GOVERMENT V. Y. T. PG. AUTONOMOUS COLLEGE, DURG

Department of Botany

(Session 2022-2023)

Skill based Value Added Courses

Name of Course: Methodology of Plant Sciences

Course Structure :

1. Introduction
2. Objective & Scope
3. Syllabus
4. Duration of the courses
5. Time table
6. Scheme of Examination Regulation
7. Assessable outcome with assessment criteria

Introduction :-

Value added courses :-

No university a part of curriculum can adequately cover all areas of importance or relevance. It is important for higher education institutions to supplement the curriculum to make students better prepared to meet industry demands as well as develop their own interests and aptitudes. Our college offers a wide variety of short term and also long term certificate courses which are conducted after class hours or during semester breaks. These courses are conducted by professionals and industry experts and help students stand apart from the rest in the job market by adding further value to their carriers.

Objectives -

- To develop a strong foundation in fundamental science for scientific understanding.
- A holistic development of academic excellence to contribute effectively to the understanding of plant sciences.
- To equip the students with the basic skills in identifying and labeling different plants.
- To impart quality education in the field of botany enabling our students to confidently face the job market.
- To sensitize the students towards the need for keeping the environment clean and conserve our natural resources.
- Understand the universal nature of science and demonstrate the use of scientific method.
- To lay a strong foundation to the study in Botany and Impart an in sight in to the different types of classifications in the living kingdom.

- Appreciate the world of organisms and its course of evolution and diversity & Develop basic skills to study Botany in detail.
- To develop Skill in Practical work, Experiments, use of biological tools and techniques.
- To develop Problem solving skills in students to carry out innovative research projects thereby enkindling in them the spirit of knowledge creation.
- Proficiency in the use of recent and advanced biological technologies.
- Awareness to explore the intricacies of life forms at the cellular, molecular and nano level and inspire to disseminate the concept of biodiversity conservation .

Name and Signatures of Members Board of Studies

S. No.	Category	Name of Nominated Members	Signature
1.	Chairperson	**Dr. Ranjana Shrivastava**	
2.	Members	1. Prof. Smt. Gayatri Pandey	
		2. Dr. G. S. Thakur	
		3. Dr. Shriram Kunjam	
		4. Dr. Satish Kumar Sen	
		5. Dr. Vijay Laxmi Naidu	
		6. Mr. Motiram Sahu	
		7. Dr. Rajeshwari Prabha Lahare	
3.	Subject specialist	1. Prof. P.C. Panda Retd. Professor Borsi Durg C.G.)	
		2. Dr. N.B. Singh (Govt. N.PG. Science College Raipur C.G.)	
4.	VC Nominated member	Dr. Aruna Shrivastava (Govt. D.B. Girls PG College Raipur C.G.)	
5.	Corporate/ Industrial area Representative	Shri Manish Jain (Apollo College, Durg C.G.)	
6.	Ex Meritorious Student PG	Umashankar Gayakwad	
7.	Subject expert from other Department	Dr. Divya Minz (Department of Zoology, Govt. V.Y.T. PG. Autonomous College Durg C.G.)	

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Name of Course : Methodology of Plant Sciences

Module 1: Introduction to science and the methodology of science (4 hrs)

Scientific method: steps involved - observation and thoughts, formulation of hypothesis; inductive reasoning - testing of hypothesis; deductive reasoning - experimentation - formulation of theories and laws.

Module 2: Experimentation in science (4 hrs)

Selection of a problem - searching the literature – designing of experiments - selection of variables, study area, and a suitable design. Need of control, treatments and replication. Mendel's experiments as an example of moving from observations to questions, then to hypothesis and finally to experimentation. Ethics in science.

Module 3: Diversity of life and its classification (10 hrs)

Diversity of life: two kingdom classification (Carolus Linnaeus, 1735); phylogenetic classification (August W Eichler, 1878); five kingdom classification (R H Whittaker, 1969). Three domains, six kingdom classification, (Carl Woese, 1990) – criteria for classification, general characters of each kingdom. The three domains of life: Archaea, Bacteria, Eucarya – general characters of each. Diversity of plants: study the salient features of algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.

Module 4 : Basic Botanical skills (6hrs)

Light microscope: dissection and compound microscope – parts and uses. Preparation of specimens for light microscopy - collection and preservation of plant specimens; killing and fixing; killing agents- formalin, ethyl alcohol; fixing agents - Carnoys fluid, Farmer's fluid, FAA; herbarium (brief study only). Whole mounts and sections – hand sectioning – TS, TLS, RLS.

Staining plant tissues: purpose; stains - safranine, acetocarmine, crystal violet. Temporary and permanent mounting, mountants.

Duration of the course : Total 30 hours
(24 hours teaching and 6 hours practical's.)

Scheme of Examinations :--

Number of Questions	20 questions (MCQs) of each module from theory portion.
Exam Mode	Online mode only
Type of questions	Objective type questions with 4 options and 1 correct answer
Duration of Exam	The exam duration is 60 minutes (1 hours)
Subjects	Questions are asked from syllabus.
Language	The question paper is asked in 11 languages English only.
Marking Scheme	4 marks are awarded for each correct answer.
Negative Marking	No Negative Marking.
Practical	20 questions (MCQs) of each module from practical's.
Maximum Marks	100
Minimum passing Marks	50

Practicals :- (6 hrs)

1. Select an important classical experiment and find out the different elements of the methodology of science (e.g., Robert Koch experiment).

2. Conduct field surveys to identify and collect plant specimens to appreciate the diversity of plant kingdom. Submit five preserved specimens (in bottles and/or herbarium) belonging to diverse groups.

3. Identification of plants with vascular elements, plants which produce flowers, fruits, seeds, cone, sporophyll, embryos and study their salient features.
4. Prepare temporary, stained hand sections (TS, TLS, RLS) of plant specimens appropriate for light microscopic studies.

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Out-come:-

Value Added Courses:-

- **The Value Added Education Courses aim to provide additional learner centric graded skill oriented technical training, with the primary objective of improving the employability skills of students. The main objectives of the program are :-**
- **To provide students an understanding of the expectations of industry.**
- **To improve employability skills of students of Govt. V. Y. T. PG. Autonomous College, Durg**
- **To bridge the skill gaps and make students industry ready.**
- **To provide an opportunity to students to develop inter-disciplinary skills.**

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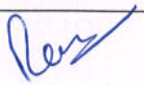
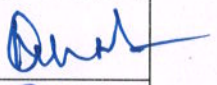
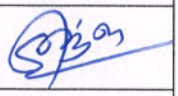
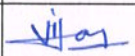
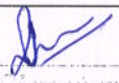
1.	Chairperson	**Dr. Ranjana Shrivastava**	
2.	Members	1. Prof. Smt. Gayatri Pandey	
		2. Dr. G. S. Thakur	
		3. Dr. Shriram Kunjam	
		4. Dr. Satish Kumar Sen	
		5. Dr. Vijay Laxmi Naidu	
		6. Mr. Motiram Sahu	
		7. Dr. Rajeshwari Prabha Lahare	
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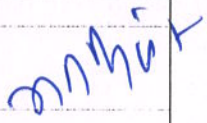
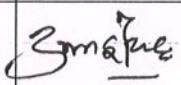
5.	Corporate/ Industrial area Representative	Shri Manish Jain (Apollo College, Durg C.G.)	
6.	Ex Meritorious Student PG	Umashankar Gayakwad	
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