



**OFFICE OF THE PRINCIPAL, S.K.C.G. (AUTONOMOUS) COLLEGE,
PARALAKHEMUNDI, GAJAPATI, ODISHA-761200**

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PROGRAMME OUTCOME
DEPARTMENT OF BOTANY

Objectives	Programme Outcome
To enable students gain requisite knowledge and acquire ability to apply them as and when required	On graduation, the student will have the following abilities: a) A fundamental as well as a higher level of understanding, comprehension, analysis and articulation of concepts studied. b) Will have the ability to identify problems/issues and come up with creative solutions.

SEMESTER - I

COURSE OUTCOME		Papers	Learning Outcome & ATTAINMENT Level
CO 1	Describe and define the different microbial life forms, reasoning their biological status in Plant kingdom	Core Course Paper I & II GE 1A	SGPA on basis of Credits earned from MSE (Mid Semester Examinations or CIA-Continuous Internal Assessments) & ESE (End Semester Examinations)
CO 2	Identify specific, type genus and species of Viruses, Bacteria, microbial Algae, Fungi, their structure, life histories in line with their Prokaryotic-Eukaryotic organization		
CO 3	Apply the micro-biodiversity knowledge gained, analyze the fundamentals of Cell ultra-structure, the structure and functions of cell organelles and Cellular Macro-Micro biomolecules		
CO 4	Develop a strong foundational knowledge on diversity, structure, life-cycle and economic and phyto-pathogenic importance of microbial life forms		
CO 5	To assess-evaluate and summarize the complex topics/issues concerning these lower kingdom life-forms		
CO 6	A student should be able to articulate, express verbally or demonstrate/write comprehensively on any of the topics covered.		

SEMESTER - II

COURSE OUTCOME		Papers	LO & ATTAINMENT Level
CO 1	Have knowledge on the Salient features of different Fungus, extensively about the various plant pathogens under chapters Mycology and Phytopathology Archegoniate	Core Course Paper III & IV GE -2A	SGPA on basis of Credits earned from MSE (Mid Semester Examinations or CIA-Continuous Internal Assessments) & ESE (End Semester Examinations)
CO 2	Identify key concepts/ideas on life forms under Archegoniate, reasoning their phylogeny and biological status in Plant kingdom		
CO 3	Comprehend the different physiological processes and metabolic pathways in plants		
CO 4	Conceptualize questions in the above mentioned complex subjects in Plant life-forms, their evolutionary significance and the different biochemical routes in their life cycles		
CO 5	Ability to Summarize all the biological concepts illustrated through the topics covered and self-assess the comprehension levels		
CO 6	Acquire expression abilities on the above topics in writing, discuss or write in shapes of short and/or long, topic specific notes		

SEMESTER - III

SEMESTER - III COURSE OUTCOME		PAPERS	LO & ATTAINMENT Level
CO 1	Define and elaborate description about anatomy of Angiospermic plants	Core Course Paper V,VI & VII GE -3A	SGPA on basis of Credits earned from MSE (Mid Semester Examinations or CIA-Continuous Internal Assessments) & ESE (End Semester Examinations)
CO 2	Botanically Identify and technically describe several economically important Cereals, pulses, oil yielding plants, spices, medical and cash crops of India.		
CO 3	Fundamentals of Mendelian Genetics, its deviations and their applications		
CO 4	Develop analytical abilities for solving problems in genetics, especially neo-Mendel genetics in crop improvement		
CO 5	Ability in conceptualizing the above prescribed topics		

CO 6	Explain with relevant examples the intricacies of inter-allelic and inter-genic interactions and their consequences		
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SEMESTER IV

SEMESTER IV COURSE OUTCOME		PAPERS	LO & ATTAINMENT Level
CO 1	Students should be able to define/state the different aspects of Nucleic acids, their structure and functions including historical perspectives.	Core Course Paper VIII, IX & X GE -3A	SGPA on basis of Credits earned from MSE (Mid Semester Examinations or CIA-Continuous Internal Assessments) & ESE (End Semester Examinations)
CO 2	Have a clear idea on the mechanisms involved in storage, processing and transmission of bio-genetic information through DNA replication. Transcription and Translation in Pro & Eukaryotic systems.		
CO 3	Study and acquire knowledge in Ecology-Ecosystem dynamics including different components of Environment, their structure and interrelationships.		
CO 4	Develop comprehensive ideas on Population ecology and dynamics, Different Phyto-geographic classification of the State and country, Concepts of Continental Drift and Endemism.		
CO 5	Students can face Assessments on any evaluation process on the above mentioned topics along with concepts of Biosystematics. Identification, Virtual herbarium; E-flora		
CO 6	Come up with comprehensive notes that students can articulate, express, write in any verbal or written assessment processes on all topics mentioned above including those of Principles and rules (ICN), Phylogeny of Angiosperms		

SEMESTER V

SEMESTER V COURSE OUTCOME		PAPERS	LO(Learning Outcome) & ATTAINMENT Level
CO 1	State and visualise the History and scope of Sexual Reproduction in higher plants and the significance of their study, instruments and techniques involved in plant study and assessment and evaluation of different Natural resources.	Core Course Paper XI & XII DSE-I &II	SGPA on basis of Credits earned from MSE (Mid Semester Examinations or CIA- Continuous Internal Assessments) & ESE (End Semester Examinations)
CO 2	Identify and discuss different important concept points on Pollen and ovule biology starting from Sporogenesis (Micro & Mega), Male & Female Gametophytes		
CO 3	Describe in detail the process of Double fertilization and triple-fusion and consequent Embryo and Endosperm formation.		
CO 4	Develop clear-cut ideas on Water potential, its component interactions in water relations. Establish and display the mechanisms of water & mineral conduction, Photosynthate translocation along with the physiology of flowering & Photo-morphogenesis in plants.		
CO 5	The different analytical techniques of separation, characterization, profiling and identification of plant cells, tissues, organelles and biomolecules. The working principle and instrumentation of Microscopy, Centrifugation, Chromatography and electrophoretic separation of Proteins and Nucleic acids.		
CO 6	While a student is able to critically analyze the topics enunciated above can evaluate and state the concepts and phenomenon clearly that underlie the above mentioned subjects.		

SEMESTER VI

SEMESTER VI COURSE OUTCOME		PAPERS	Learning Outcome & ATTAINMENT Level
CO 1	Define and describe the Concepts of metabolism, Anabolism, Catabolism, Molecular signalling and Pathways of signal transduction mediated by Calcium, phospholipids, cGMP, Nitric Oxide	Core Course Paper XIII & XIV DSE-III & DSE IV Project work	SGPA on basis of Credits earned from MSE (Mid Semester Examinations or CIA-Continuous Internal Assessments) & ESE (End Semester Examinations) The final CGPA attained at the Final Semester is calculated taking all SGPA's of all semester and grading is done to award 1 st /2 nd Class Honors with Distinction.
CO 2	Study and critically analyze the metabolic steps involved in Carbon Fixation and assimilation in plants. Describe the complex processes of Oxidation of Carbon along with the detailed, step-wise reactions in Glycolysis and energy harvest and storage in ATP-Synthesis		
CO 3	Thorough study of nature, types and biosynthesis of Lipids, the process of Biotic and abiotic Nitrogen assimilation and metabolism involved in Amino acid biosynthesis		
CO 4	Define concepts of Totipotency, Explants, Callus, micro-propagation, Organogenesis and Somatic embryo-genesis; Describe the process of plant Tissue Culture and its scientific and commercial applications.		
CO 5	Study, evaluate and summarize the concepts and process Recombinant DNA technology, Restriction Endonucleases and methods of gene transfer- Transgenics–Exemplary applications: Golden Rice, Bt-cotton; RoundUp Ready soybean along with the different universally recognized and applied Biosafety rules and Bioethics in Biotechnology		
CO 6	Basic concepts of research, general laboratory practices, Data collection and documentation, scientific writing and its presentation through oral, Power Point and Poster methods and how to conceptualize, design and execute a science Project. On completion of all six semesters, a Botany Graduate should be able to express, articulate and write scientifically on any of the chapters/Topics mentioned above		