RAMA DEVI WOMEN'S UNIVERSITY, VIDYA VIHAR
BHUBANESWAR-22

Proceeding of the meeting of the Board of Studies Industrial Microbiology held on 21.4.23 at 11:30 A.M / P.M. in the University Office, Bhoi Nagar, Bhubaneswar-22.

Members Present:

1. Prof. Chandi charan Rath, Prof. Life Sc., RDWU
2. Prof. R.C. Mohanty, Prof. Emeritus, UU, BBSR
3. Prof. Sasmita Mohanty, Prof. Biotech, RDWU, BBSR
4. Dr. Shikha Singh, Assoc. Prof., Life Sc, RDWU
5. Dr. Sakti Kanta Rath, Assoc. prof, Life Sc, RDWU.
6.
7.
8.

Prof./ ~~Dr.~~ Chandi charan Rath is selected as Chairman of the Board for the Academic year 2023-24.

The recommendations of the Board in respect of the Regulations, Detailed Syllabus, Text Books and other items are appended the prescribed form.

CHAIRMAN

Signature of the Members:-

1.
2. SM 21/4/23
3. 21.4.23
4. 21/4/23
5.
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Recommendation

1. Recommended the name and contact no. of Board of conducting members, Moderating board and paper setter for PG IInd Hr. 23-24 examination.
2. Recommended the list of examiners (external and internal) for PG IInd Hr 23-24 examination.
3. PG IInd Hr 23 syllabus were examined and following modifications were incorporated.

(i) paper HC 104 practical
Added No. 15 Estimation of total sugar.

(ii) paper OE 201A Human Health and Hygiene
Unit I "and lifestyle disorders" – deleted.
Unit II "cardiovascular disorders" changed to "Lifestyle disorders"
"Myocardial infraction (cause, treatment and prevention" – deleted

(iii) HC 303 practical – two practicals added.
14. To study potability of drinking water.
15. Isolation of bacterial DNA

4. PG syllabus (attached) has been framed as per the new structure and PG regulation.
Non Credit skill based certificate has been introduced and approved in 2…
suggestion as per NEP 2020 will be introduced in the curriculum, time to time as per the direction.
Chairman is authorised to make any changes if required.

S Mohanty 21/04/23

[signature] 21.4.23

[signature] S. K. Rath 21.4.23

[signature] 21.4.23

S. [signature] 21/4/23

OE[illegible]1A	HUMAN HEALTH AND HYGIENE	4CH	50 MARKS

Unit-I: Human health, disease ~~and lifestyle disorders~~: WHO definition of health, disease, disorder and classification of diseases based on source of pathogens, terminologies used in infectious disease (etiology, epidemiology, vector, incubation period, infective period, causative agent, carrier, notifiable disease, epidemic, endemic, pandemic, signs, symptoms, prevention/prophylaxis, treatment).Vaccination: Definition of vaccine, types of vaccines, vaccination programmes in India

Lifestyle disorders.

Unit-II: ~~Cardiovascular disorders:~~ blood pressure and heart attack (causes, treatment and prevention). ~~Myocardial infarction (cause, treatment and prevention),~~ Cancer: Definition, Types, causes of cancer, prevention and control, Diabetes mellitus: Types (Type I and Type II); Type II diabetes- causes, clinical symptoms, treatment, control and prevention. Obesity: Definition, cause, prevalence, effect and preventive measures.

Unit-III: Communicable Diseases: Water borne diseases: Typhoid (causative agents, transmission, signs and symptoms, treatment and prevention). Air borne disease: Influenza, H1N1 (causative agents, transmission, signs and symptoms, treatment and prevention). Vector borne disease: Malaria (causative agents, transmission, signs and symptoms, treatment and prevention, eradication). Food-borne disease: Botulism (cause, epidemiology, clinical symptoms, treatment, control and prevention). Animal-borne disease: Rabies (cause, epidemiology, clinical symptoms, treatment, control and prevention). STDs: AIDS (causative agents, transmission, signs and symptoms, treatment and prevention, eradication).

Unit-IV: Implications of climate change and management of communicable diseases, Climate Change: Meaning, causes and impact on human health; Management of communicable diseases: Disinfectants, antiseptics and antibiotic; Definition, various types of antiseptics (hypochlorite, phenol, ethanol, isopropanol, aldehydes, detergents, chloroxylenol), antibiotics, types (biostatic, biocidal) and most commonly used antibiotic, antibiotic resistance

Objectives

1. To understand the major life style diseases affecting each organ system.
2. To understand common infectious communicable diseases and their specific symptoms
3. To understand management of communicable diseases

Learning Outcomes

At the end of the course, students will be able to

1. Describe the major life style diseases affecting each organ system.
2. Explain the common infectious communicable diseases and their specific symptoms.
3. Explain the Implications of climate change and management of communicable diseases.

Reference Books:

1. Nandini N, Sunitha N and SucharitaTandon, (2007), Environmental Studies, Sapna Book House, Bangalore
2. Park, K. (2011) Preventive and Social Medicine.Benarsi Das Publications
3. Sekhsaria, P. (2007) Conservation in India and the Need to Think Beyond 'Tiger vs Tribal'.Biotropica
4. Tyler Miller and Scott E. Spoolman 'Environmental Science' (2012) 13th Edition First Indian Reprint

29/04/23 S.K. Rath 21.4.23

21.4.23 21/4/2023 S.S. 21/4/23

HC-104	PRACTICAL BASED ON PAPERS HC 101, HC 102, HC 103	6CH	100 Marks

1. Learning the equipments of a common microbiology laboratory.
2. Learning the techniques of sterilization(Autoclave, Laminar air flow).
3. Preparation of culture media (agar/ broth).
4. Isolation of pure culture by spread plate, streak plate and pour plate.
5. Study of colony morphology and counting.
6. Gram staining
7. Estimation of proteins.
8. Paper chromatography.
9. Precipitation method – Immunodiffusion
10. ELISA method
11. SDS PAGE Electrophoresis
12. Western Blotting
13. Affinity purification
14. To perform the experiments using following instruments
    a. pH Meter (to measure the pHof the supplied sample)
    b. Microscope (to identify the morphology of the supplied sample)
    c. Spectrophotometer (to determine the absorption maxima, measure the concentration of the supplied sample)
    d. Chromatography(to separate the supplied sample on the basis of mass, charges)
    e Centrifuge (to separate biomass of the supplied sample)

15. Estimation of total sugar.

Objectives

1. To understand the practical skills using instruments in biology.
2. To perform and evaluate practical methods for identification and isolation of microbes.
3. To have hands on working experience of basic instruments of biology.

Learning Outcomes

At the end of the course, students will be able to

1. Demonstrate knowledge and practical skills using instruments in biology and life sciences.
2. Perform and evaluate methods used to identify microbes and their activity.
3. Analyse microbial physiology including metabolism, regulation and replication.
4. Evaluate and apply knowledge of microbiology in various field.
5. Execute various basic instruments of life sciences.

21/04/23 21.4.22 21.4.23 21/4/2023 21/4/23

HC 303	**Practical related to paper Practical related to paper HC-301, HC- 302 and CE-301 A/B, CE-302 A/B**	**6CH**	**100 MARKS**

1. Isolation of microorganism from waste water samples.
2. Isolation of multi metal resistant bacteria from heavy metal polluted soil samples
3. Isolation of bacteria from contaminated food samples.
4. Isolation of Nitrogen Fixing Bacteria from soil (Rhizobium, Azospirillum Azotobacter)
5. Isolation and culture of Phosphate and sulphate Solubilizing bacteria
6. Isolation and culture of Cyanobacteria (Anabaena from Azolla; Nostoc from soil)
7. Laboratory scale production of Bacterial, algal, and fungal Biofertilizer.
8. Problems relate to mean, median, mode, SD, SE, ANOVA and Correlation.
9. Testing the difference between two samples by t-test.
10. Testing the difference between expected value and observed value by Chi-square test.
11. Testing the interaction of factors by F-test.
12. Determination of antibody concentration in the given sample using ELISA.
13. Determination of microbial proteins molecular weight in given sample using SDS PAGE.
14. To study portability of drinking water
15. Isolation of bacterial DNA.

Objectives

1. To have handson experience in Isolation of microorganism from waste water samples
2. To demonstrate Isolation of Nitrogen Fixing Bacteria from soil.
3. To carry statistical experiments in research.

Learning Outcomes

At the end of the course, students will be able to...

1. Demonstare Isolation of microorganism from waste water samples
2. Demonstrate Molecular biology experiments like ELISA and SDS PAGE
3. Solve Problems related to mean, median, mode, SD, SE, ANOVA and Correlation
4. Isolate Nitrogen fixing phosphate and sulphate solubilising bacteria from soil

Reference Books

5. Presscott, M.J., Harley J.P., Klein, D.A. (2002). Microbiology, 5th Edition. New York: WCB Mc GrawHill publication.
6. Pelczar, M.J., Chan E.C.S., Krieg, N.R., Microbiology, 5 Edition. Tata McGraw Hill Publication Co. Ltd. New Delhi.
7. Salle, S.J. (1974).Fundamental Principals of Bacteriology. Tata McGraw Hill Publication Co. Ltd New Delhi.
8. Purohit, S.S., Microbiology-Fundamentals and Applications-6 th Edition. Agrobios Publications Delhi.

21/04/23 21.4.23 21/4/2023 21.4.23 21/4/23

RAMA DEVI WOMEN'S UNIVERSITY, VIDYA VIHAR
BHUBANESWAR-22

Proceeding of the meeting of the Board of Studies ...Industrial Microbiology...
held on ..17.5.22..... at ....11 am.....A.M / P.M. in the University Office, Bhoi Nagar, Bhubaneswar-22.

Members Present :

1. Prof. R.C. Mohanty.
2. Prof. Sarmita Mohanty.
3. Sakti Kanta Rath
4. Prof. P. Ray
5.
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8.

Prof. / Dr. ....S.K. Rath..... is selected as Chairman of the Board for the Academic year 20.....

The recommendations of the Board in respect of the Regulations, Detailed Syllabus, Text Books and other items are appended the prescribed form.

Signature of the Members:-

CHAIRMAN 17.5.22

1. 17.5.22 (R.C. Mohanty)
2. 17.5.22
3. 17.5.22 (S.K. Rath)
4.
5. 17/5/22
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PTO

The chairman approved the committee about the agenda [illegible]
on deliberation, the following were resolved:

1) Committee recomended the name of experts for BOS of conducting, ex[illegible] Moderation board and paper setters for PG in Industrial Microbiology CBCS 2022-23 as per newly modified structure of PG, DMB

2) The committe recomended the list of examiner (external and Internal) along with revised [illegible]

3) Committee examined the structure of PG syllabus. The objectives and learning outcomes of each unit of each paper were discussed and finalized to include in the structured syllabus

4) The committee discussed the structure of PG syllabus in DMB and unanimously modified the structure by adding the following new modified papers in syllabus

Sem 1: Int to Industrial Microbiol. and Microbial techniques, Immunology and Microbial transformation, Bioinstrumentation, practical and comp. application course by elearning centre

Sem 2: Fermentation technology, Microbial physiology and genetics, Food microbiology practical, Recombinant DNA Tech / Bioremediation, Human health Hygiene / HCO Cs (Summer) NPTEL)

Sem 3: Env. Microbial Technology, Microbial disease and their control, practical, Microbes, Biofertilizer, Biomedical / Virology, Res. Method., Waste management, Field internship

Sem 4: Subject Area Overview, seminar, Dissertation, Dissertation evaluation and Women and society

5) It was resolved that following Non-credit skill based certificate course will be introduced for the PG DMB course

- Scientific manuscript writing from paper to publication
- Integrated pest management
- Biofertilizers.

6) The committee recomended and passed the newly structured PG DMB syllabus

7) It was resolved that chairman BOS and COE are authorised to make any change in list of examiners, paper setter, Moderation and Board of conducting examiners.

8) It was resolved that last unit of all Hard core and some elective papers of each semester will be grupled self study (Blended learning) for students. These units will have introductory class and students will study themselves there will be 2 doubt clearing classes for those units and students will be provided with study materials for the same.

(R.C. Mohanty) 17.5.22

17.05.22

17/05/22

Department of Life Sciences
Skilled Based Certificate Course
(20[illegible])

PG in Life Sciences
and
Industrial Microbiology

Rama Devi Women's University
Bhubaneswar, Odisha

Name of the Department: [illegible]

Title of SBCC: Skilled [illegible] on Scientific manuscript writing [illegible] publication

SBCC Code: SMW

Semester of offering: [illegible]

Course Coordinator: [illegible] Prasad [illegible] Dr. Shikha Singh

[illegible] Sciences [illegible] Microbiology, RD Women's [illegible]

[illegible]

Exam pattern: [illegible] Practical (25)

Course Overview: [illegible] publishing articles in peer-reviewed high [illegible] students who intend to pursue careers [illegible] the different types of scientific [illegible] research [illegible] review [illegible] post graduate students and PhD research sch[illegible] skills on scientific manuscript writing. The course [illegible] sessions involving students, scholars and experts and [illegible] preparation and presentation by students.

Detailed Syllabus

Module 1: Introduction to Scientific Writing, Structure of a research article, Scientific writing style, how to write a title, abstract and list keywords? Providing Authors [illegible] Affiliations, writing 'Methods' section, designing effective tables and graphs, Describing [illegible] Results section

Module 2: Art of scientific writing, Choosing the right journal for publication, how to submit papers in journals? highlight your research, Common mistakes, error in Language, sharing [illegible] Reviewer's commentaries, responding to peer-review, Submitting a revised manuscript

[illegible] Reference Management, Introduction to Mendeley, Publication [illegible] Data [illegible] checking paper for Plagiarism, Conflict of Interest, [illegible] funding agencies, Contribution of authors, conducting a peer review, Sharing [illegible] collaborating

Practical's: Workshop, Seminars, Hands on practice, Paper writing, [illegible] teaching, Submission of review [illegible] seminars

Referred Books

1. Style and Ethics of Communication in Science and Engineering by Jay D. Hum[illegible] [illegible] M. [illegible]
2. A Field Guide for Science Writers by Deborah Blum (Editor), Mary Knudson [illegible] Robin Marantz Henig (Editor)
3. The Handbook of Technical Writing by Gerald J. Alred, Charles T. Brusaw, Walter E. Oliu

Integrated Pest Management

SBCC Code: IPM

Objective

1. To explore the basic themes and methods of pest management.
2. To understand the challenges that modern pest management programs face
3. To gain an appreciation for management techniques that balance the need for pest control

Unit-1 Insects, their abundance and diversity in nature. Insects as pests in agriculture, horticulture, for outbreaks causing crop loss: concept of pest status, types of pests; methods of sampling and surveillance of pests. Principles of pest management: history-definition etc. IPM: basic concepts.

Unit-2- Components of IPM: legal approach, ecological management, changing the population away from the level of economic damage, managing insects, its resistant plants; biological resistance and use of plants as resistant means in pest management. Pest management by modifying insect development and behaviour; insect growth regulators like repellents, attractants, inhibitors.

Unit -3 -Sterile insect technique. Biological control: using predators, parasitoids, microbes. Botanical pest management: chemical means of pest management. Integration of different IPM techniques: pros and cons. Adoption of IPM; pros and cons. Importance of AESA in pest management. Successful implementation of IPM in cereals, pulses, oil commercial crops, oilseed, vegetable crops and fruit crops

Practical's

Case studies, video lectures, seminars, field visits etc

Learning Outcomes

At the end of the course, students will be able to

1. Define the IPM concept and its components
2. Describe the themes and methods of pest management
3. Describe the challenges faced by modern pest management programs
4. Demonstrate different techniques of pest management
5. Enumerate the successful application IPM in different crops

Reference Books

1. Integrated Pest Management: Potential, Constraints and Challenges (Eds) edited by Opender Koul, G S Dhaliwal, G W Cuperus CABI Publishing
2. Insect Pest Management by David Dent - CABI Publishing.
3. Insect Pest Management and Ecological Research by Gimme H Walter - Cambridge University Press.

12/05/22 17.05.22 9/5/22 S.K. Patil 12.05.22

Biofertilizer

SBC code : BF

Course Objectives:

To demonstrate the low cost media preparation and impart training of eco-friendly agricultural inputs in biofertilizer production.

Unit-1: Introduction. Chemical fertilizers and its demerits. History and concept of Bio fertilizers, status scope and importance of Bio fertilizers. Classification of Bio fertilizers, Advantages of Biofertilizers and its environmental impacts

Unit -2: Structure and characteristic features of bacterial Bio fertilizers. Nitrogen fixation. Nitrogen Biofertilizers (Azospirillum, Azotobacter, Bacillus, Pseudomonas, Rhizobium and Frankia; Cynobacterial biofertilizers- Anabaena, Nostoc, Azolla, Phosphate solubilizing Microorganisms, fungal biofertilizers- Mycorrhizae

Unit -3: Production technology: Strain selection, Strain Improvement, mass production of carrier based and liquid bio fertilizers (Bacterial and Fungal), FCO specifications and quality control of bio fertilizers, Biofertilizers -Storage, shelf life, quality control and marketing. Factors influencing the efficacy of bio fertilizers

Practical:

1. Isolation of Nitrogen Fixing Bacteria from soil (Rhizobium, Azospirillum, Azotobacter)
2. Isolation and culture of Phosphate and sulphate Solubilizing bacteria
3. Isolation and culture of Cyanobacteria (Anabaena from Azolla, Nostoc from soil)
4. Laboratory scale production of Bacterial, algal, and fungal Biofertilizer

Learning Outcomes

At the end of the course, students will be able to

1. Ability to distinguish the types of biofertilizers and methods of application in field.
2. Development of integrated management for best results using nitrogenous and phospnate biofertilizers

Reference Books

Motsara M.R., P.Bhattacharya and Beena Srivastava (1995). Biofertilizer Technology, Marketing and Usage-A Source Bookcum-Glossary

Subbarao, N S. 1993. Biofertilizers in Agriculture and Forestry (Oxford and IBH Pub Co., New Delhi)

General Microbiology- Dubey and Maheswari

17/05/22 17.05.22 19/5/22 12.5.22

M.Sc. Industrial Microbiology
2 YEARS SEMESTER COURSE (2022-23)

COURSES OF STUDY
CHOICE BASED CREDIT SYSTEM

P.G. DEPARTMENT OF LIFE SCIENCES
RAMA DEVI WOMEN'S UNIVERSITY
BHUBANESWAR, ODISHA

17/05/22 17/5/22 17.5.22 17.05.22

RAMA DEVI WOMEN'S UNIVERSITY, VIDYA VIHAR
BHUBANESWAR-22

Proceeding of the meeting of the Board of Studies ...Industrial Microbiology... held on ...15/07/21..... at .....11 AM.....A.M / P.M. in the University Office, Bhoi Nagar, Bhubaneswar-22.

Members Present :

1. Prof. C.C. Rath – Prof, Dept of Life Science, RDWU, BBSR
2. Dr. S. Singh., Assoc. Prof., Dept. of Lifescience, RDWU, BBSR
3. Dr A.C. Mohanty, Rtd. Prof. of Botany, Utkal Univ., BBSR
4. Dr. S. Mohanty, Prof, Dept of Biotechnology, RDWU, BBSR
5. Dr. S.K. Rath – Assoc. Prof., Dept of Life Science, RDWU, BBSR
6.
7.
8.

Prof./ Dr. ...Chandi charan Rath... is selected as Chairman of the Board for the Academic year 2021-22

The recommendations of the Board in respect of the Regulations, Detailed Syllabus, Text Books and other items are appended the prescribed form. The content of the course syllabus has been modified. The modified syllabus will be applicable for the session 2021-22.

Signature of the Members:-

CHAIRMAN 15/7/2021

1. Ranjitha
2. S Mohanty 15/7/21
3.
4. Shikha S.S.
5. S.K. Rath, S.K. Rath
6.
7.
8.

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M.Sc. INDUSTRIAL MICROBIOLOGY
2 YEARS SEMESTER COURSE (2021-22)

COURSES OF STUDY
CHOICE BASED CREDIT SYSTEM

P.G. DEPARTMENT OF LIFE SCIENCES
RAMA DEVI WOMEN'S UNIVERSITY
BHUBANESWAR, ODISHA

Approved for 2021-22 Session.

15/7/21 15.7.21

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RAMA DEVI WOMEN'S UNIVERSITY, VIDYA VIHAR
BHUBANESWAR-22

Proceeding of the meeting of the Board of Studies ...Industrial Microbiology held on .....26.8.2020..... at .....11.00.....A.M / P.M. in the University Office, Bhoi Nagar, Bhubaneswar-22.

Members Present :

1. Prof. C. C. Rath
2. Dr. S. K. Singh
3. Dr. S. Mohanty
4. Dr. R. C. Mohanty
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Prof./ Dr. ..... C. C. Rath ..... is selected as Chairman of the Board for the Academic year 20..-21

The recommendations of the Board in respect of the Regulations, Detailed Syllabus, Text Books and other items are appended the prescribed form. 1. Unit-V of each paper is considered as blended studies.

Signature of the Members :- 2. The BOS authorizes the COE to take alternative measures in case of urgency in consultation with Chairman BOS

26-8-2020
CHAIRMAN BOS

1. Dr. S. Mohanty SMohanty
2. Dr. S. Singh SS
3. Dr. R. C. Mohanty
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RAMA DEVI WOMEN'S UNIVERSITY,
VIDYA VIHAR, BHUBANESWAR-22

Proceeding of the meeting of the Board of Studies ...In Industrial Microbiology

held on ..28.8.19..... at .....11.....A.M / P.M. in the University Office,

Bhoi Nagar, Bhubaneswar-22.

Members Present :

1. Prof. Chandi Charan Rath, Coordinator.
2. Dr. Shikha Singh, Assoc. Prof., Life Sc.
3. Dr. Sakti Kanta Rath, Assoc. Prof., Life Sc.
4. Prof. Sasmita Mohanty, Prof., Biotechnology
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Prof./ Dr. Chandi Charan Rath is selected as Chairman of the Board for the Academic year 20.....

The recommendations of the Board in respect of the Regulations, Detailed Syllabus, Text Books and other items are appended the prescribed form.

Signature of the Members :-

CHAIRMAN

1. 28/8/2019
2. 28/8/19
3. 28.8.19.
4. Mohanty
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RAMA DEVI WOMEN'S UNIVERSITY, BHUBANESWAR

Proceeding of the meeting of the Board of Studies Of Industrial Microb held on 6.6.2019 at 11:30 A.M / ~~P.M.~~ in the University Office, Bhoinagar, Bhubaneswar-22.

Members Present :

1. Prof. Chandi charan Rath -
2. Dr. Shikha singh.
3. Dr. Sakti kanta Rath.
4. Prof. Sasmita Mohanty.
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Prof./ ~~Dr.~~ Chandi Charan Rath is selected Chairman of the Board for the Academic year 2019-20

The recommendations of the Board in respect of the Regulations, Detailed Syllabus, Text Books and other items are appended the prescribed form.

Signature of the Members :-

CHAIRMAN

1. SMohanty
2. Shikha S.
3. Sakti kanta Rath
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Syllabus
M.Sc. Industrial Microbiology
(2019 onwards)

P.G. DEPARTMENT OF LIFE SCIENCES
RAMA DEVI WOMEN'S UNIVERSITY
VIDYA VIHAR, BHUBANESWAR-751022

Industrial Microbiology

PAPER	COURSE CODE	COURSE TITLE	Units	Credits	Mid-sem	End-sem	Total
SEMESTER-I							
Hard Core	HC-101	Introduction to Industrial Microbiology & Microbial Techniques	5	5	30	70	100
Hard Core	HC-102	Immunology and microbial transformation	5	5	30	70	100
Hard Core	HC-103	Bioinstrumentation	5	5	30	70	100
Hard Core	HC- 104	Practical related to paper HC-101, HC-102, HC-103		5	30	70	100
Allied Core	AC-101	Computer application course by e-learning centre	3	3	Mid sem 10 + Practical 10= 20 marks	30	50
TOTAL				**23**	**140**	**310**	**450**
SEMESTER-II							
Hard Core	HC-201	Fermentation Technology	5	5	30	70	100
Hard Core	HC-202	Microbial Physiology and genetics	5	5	30	70	100
Hard Core	HC-203	Food Microbiology	5	5	30	70	100
Hard Core	HC- 204	Practical related to paper HC-201, HC- 202, HC-203 and CE-201A/B		5	30	70	100
Core Elective	CE-201 A/B	A:Recombinant DNA Technology & Bioinformatics B: Bioremediation	5	5	30	70	100
Open Elective	OE-201 A/B	A: Human health & Hygiene B: MOOCs (From SWAYAM/ NPTEL etc.)		4		50	50
TOTAL				**29**	**150**	**400**	**550**
SEMESTER-III							
Hard Core	HC-301	Environmental Microbial Technology	5	5	30	70	100
Hard Core	HC-302	Microbial diseases and their control	5	5	30	70	100

Hard Core	HC-303	Practical related to paper HC-301, HC-302 and CE-301 A/B, CE-302 A/B	-	5	30	70	100
Core Elective	CE-301 A/B	A: Microbes, Bio fertilizer and Bioinsecticides B: Virology	5	5	30	70	100
Core Elective	CE-302 A/B	A: Research Methodology B: Waste Management	5	5	30	70	100
Field Internship	FI- 301	Field Internship		3		50	50
TOTAL				**28**	**150**	**400**	**550**
SEMESTER-IV							
Hard Core	HC-401	Subject Overview	-	5	-	100	100
Hard Core	HC-402	Seminar	-	5	-	100	100
Hard Core	HC-403	Dissertation	-	5	-	100	100
Core Elective	CE-401	Dissertation Evaluation	-	5	-	100	100
Allied Core	AC-401	Theory : 'Women and Society' (For All PG Subjects/Programs)	03	03	15	35	50
TOTAL				**23**	**15**	**435**	**450**

Summary

HC-HardCore	14 x100	1400
CE-CoreElective	4 x100	400
OE-OpenElective	1x50	50
AC-AlliedCore	2x50	100
FI-FieldInternship	1x50	50
TotalMarks:		**2000**

Summary

	Credits	**TotalMarks**
Sem-I	23	450
Sem-II	29	550
Sem-III	28	550
Sem-IV	23	450
TOTAL	**103**	**2000**