


Average percentage of courses that include experiential learning through project work/field work/internship during last five years

1.3.2.1. Number of courses that include experiential learning through project work/field work/internship year-wise during last five years

Government Science College Gadchiroli runs three programs undergraduate program, post graduate and Ph. D program. Out of these three programs post graduate and Ph.D. program programs have courses which include experiential learning through project work/field work/internship. The details are as follows.

Year 2018-2019


Sr. No.	Name of the program	Name of the course	Name of the course which include experiential learning through project work/field work/
1	Post Graduate	M. Sc. Botany	Semester IV, Course No. Practical PSPBOTP09
2	Post Graduate	M.Sc. Chemistry	Semester IV, Course No. Practical PSCChP11 Practical-XI Project
3	Post Graduate	M.Sc. Zoology	Semester IV, Course No. Practical 8 credits PSPZOOP08
4	Doctorate	Ph. D Botany	Experimental work is compulsory to get degree
5	Doctorate	Ph.D. Chemistry	Experimental work is compulsory to get degree
6	Doctorate	Ph.D. Zoology	Experimental work is compulsory to get degree


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Gadchiroli



Year 2017-2018


Sr. No.	Name of the program	Name of the course	Name of the course which include experiential learning through project work/field work/
1	Post Graduate	M. Sc. Botany	Semester IV, Course No. Practical PSPBOTP09
2	Post Graduate	M.Sc. Chemistry	Semester IV, Course No. Practical PSCChP11 Practical-XI Project
3	Post Graduate	M.Sc. Zoology	Semester IV, Course No. Practical 8 credits PSPZoop08
4	Doctorate	Ph. D Botany	Experimental work is compulsory to get degree
5	Doctorate	Ph.D. Chemistry	Experimental work is compulsory to get degree


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Year 2016-2017


Sr. No.	Name of the program	Name of the course	Name of the course which include experiential learning through project work/field work/
1	Post Graduate	M. Sc. Botany	Semester IV, Course No. Practical PSPBOTP09
2	Post Graduate	M.Sc. Chemistry	Semester IV, Course No. Practical PSCChP11 Practical-XI Project
3	Post Graduate	M.Sc. Zoology	Semester IV, Course No. Practical 8 credits PSPZoop08
4	Doctorate	Ph. D Botany	Experimental work is compulsory to get degree
5	Doctorate	Ph.D. Chemistry	Experimental work is compulsory to get degree


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Year 2015-2016


Sr. No.	Name of the program	Name of the course	Name of the course which include experiential learning through project work/field work/
1	Post Graduate	M. Sc. Botany	Semester IV, Course No. Practical PSPBOTP09
2	Post Graduate	M.Sc. Chemistry	Semester IV, Course No. Practical PSCChP11 Practical-XI Project
3	Post Graduate	M.Sc. Zoology	Semester IV, Course No. Practical 8 credits PSPZoop08
4	Doctorate	Ph. D Botany	Experimental work is compulsory to get degree
5	Doctorate	Ph.D. Chemistry	Experimental work is compulsory to get degree


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Year 2014-2015

Sr. No.	Name of the program	Name of the course	Name of the course which include experiential learning through project work/field work/
1	Post Graduate	M. Sc. Botany	Semester IV, Course No. Practical PSPBOTP09
2	Post Graduate	M.Sc. Chemistry	Semester IV, Course No. Practical PSCChP11 Practical-XI Project
3	Post Graduate	M.Sc. Zoology	Semester IV, Course No. Practical 8 credits PSPZOOP08
4	Doctorate	Ph. D Botany	Experimental work is compulsory to get degree
5	Doctorate	Ph.D. Chemistry	Experimental work is compulsory to get degree


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GONDWANA UNIVERSITY
GADCHIROLI

SYLLABUS

For

M. Sc.

BOTANY

SEMESTER I & II

Under
Choice Based Credit System

(CBCS)

(With effect from : 2016-17)

**Scheme of teaching and examination under semester pattern Choice Based Credit System (CBCS) for
M.Sc. Program in Botany.**

Semester I

Core	Theory / Practical	Teaching Scheme			Credit	Examination Scheme					
		Hrs/ week				Duration in hrs.	Max. Marks		Total	Minimum Marks	
		Theory	Practical	Total			External	Internal		Theory	Practical
PSCBOTT01	Paper - I	4	-	4	4	3	80	20	100	40	
PSCBOTT02	Paper - II	4	-	4	4	3	80	20	100	40	
PSCBOTT03	Paper -III	4	-	4	4	3	80	20	100	40	
PSCBOTT04	Paper - IV	4	-	4	4	3	80	20	100	40	
Pract. – I PSCBOTP01	Practical - I	-	8	8	4	6	80	20	100	40	40
Pract. – II PSCBOTP02	Practical - II	-	8	8	4	6	80	20	100	40	40
Seminar - I	Seminar - I	2	-	2	1			25	25	10	
TOTAL		18	16	34	25		480	145	625	170	80

Semester II

Core	Theory / Practical	Teaching Scheme			Credit	Examination Scheme					
		Hrs/ week				Duration in hrs.	Max. Marks		Total	Minimum Marks	
		Theory	Practical	Total			External	Internal		Theory	Practical
PSCBOTT05	Paper - V	4	-	4	4	3	80	20	100	40	
PSCBOTT06	Paper - VI	4	-	4	4	3	80	20	100	40	
PSCBOTT07	Paper -VII	4	-	4	4	3	80	20	100	40	
PSCBOTT08	Paper -VIII	4	-	4	4	3	80	20	100	40	
Pract. – III PSCBOTP03	Practical - III	-	8	8	4	6	80	20	100	40	40
Pract. - IV PSCBOTP04	Practical - IV	-	8	8	4	6	80	20	100	40	40
Seminar - II	Seminar - II	2	-	2	1			25	25	10	
TOTAL		18	16	34	25		480	145	625	170	80

Project Work/Dissertation Scheme / Guidelines for the Students, Supervisors and Examiners

Every student is required to carry out a project work in semester IV. The project can be of following types. A) Experimental Project Work; OR B) Field Based Project Work; OR C) Review writing based Project Work.

Experimental Project Work and Field Based Project Work:

Student can carry out Experimental / Field Based Project Work on a related research topic of the subject /course. It must be an original work and must indicate some degree of experimental work / Field work. On the basis of this work, student must submit the Project Report (typed and properly bound) in two copies at least one month prior to commencement of the final Practical / lab Examination of Semester IV. The project report shall comprise of Introduction, Material and Methods, Results, Discussion, Summary, Conclusion and, References along with the declaration by the candidate that the work is original and not submitted to any University or Organization for award of the degree and certificate by the supervisor and forwarded through Head / Course-coordinator / Director of the Department / Centre or the Principal of the College.

Review writing based Project Work.

Student can carry out review writing Based Project Work on a related topic of the subject / course. It must be a review of topic based on research publications. Student shall refer peer reviewed original research publications and based on findings, write a summary of the same. The pattern of review writing shall be based on reputed reviews published in a standard, peer reviewed journals. On the basis of this work, student must submit the Project Report (typed and properly bound) in two copies at least one month prior to commencement of the final Practical / lab Examination of Semester IV. The project report shall comprise of Abstract, Introduction, detailed review, Discussion, Summary, Conclusion and, References along with the declaration by the candidate that the work is original and not submitted to any University or Organization for award of the degree and certificate by the supervisor and forwarded through Head / Course-coordinator / Director of the Department / Centre or the Principal of the College.

*The supervisors for the Project Work shall be from the following.

A person shall be an approved faculty member in the relevant subject.

OR

Scientists of National Laboratories / Regional Research Laboratories/ Experts from R&D in Industry who are approved by competent authority in such facilities by the Union Government / the State Government / Gondwana University / Other Universities recognized by UGC.

The Project Work will carry total 100 marks and will be evaluated by both external and internal examiner in the respective Department / Center / Affiliated College.

The examiners will evaluate the Project Work/Dissertation taking into account the coverage of subject matter, arrangement and presentation, references, etc.

For written Project work	40	Marks – Evaluated jointly by External & Internal examiner
Oral Presentation	20	Marks – Evaluated jointly by External & Internal examiner
For Viva-Voce	20	Marks – Evaluated by External examiner
Internal Assessment	20	Marks – Evaluated by Internal examiner
Total	100	

Seminar

Guidelines for Students, Supervisors and Examiners

In each semester, the student will have to deliver a seminar on any topic relevant to the syllabus / subject encompassing the recent trends and development in that field / subject. The topic of the seminar will be decided at the beginning of each semester in consultation with the supervising teachers. The student has to deliver the seminar which will be followed by discussion. The seminar will be open to all the teachers of the department, invitees, and students.

The students should submit the seminar report typed and properly bound in two copies to the head of the department. The said shall be evaluated by the concerned supervisor / head of the department. The marks of the seminar shall be forwarded to the university within due period through head of the Department. The record of the seminar should be preserved till the declaration of the final result.

Internal Assessment:

1. The internal assessment marks shall be awarded by the concerned teacher.
2. The internal assessment marks shall be sent to the University after the Assessment in the prescribed format.
3. For the purpose of internal assessment the University Department / College shall conduct any three assignments described below. Best two scores of a student in these tests shall be considered to obtain the internal assessment score of that student.
4. If the student does not appear for the Practical Exam he shall be declared failed in Practical Examination irrespective of marks obtained in Internal Practical Assessment. However the Internal Practical Assessment marks will be carried forward for his next supplementary Practical Exam.
5. General guidelines for Internal Assessment are:
 - a) The internal assessment marks assigned to each theory paper as mentioned in Appendix 1 shall be awarded on the basis of assignments like class test, attendance, home assignments, study tour, industrial visits, visit to educational institutions and research organizations, field work, group discussions or any other innovative practice / activity.
 - b) There shall be three assignments (as described above) per course.
 - c) There shall be no separate / extra allotment of work load to the teacher concerned. He/ She shall conduct the Internal assessment activity during the regular teaching days / periods as a part of regular teaching activity.
 - d) The concerned teacher / department / college shall have to keep the record of all the above activities until six months after the declaration of the results of that semester.
 - e) At the beginning of each semester, every teacher / department / college shall inform his / her students unambiguously the method he / she proposes to adopt and the scheme of marking for internal assessment. (Prescribed in syllabus of respective Subjects).
 - f) Teacher shall announce the schedule of activity for internal assessment in advance in consultation with HOD / Principal.

Practical Examination

1. Each practical carries 100 marks. The scheme of marking shall be as per given in the syllabi of respective subjects.
2. Practical performance shall be jointly evaluated by the External and Internal Examiner. In case of discrepancy, the External Examiner's decision shall be final.
3. Duration of practical examination will be as per given in the syllabi of respective subjects.
4. The Practical Record of every student shall carry a certificate as shown below, duly signed by the teacher-in-charge and the Head of the Department. If the student fails to submit his / her certified Practical Record duly signed by the Teacher-In-Charge and the Head of the Department, he / she shall not be allowed to appear for the Practical Examination and no Marks shall be allotted to the student.

5. The certificate template shall be as follows:

C E R T I F I C A T E

Name of the college / institution _____

Name of the Department: _____

This is to certify that this Practical Record contains the bonafide record of the Practical work of Shri / Shrimati / Kumari _____ of M. Sc. _____ Semester _____ during the academic year _____. The candidate has satisfactorily completed the experiments prescribed by Gondwana University Gadchiroli for the subject _____

Dated ___ / ___ / _____

Signature of the teacher who taught the examinee

Head of the Department

1. _____

2. _____

SEMESTER I

PRACTICAL I **Course code : PSCBOTP01**

Credit - 04

Time : 6 Hours

Full marks : 80

- | | |
|--|----|
| Q. 1 To identify the given Cyanobacterial material A . | 06 |
| Q.2 To identify two algal forms B, C , from the given mixture. | 06 |
| Q.3 To identify the given fungal culture D | 06 |
| Q. 4 To identify the given pathogen in the given material E . | 06 |
| Q. 5 To prepare a Temporary micropreparation of the given Bryophytic F material and identify it. | 12 |
| Q 6. To prepare a Temporary micropreparation of the given Pteridophytic G material and identify it. | 12 |
| Q. 7 Comment on the given spot H (Cyanobacteria/Bacteria), I (Algae), J (Fungi), K (Plant Pathology) L (Bryophyte) , M (Pteridophyte). | 12 |
| Q.8 Viva-voce | 10 |
| Q. 9 Practical Record and tour report | 10 |

SEMESTER I

PRACTICAL II Course code : PSCBOTP02

Credit - 04

Time : 6 Hours

Full marks : 80

Q. 1 To prepare a double stained micropreparation of the given gymnospermic material A and identify it.	12
Q.2 Comment on the given fossil specimen B	12
Q.3 One experiment from Cytology C	12
Q. 4 One experiment from Genetics D	12
Q. 5 Comment on the given spot E (Gymnosperm) F (Paleobotany), G (Cytology), H (Genetics)	12
Q.6 Viva-voce	10
Q. 7 Practical Record and tour report	10

SEMESTER II

PRACTICAL III Course code : PSCBOTP03

Credit - 04

Time : 6 Hours

Full marks : 80

Q. 1 To perform the given physiological experiment A and report The findings	15
Q.2 To quantify the given metabolite in the given sample B	10
Q.3 To study the cytohistological zonation in SAM of given material C	10
Q. 4 To perform the given exercise based on plant development D	10
Q. 5 Write a note on given stage of micro- or megasporogenesis E	06
Q. 6 Spotting: F (Physiology), G (Plant development), H (Reproduction)	09
Q. 7 Viva-voce	10
Q. 8 Practical Record	10

SEMESTER II

PRACTICAL IV Course code : PSCBOTP04

Credit - 04

Time : 6 Hours

Full marks : 80

Q. 1 One experiment from paper VII A	14
Q.2 One experiment from paper VII B	10
Q.3 One experiment from paper VIII C	14
Q. 4 One experiment from paper VIII D	10
Q. 5 Spotting: E (Paper VII), F (Paper VII), G (Paper VIII), H (Paper VIII)	12
Q. 6 Viva-voce	10
Q. 7 Practical Record and field diary	10

M. Sc. Botany Syllabus

Semester I

Course code- PSCBOTT01

Credit - 04

PAPER –I: Microbiology, Algae and Fungi

UNIT – I

General Microbiology :

History – Contributions made by Leeuwenhoek, Pasteur, Robert Hook, Jenner, Waksman, Iwanowsky. Koch” s Postulate.

Bacteria – Structure, morphology, reproduction.

Viruses – General account; Morphology and ultrastructure of TMV, Bacteriophage;

Introduction to viroids, prions and interferon.

Archaeobacteria and eubacteria: General account; ultrastructure, nutrition and reproduction, biology and economic importance; **Cyanobacteria:** *Microcystis, Lyngbya, Nostoc, Scytonema, Gloeotrichia and Stigonema.*

UNIT - II

Phycology:

Criteria for classification of algae: Chlorophyta, Charophyta, Xanthophyta, Bacillariophyta, Pheophyta and Rhodophyta; pigments, reserved food, flagella

Algae in diversified habitats (terrestrial, freshwater, marine), thallus organization; cell ultrastructure; reproduction (vegetative, asexual, sexual); algal blooms, algal biofertilizers; algae as a food, feed and uses in industry.

UNIT –III

General account: Classification of Fungi (recent trends and criteria used in classification); Physiology of Fungi (with reference to biotrophs, hemibiotrophs, symbionts); Fungal Cytology : Heterothallism, heterokaryosis, parasexual cycle.

Comparative study, classification and evolutionary trends in the following:

Myxomycota: Protist characters and general account with special reference to *Physarium* and *Plasmodiophora*

Eumycota: i. Oomycetes : *Saprolegnia, Synchytrium, Phytophthora, Peronospora*, ii.

Zygomycetes : *Mucor, Rhizopus, Syncephalastrum, Cunninghamella*

UNIT – IV

Comparative study, classification and evolutionary trends in the following: iii.

Ascomycetes: *Saccharomyces, Phyllactinia, Chaetomium, Xylaria*, iv. Basidiomycetes:

Melampsora, Puccinia, Ravenelia, Ustilago, Polyporus, v. Deuteromycetes:

Helminthosporium, Fusarium, Colletotrichum, Phoma