techniques in local plants.
CO10	Illustrate the floral biology of common crop plants.