

DEPARTMENT OF BOTANY
TEACHING PLAN
FOR HONOURS AND GENERAL COURSES
(UNDER CBCS SYSTEM)
ACADEMIC SESSION 2018-2019

TEACHERS:

MM- DR. MRIGANKA MANDAL

DS- DR. DIPU SAMANTA

RP- RIMLI PAUL

BP- BISWANATH PATI

(JULY- DECEMBER- 2018)

SEMESTER I- HONOURS

CC-1 (THEORITICAL)

PHYCOLOGY AND MICROBIOLOGY (BOT-A-CC-1-1-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|-----------------|------------|---------|---|
| PHYCOLOGY | General account | 3 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Classification | 3 | | |
| | Cyanobacteria | 1 | | |
| | Bacillariophyta | 2 | | |
| | Life History | 6 | | |
| MICROBIOLOGY | Virus | 3 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Bacteria | 4 | | |

CC-1 (PRACTICAL)

PHYCOLOGY AND MICROBIOLOGY (BOT-A-CC-1-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|--|------------|---------|---|
| PHYCOLOGY | Work out | 4 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Identification | 2 | | |
| MICROBIOLOGY | Preparation of bacterial media | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Sub-culturing | 1 | | |
| | Gram staining from | 2 | | |
| | Microscopic examination of bacteria from natural habitat | 2 | | |

CC-2 (THEORY)

MYCOLOGY AND PHYTO-PATHOLOGY (BOT-A-CC-1-2-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---|
| MYCOLOGY | General Account | 2 | BP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Classification | 2 | | |
| | Life history | 4 | | |
| | Mycorrhiza | 2 | DS | |
| | Lichen | 1 | | |
| PHYTO-PATHOLOGY | Terms and Definitions | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Host – Parasite Interaction | 3 | | |
| | Plant Disease Management | 3 | | |
| | Symptoms , Causal organism, Disease cycle and Control measures of different diseases | 4 | | |

CC-2 (PRACTICAL)

MYCOLOGY AND PHYTO-PATHOLOGY (BOT-A-CC-1-2-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---|
| MYCOLOGY | Work out | 8 | BP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Study from permanent slides | 2 | | |
| | Morphological study of Fungi | 2 | | |
| PHYTO-PATHOLOGY | Preparation of fungal media | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Sterilization process | 1 | | |
| | Isolation of pathogen from diseased leaf | 2 | | |
| | Inoculation of fruit and subculturing | 2 | | |
| | Identification | 2 | | |

SEMESTER I- GENERAL

GE-1/CC-1 PLANT DIVERSITY I (PHYCOLOGY, MYCOLOGY, PHYTOPATHOLOGY, BRYOPHYTES AND ANATOMY) (BOT-G-CC-1-1-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------|----------------|------------|---------|---|
| PLANT DIVERSITY I | PHYCOLOGY | 6 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | MYCOLOGY | 5 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | PHYTOPATHOLOGY | 6 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | BRYOPHYTES | 6 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | ANATOMY | 5 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |

GE-1/CC-1 PRACTICAL- PLANT DIVERSITY I (PHYCOLOGY, MYCOLOGY, PHYTOPATHOLOGY, BRYOPHYTES AND ANATOMY) (BOT-G-CC-1-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------------------|----------------|------------|---------|---|
| PRACTICAL- PLANT DIVERSITY I | PHYCOLOGY | 3 | BP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | MYCOLOGY | 2 | | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | PHYTOPATHOLOGY | 2 | | DEMONSTRATION, INTERACTION |
| | BRYOPHYTES | 2 | | DEMONSTRATION, INTERACTION |
| | ANATOMY | 6 | | DEMONSTRATION, INTERACTION, WORK OUT |

TEACHING PLAN
FOR HONOURS AND GENERAL COURSES
(UNDER CBCS SYSTEM)
ACADEMIC SESSION 2018-2019
(JANUARY- JUNE- 2019)

TEACHERS:

MM- DR. MRIGANKA MANDAL

DS- DR. DIPU SAMANTA

RP- RIMLI PAUL

BP- BISWANATH PATI

SEMESTER- II HONOURS

CC- 3 PLANT ANATOMY (THEORY) (BOT-A-CC-2-3-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---|------------|---------|---|
| PLANT ANATOMY | Cell wall | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Stomata | 1 | | |
| | Stele | 1 | | |
| | Primary structure of stem and root | 2 | | |
| | Secondary growth | 3 | | |
| | Mechanical tissues and the Principles governing their distribution in plants | 2 | BP | |
| | Developmental Anatomy | 2 | | |
| | Ecological Anatomy | 1 | | |
| | Scope of plant anatomy: application in systematics, forensics and pharmacognosy | 4 | | |

CC-3 PLANT ANATOMY (PRACTICAL) (BOT-A-CC-2-3-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|--|------------|---------|--------------------------------------|
| PLANT ANATOMY | Microscopic studies | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Study of anatomical details through permanent slides/ temporary stained mounts | 2 | | |
| | Study of anomalous secondary structure | 5 | BP | |
| | Study of adaptive anatomical features | 2 | | |

CC-4 (THEORITICAL) ARCHAEGONIATE (BOT-A-CC-2-4-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---------------|------------|---------|---|
| ARCHAEGONIATE | BRYOPHYTES | 8 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | PTERIDOPHYTES | 8 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | GYMNOSPERMS | 7 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |

CC- 4 (PRACTICAL) ARCHAEGONIATE (BOT-A-CC-2-4-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---------------|------------|---------|---|
| ARCHAEGONIATE | BRYOPHYTES | 4 | DS | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | PTERIDOPHYTES | 6 | | |
| | GYMNOSPERMS | 4 | | |

SEMESTER- II GENERAL

GE-2/CC-2 PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS, PALAEOBOTANY, MORPHOLOGY AND TAXONOMY) (BOT-G-CC-2-2-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------------|---------------|------------|---------|---|
| PLANT DIVERSITY II | PTERIDOPHYTES | 4 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | GYMNOSPERMS | 6 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | PALAEOBOTANY | 4 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | MORPHOLOGY | 5 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | TAXONOMY | 7 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |

GE-2/CC-2 PRACTICAL- PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS, PALAEOBOTANY, MORPHOLOGY AND TAXONOMY) (BOT-G-CC-2-2-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------|----------------------------|------------|---------|---|
| PRACTICAL- PLANT DIVERSITY II | MORPHOLOGY AND TAXONOMY | 6 | BP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | PTERIDOPHYTES, GYMNOSPERMS | 6 | | |

DEPARTMENT OF BOTANY
TEACHING PLAN
FOR HONOURS AND GENERAL COURSES
(UNDER CBCS SYSTEM)
ACADEMIC SESSION 2019-2020

TEACHERS:

MM- DR. MRIGANKA MANDAL

DS- DR. DIPU SAMANTA

RP- RIMLI PAUL

BP- BISWANATH PATI

(JULY- DECEMBER- 2019)

SEMESTER I- HONOURS

CC-1 (THEORITICAL)

PHYCOLOGY AND MICROBIOLOGY (BOT-A-CC-1-1-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|-----------------|------------|---------|---|
| PHYCOLOGY | General account | 3 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Classification | 3 | | |
| | Cyanobacteria | 1 | | |
| | Bacillariophyta | 2 | | |
| | Life History | 6 | | |
| MICROBIOLOGY | Virus | 3 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Bacteria | 4 | | |

CC-1 (PRACTICAL)

PHYCOLOGY AND MICROBIOLOGY (BOT-A-CC-1-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|--|------------|---------|---|
| PHYCOLOGY | Work out | 4 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Identification | 2 | | |
| MICROBIOLOGY | Preparation of bacterial media | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Sub-culturing | 1 | | |
| | Gram staining from | 2 | | |
| | Microscopic examination of bacteria from natural habitat | 2 | | |

CC-2 (THEORY)

MYCOLOGY AND PHYTO-PATHOLOGY (BOT-A-CC-1-2-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---|
| MYCOLOGY | General Account | 2 | BP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Classification | 2 | | |
| | Life history | 4 | | |
| | Mycorrhiza | 2 | DS | |
| | Lichen | 1 | | |
| PHYTO-PATHOLOGY | Terms and Definitions | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Host – Parasite Interaction | 3 | | |
| | Plant Disease Management | 3 | | |
| | Symptoms , Causal organism, Disease cycle and Control measures of different diseases | 4 | | |

CC-2 (PRACTICAL)

MYCOLOGY AND PHYTO-PATHOLOGY (BOT-A-CC-1-2-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---|
| MYCOLOGY | Work out | 8 | BP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Study from permanent slides | 2 | | |
| | Morphological study of Fungi | 2 | | |
| PHYTO-PATHOLOGY | Preparation of fungal media | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Sterilization process | 1 | | |
| | Isolation of pathogen from diseased leaf | 2 | | |
| | Inoculation of fruit and subculturing | 2 | | |
| | Identification | 2 | | |

SEMESTER I- GENERAL

GE-1/CC-1 PLANT DIVERSITY I (PHYCOLOGY, MYCOLOGY, PHYTOPATHOLOGY, BRYOPHYTES AND ANATOMY) (BOT-G-CC-1-1-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------|----------------|------------|---------|---|
| PLANT DIVERSITY I | PHYCOLOGY | 6 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | MYCOLOGY | 5 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | PHYTOPATHOLOGY | 6 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | BRYOPHYTES | 6 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | ANATOMY | 5 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |

GE-1/CC-1 PRACTICAL- PLANT DIVERSITY I (PHYCOLOGY, MYCOLOGY, PHYTOPATHOLOGY, BRYOPHYTES AND ANATOMY) (BOT-G-CC-1-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------------------|----------------|------------|---------|---|
| PRACTICAL- PLANT DIVERSITY I | PHYCOLOGY | 3 | BP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | MYCOLOGY | 2 | | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | PHYTOPATHOLOGY | 2 | | DEMONSTRATION, INTERACTION |
| | BRYOPHYTES | 2 | | DEMONSTRATION, INTERACTION |
| | ANATOMY | 6 | | DEMONSTRATION, INTERACTION, WORK OUT |

SEMESTER- III HONOURS

CC-5 (THEORETICAL) PALAEOBOTANY AND PALYNOLOGY (BOT-A-CC-3-5-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|--------------|------------|---------|---|
| PALAEOBOTANY AND PALYNOLOGY | PALAEOBOTANY | 8 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | PALYNOLOGY | 4 | | |

CC-5 (PRACTICAL) PALAEOBOTANY AND PALYNOLOGY (BOT-A-CC-3-5-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|--------------|------------|---------|--------------------------------------|
| PALAEOBOTANY AND PALYNOLOGY | PALAEOBOTANY | 4 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | PALYNOLOGY | 4 | | |

CC 6 (THEORETICAL) REPRODUCTIVE BIOLOGY OF ANGIOSPERMS (BOT-A-CC-3-6-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|---------------------------|------------|---------|---|
| REPRODUCTIVE BIOLOGY OF ANGIOSPERMS | MORPHOLOGY OF ANGIOSPERMS | 8 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | EMBRYOLOGY | 4 | | |

CC - 6 (PRACTICAL) REPRODUCTIVE BIOLOGY OF ANGIOSPERMS (BOT-A-CC-3-6-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|---------------------|------------|---------|---|
| REPRODUCTIVE BIOLOGY OF ANGIOSPERMS | Inflorescence types | 2 | DS | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Flowers | 2 | | |
| | Fruits- | 2 | | |
| | Study of ovules | 2 | | |

CC - 7 (THEORETICAL) PLANT SYSTEMATICS (BOT-A-CC-3-7-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------|--|------------|---------|---|
| TAXONOMY OF ANGIOSPERMS | Introduction | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Nomenclature | 2 | | |
| | Systems of classification | 2 | | |
| | Phenetics and Cladistics | 2 | | |
| | Data sources in Taxonomy | 2 | | |
| | Diagnostic features, Systematic position (Bentham & Hooker and Cronquist), Economically important plants (parts used and uses) of different families | 6 | | |

CC7 (PRACTICAL) PLANT SYSTEMATICS (BOT-A-CC-3-7-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------|------------------------|------------|---------|---|
| ANGIOSPERMS | Workout on Angiosperms | 12 | DS | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Spot Identification | 2 | | |

**SKILL ENHANCEMENT COURSE- ELECTIVE (SEC) SEC-A BIOFERTILIZERS (BOT-A-SEC-A-3-2)
(THEORETICAL)**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------|--|------------|---------|---|
| BIOFERTILIZERS | GENERAL ACCOUNT ABOUT THE MICROBES USED AS BIOFERTILIZERS, RHIZOBIUM | 2 | BP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | AZOSPIRILLUM | 2 | | |
| | AZOTOBACTER | 2 | | |
| | CYANOBACTERIA (BLUE GREEN ALGAE) | 2 | | |
| | MYCORRHIZAL ASSOCIATION | 2 | | |
| | ORGANIC FARMING | 2 | | |

SEMESTER- III GENERAL

GE-3/CC-3 CELL BIOLOGY, GENETICS AND MICROBIOLOGY (BOT-G-CC-3-3-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|--------------|------------|---------|---|
| CELL BIOLOGY, GENETICS AND MICROBIOLOGY | CELL BIOLOGY | 4 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | GENETICS | 6 | | |
| | MICROBIOLOGY | 4 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |

GE-3/CC-3 PRACTICAL- CELL BIOLOGY, GENETICS AND MICROBIOLOGY

(BOT-G-CC-3-3-P)

| TOPIC | SUBTOPIC | CLASS HOUR | | TEACHER | TEACHING METHODS |
|--|------------------------|------------|--|---------|--------------------------------------|
| PRACTICAL- CELL BIOLOGY, GENETICS AND MICROBIOLOGY | CELL BIOLOGY, GENETICS | 6 | | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | MICROBIOLOGY | 4 | | DS | DEMONSTRATION, INTERACTION, WORK OUT |

SEC-A BIOFERTILIZERS (BOT-G-SEC-A-3/5-2)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------|-------------------------|------------|---------|---|
| BIOFERTILIZERS | Biofertilizers | 2 | BP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Azospirillum | 2 | | |
| | Cyanobacteria | 2 | | |
| | Mycorrhizal association | 2 | | |
| | Organic farming | 2 | | |

TEACHING PLAN
FOR HONOURS AND GENERAL COURSES
(UNDER CBCS SYSTEM)
ACADEMIC SESSION 2019-2020
(JANUARY- JUNE- 2020) BLENDED MODE
(ONLINE CLASS FROM 1st APRIL, 2020)

TEACHERS:

MM- DR. MRIGANKA MANDAL

DS- DR. DIPU SAMANTA

RP- RIMLI PAUL

SEMESTER- II HONOURS

CC- 3 PLANT ANATOMY (THEORY) (BOT-A-CC-2-3-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---|------------|---------|--|
| PLANT ANATOMY | Cell wall | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Stomata | 1 | | |
| | Stele | 1 | | |
| | Primary structure of stem and root | 2 | | |
| | Secondary growth | 3 | | |
| | Mechanical tissues and the Principles governing their distribution in plants | 2 | | |
| | Developmental Anatomy | 2 | | |
| | Ecological Anatomy | 1 | | |
| | Scope of plant anatomy: application in systematics, forensics and pharmacognosy | 4 | | |

CC-3 PLANT ANATOMY (PRACTICAL) (BOT-A-CC-2-3-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|--|------------|---------|---|
| PLANT ANATOMY | Microscopic studies | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Study of anatomical details through permanent slides/ temporary stained mounts | 2 | | |
| | Study of anomalous secondary structure | 5 | | |
| | Study of adaptive anatomical features | 2 | | |

CC-4 (THEORITICAL) ARCHAEGONIATE (BOT-A-CC-2-4-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---------------|------------|---------|--|
| ARCHAEGONIATE | BRYOPHYTES | 8 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | PTERIDOPHYTES | 8 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | GYMNOSPERMS | 7 | DS | |

CC- 4 (PRACTICAL) ARCHAEGONIATE (BOT-A-CC-2-4-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---------------|------------|---------|--|
| ARCHAEGONIATE | BRYOPHYTES | 4 | DS | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT (11.01.20-16.01.20), ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | PTERIDOPHYTES | 6 | | |
| | GYMNOSPERMS | 4 | | |

SEMESTER- II GENERAL

GE-2/CC-2 PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS, PALAEOBOTANY, MORPHOLOGY AND TAXONOMY) (BOT-G-CC-2-2-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------------|---------------|------------|---------|--|
| PLANT DIVERSITY II | PTERIDOPHYTES | 4 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | GYMNOSPERMS | 6 | DS | |
| | PALAEOBOTANY | 4 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | MORPHOLOGY | 5 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | TAXONOMY | 7 | RP | |

GE-2/CC-2 PRACTICAL- PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS, PALAEOBOTANY, MORPHOLOGY AND TAXONOMY) (BOT-G-CC-2-2-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------|----------------------------|------------|---------|---|
| PRACTICAL- PLANT DIVERSITY II | MORPHOLOGY AND TAXONOMY | 6 | RP | DEMONSTRATION, INTERACTION, WORK OUT, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | PTERIDOPHYTES, GYMNOSPERMS | 6 | DS | DEMONSTRATION, INTERACTION, WORK OUT, ONLINE CLASS THROUGH GOOGLE CLASSROOM |

SEMESTER IV- HONOURS

CC-8 (THEORETICAL) PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION (BOT-A-CC-4-8-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--|-----------------|------------|---------|--|
| PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION | PLANT GEOGRAPHY | 4 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | ECOLOGY | 4 | | |
| | EVOLUTION | 3 | RP | |

CC-8 (PRACTICAL) PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION (BOT-A-CC-4-8-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---|
| PLANT GEOGRAPHY | Study of local flora and submission of a project report highlighting phytogeographical characteristics of the region | 4 | DS | DEMONSTRATION, INTERACTION, WORK OUT, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| ECOLOGY | Study of community structure by quadrat method | 3 | | |
| | Comparative anatomical studies of leaves from polluted and less polluted areas | 2 | | |
| | Measurement of dissolved O ₂ by Azide modification of Winkler's method | 2 | | |
| | Comparison of free CO ₂ from different sources | 2 | | |

CC-9 (THEORETICAL) ECONOMIC BOTANY (BOT-A-CC-4-9-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|----------------------------|------------|---------|--|
| ECONOMIC BOTANY | Origin of cultivated crops | 1 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Cereals | 2 | | |
| | Legumes | 2 | | |
| | Sugar and starches | 2 | | |
| | Spices | 2 | | |
| | Beverages | 2 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Oil and fats | 2 | | |
| | Drug-yielding plants | 2 | | |
| | Timber | 1 | | |
| | Fibers | 2 | | |

CC- 9 (PRACTICAL) ECONOMIC BOTANY (BOT-A-CC-4-9-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|---|------------|---------|---|
| ECONOMIC BOTANY | Cereals | 2 | DS | DEMONSTRATION, INTERACTION, WORK OUT, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Legume | 2 | | |
| | Sugars and starches | 2 | | |
| | Tea | 1 | | |
| | Mustard | 2 | | |
| | Habit sketch of Digitalis, Papaver and Cannabis | 1 | | |
| | Sal, Teak | 2 | | |
| | Jute | 2 | | |

CC-10 (THEORETICAL) GENETICS (BOT-A-CC-4-10-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------|--|------------|---------|--|
| GENETICS | Introduction: Mendelian genetics and its extension | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Linkage, Crossing over and Gene Mapping | 3 | | |
| | Epistasis and Polygenic inheritance in plants | 2 | | |
| | Aneuploidy and Polyploidy | 2 | | |
| | Chromosomal aberration | 2 | | |
| | Mutation | 3 | | |
| | Structural organisation of Gene | 2 | | |

CC-10 (PRACTICAL) GENETICS (BOT-A-CC-4-10-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------|--|------------|---------|---|
| GENETICS | Introduction to chromosome preparation | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Determination of mitotic index and frequency of different mitotic stages in pre-fixed root tips of Allium cepa | 4 | | |
| | Study of mitotic chromosome | 4 | | |
| | Study of chromosomal aberrations developed due to exposure to any two pollutants/ pesticides etc. | 2 | | |
| | Study of meiotic chromosome | 4 | | |
| | Identification from permanent slides | 2 | | |
| | | | | |

SKILL ENHANCEMENT COURSE- ELECTIVE (SEC)

SEC-B MUSHROOM CULTURE TECHNOLOGY (BOT-A-SEC-B-4-4) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|------------------------|------------|---------|--|
| MUSHROOM CULTURE TECHNOLOGY | INTRODUCTION | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | CULTIVATION TECHNOLOGY | 2 | | |
| | STORAGE AND NUTRITION | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | FOOD PREPARATION | 2 | | |

SEMESTER IV GENERAL

GE-4/CC-4 (THEORETICAL) PLANT PHYSIOLOGY AND METABOLISM (BOT-G-CC-4-4-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------------|-------------------------|------------|---------|---|
| PLANT PHYSIOLOGY AND METABOLISM | Proteins | 2 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Transport in plants | 2 | | |
| | Transpiration | 2 | | |
| | Photosynthesis | 2 | | |
| | Respiration | 2 | | |
| | Nitrogen metabolism | 2 | | |
| | Plant Growth regulators | 2 | | |
| | Photoperiodism | 1 | | |
| | Senescence | 1 | | |

GE-4/CC-4 (PRACTICAL) PLANT PHYSIOLOGY AND METABOLISM (BOT-G-CC-4-4-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------------|--|------------|---------|---|
| PLANT PHYSIOLOGY AND METABOLISM | Experiment on Plasmolysis | 2 | DS | DEMONSTRATION , INTERACTION, WORK OUT, CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Measurement of leaf area (graphical method) and determination of transpiration rate per unit area by weighing method | 2 | | |
| | Imbibition of water by dry seeds | 2 | | |
| | Evolution of O ₂ during photosynthesis | 2 | | |
| | Evolution of CO ₂ during aerobic respiration and measurement of volume | 2 | | |
| | | | | |

SEC-B MUSHROOM CULTURE TECHNOLOGY (BOT-G-SEC-D-4/6-4) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|---|
| MUSHROOM CULTURE TECHNOLOGY | Mushroom | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Cultivation techniques/ technology of edible mushrooms in India | 2 | | |
| | Storage | 2 | | |
| | Food preparation | 2 | | |
| | Research centers | 2 | | |

DEPARTMENT OF BOTANY
TEACHING PLAN
FOR HONOURS AND GENERAL COURSES
(UNDER CBCS SYSTEM)
ACADEMIC SESSION 2020-2021

TEACHERS:

MM- DR. MRIGANKA MANDAL

DS- DR. DIPU SAMANTA

RP- RIMLI PAUL

(JULY- DECEMBER- 2020)- ONLINE MODE

SEMESTER I- HONOURS

CC-1 (THEORITICAL)

PHYCOLOGY AND MICROBIOLOGY (BOT-A-CC-1-1-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|-----------------|------------|---------|---------------------------------------|
| PHYCOLOGY | General account | 3 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Classification | 3 | | |
| | Cyanobacteria | 1 | | |
| | Bacillariophyta | 2 | | |
| | Life History | 6 | | |
| MICROBIOLOGY | Virus | 3 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Bacteria | 4 | | |

CC-1 (PRACTICAL)

PHYCOLOGY AND MICROBIOLOGY (BOT-A-CC-1-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|--|------------|---------|---------------------------------------|
| PHYCOLOGY | Work out: | 4 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Identification | 2 | | |
| MICROBIOLOGY | Preparation of bacterial media | 2 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Sub-culturing | 1 | | |
| | Gram staining from | 2 | | |
| | Microscopic examination of bacteria from natural habitat | 2 | | |

CC-2 (THEORY)

MYCOLOGY AND PHYTO-PATHOLOGY (BOT-A-CC-1-2-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---------------------------------------|
| MYCOLOGY | General Account | 2 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Classification | 2 | | |
| | Life history | 4 | | |
| | Mycorrhiza | 2 | | |
| | Lichen | 1 | | |
| PHYTO-PATHOLOGY | Terms and Definitions | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Host – Parasite Interaction | 3 | | |
| | Plant Disease Management | 3 | | |
| | Symptoms , Causal organism, Disease cycle and Control measures of different diseases | 4 | | |

CC-2 (PRACTICAL)

MYCOLOGY AND PHYTO-PATHOLOGY (BOT-A-CC-1-2-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---------------------------------------|
| MYCOLOGY | Work out | 8 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Study from permanent slides | 2 | | |
| | Morphological study of Fungi | 2 | | |
| PHYTO-PATHOLOGY | Preparation of fungal media | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Sterilization process | 1 | | |
| | Isolation of pathogen from diseased leaf | 2 | | |
| | Inoculation of fruit and subculturing | 2 | | |
| | Identification | 2 | | |

SEMESTER I- GENERAL**GE-1/CC-1 PLANT DIVERSITY I (PHYCOLOGY, MYCOLOGY, PHYTOPATHOLOGY, BRYOPHYTES AND ANATOMY) (BOT-G-CC-1-1-TH) THEORETICAL**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------|----------------|------------|---------|---------------------------------------|
| PLANT DIVERSITY I | PHYCOLOGY | 6 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | MYCOLOGY | 5 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | PHYTOPATHOLOGY | 6 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | BRYOPHYTES | 6 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | ANATOMY | 5 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |

GE-1/CC-1 PRACTICAL- PLANT DIVERSITY I (PHYCOLOGY, MYCOLOGY, PHYTOPATHOLOGY, BRYOPHYTES AND ANATOMY) (BOT-G-CC-1-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------------------|----------------|------------|---------|---------------------------------------|
| PRACTICAL- PLANT DIVERSITY I | PHYCOLOGY | 3 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | MYCOLOGY | 2 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | PHYTOPATHOLOGY | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | BRYOPHYTES | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | ANATOMY | 6 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |

SEMESTER- III HONOURS**CC-5 (THEORETICAL) PALAEOBOTANY AND PALYNOLOGY (BOT-A-CC-3-5-TH)**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|--------------|------------|---------|---------------------------------------|
| PALAEOBOTANY AND PALYNOLOGY | PALAEOBOTANY | 8 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | PALYNOLOGY | 4 | | |

CC-5 (PRACTICAL) PALAEOBOTANY AND PALYNOLOGY (BOT-A-CC-3-5-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|--------------|------------|---------|---------------------------------------|
| PALAEOBOTANY AND PALYNOLOGY | PALAEOBOTANY | 4 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | PALYNOLOGY | 4 | | |

CC 6 (THEORETICAL) REPRODUCTIVE BIOLOGY OF ANGIOSPERMS (BOT-A-CC-3-6-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|---------------------------|------------|---------|---------------------------------------|
| REPRODUCTIVE BIOLOGY OF ANGIOSPERMS | MORPHOLOGY OF ANGIOSPERMS | 8 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | EMBRYOLOGY | 4 | | |

CC- 6 (PRACTICAL) REPRODUCTIVE BIOLOGY OF ANGIOSPERMS (BOT-A-CC-3-6-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|---------------------|------------|---------|---------------------------------------|
| REPRODUCTIVE BIOLOGY OF ANGIOSPERMS | Inflorescence types | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Flowers | 2 | | |
| | Fruits- | 2 | | |
| | Study of ovules | 2 | | |

CC - 7 (THEORETICAL) PLANT SYSTEMATICS (BOT-A-CC-3-7-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------|--|------------|---------|---------------------------------------|
| TAXONOMY OF ANGIOSPERMS | Introduction | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Nomenclature | 2 | | |
| | Systems of classification | 2 | | |
| | Phenetics and Cladistics | 2 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Data sources in Taxonomy | 2 | | |
| | Diagnostic features, Systematic position (Bentham & Hooker and Cronquist), Economically important plants (parts used and uses) of different families | 6 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |

CC7 (PRACTICAL) PLANT SYSTEMATICS (BOT-A-CC-3-7-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------|------------------------|------------|---------|---------------------------------------|
| ANGIOSPERMS | Workout on Angiosperms | 12 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Spot Identification | 2 | | |

**SKILL ENHANCEMENT COURSE- ELECTIVE (SEC) SEC-A BIOFERTILIZERS (BOT-A-SEC-A-3-2)
(THEORETICAL)**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------|--|------------|---------|---------------------------------------|
| BIOFERTILIZERS | GENERAL ACCOUNT ABOUT THE MICROBES USED AS BIOFERTILIZERS, RHIZOBIUM | 2 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | AZOSPIRILLUM | 2 | | |
| | AZOTOBACTER | 2 | | |

| | | | | |
|--|--|---|--|--|
| | CYANOBACTERIA (BLUE GREEN ALGAE) | 2 | | |
| | MYCORRHIZAL ASSOCIATION | 2 | | |
| | ORGANIC FARMING | 2 | | |

SEMESTER- III GENERAL

GE-3/CC-3 CELL BIOLOGY, GENETICS AND MICROBIOLOGY (BOT-G-CC-3-3-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|--------------|---------------|---------|--|
| CELL BIOLOGY, GENETICS AND MICROBIOLOGY | CELL BIOLOGY | 4 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | GENETICS | 6 | | |
| | MICROBIOLOGY | 4 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |

GE-3/CC-3 PRACTICAL- CELL BIOLOGY, GENETICS AND MICROBIOLOGY

(BOT-G-CC-3-3-P)

| TOPIC | SUBTOPIC | CLASS HOUR | | TEACHER | TEACHING METHODS |
|---|---------------------------|---------------|--|---------|--|
| PRACTICAL- CELL BIOLOGY, GENETICS AND MICROBIOLOGY | CELL BIOLOGY, GENETICS | 6 | | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | MICROBIOLOGY | 4 | | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |

SEC-A BIOFERTILIZERS (BOT-G-SEC-A-3/5-2)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------|----------------------------|---------------|---------|--|
| BIOFERTILIZERS | Biofertilizers | 2 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Azospirillum | 2 | | |
| | Cyanobacteria | 2 | | |
| | Mycorrhizal association | 2 | | |
| | Organic farming | 2 | | |

SEMESTER V HONOURS

CC- 11 (THEORETICAL)

CELL AND MOLECULAR BIOLOGY (BOT-A-CC-5-11-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------------------------|----------------------|---------------|---------|--|
| CELL AND MOLECULAR BIOLOGY | CELL BIOLOGY | 8 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | MOLECULAR BIOLOGY | 6 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |

CC-11 (PRACTICAL) CELL AND MOLECULAR BIOLOGY (BOT-A-CC-5-11-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------------------|------------------------------|------------|---------|---------------------------------------|
| CELL AND MOLECULAR BIOLOGY | Work out | 10 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Identification | 2 | | |
| | Preparation of models/charts | 2 | | |

CC-12 (THEORETICAL) BIOCHEMISTRY (BOT-A-CC-5-12-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHOD |
|--------------|----------------------------|------------|---------|---------------------------------------|
| BIOCHEMISTRY | Biochemical Foundations | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Molecules of life | 2 | | |
| | Energy flow and enzymology | 3 | | |
| | Cell membrane | 2 | | |
| | Phosphorylation | 2 | | |

CC-12 (PRACTICAL) BIOCHEMISTRY (BOT-A-CC-5-12-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|---------------------------|------------|---------|---------------------------------------|
| BIOCHEMISTRY | Biochemistry-qualitative | 8 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Biochemistry-quantitative | 12 | | |

DISCIPLINE SPECIFIC ELECTIVE COURSES

DSE-A BIOSTATISTICS (BOT-A-DSE-A-5-1-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|-------------------------------|------------|---------|---------------------------------------|
| BIOSTATISTICS | Biostatistics | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Biometry | 2 | | |
| | Central tendency | 2 | | |
| | Test of significance | 2 | | |
| | Probability | 3 | | |
| | Measurement of gene frequency | 2 | | |

DSE-A BIOSTATISTICS (BOT-A-DSE-A-5-1-P) (PRACTICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---|------------|---------|---------------------------------------|
| BIOSTATISTICS | Univariate analysis of statistical data | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Calculation of correlation coefficient values and finding out the probability | 2 | | |
| | Determination of goodness of fit in Mendellian and modified mono-and dihybrid ratios | 4 | | |
| | Calculation of 'F' value and finding out the probability value for the F value | 2 | | |
| | Basic idea of computer programme for statistical analysis of correlation coefficient, 't' test, standard error, standard deviation. | 2 | | |

DSE-B PLANT BIOTECHNOLOGY (BOT-A-DSE-B-5-5-TH) (THEORETICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------|-------------------------------------|------------|---------|---------------------------------------|
| PLANT BIOTECHNOLOGY | PLANT TISSUE CULTURE – INTRODUCTION | 1 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | CALLUS CULTURE | 2 | | |
| | PLANT REGENERATION | 2 | | |
| | HAPLOID CULTURE | 2 | | |
| | PROTOPLAST CULTURE | 2 | | |
| | PLANT GENETIC ENGINEERING | 2 | | |

DSE-B PLANT BIOTECHNOLOGY (BOT-A-DSE-B-5-5-P) (PRACTICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------|---|------------|---------|---------------------------------------|
| PLANT BIOTECHNOLOGY | Familiarization of basic equipments in plant tissue culture | 2 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Study through photographs/ charts/ models of anther culture, somatic embyogenesis, endosperm and embryo culture, micropropagation | 4 | | |
| | Preparation of basal media. Sterilization techniques | 4 | | |

SEMESTER V GENERAL**DSE A PHYTOCHEMISTRY AND MEDICINAL BOTANY****(BOT-G-DSE-A-5-1-TH) THEORETICAL**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|--|------------|---------|---------------------------------------|
| PHYTOCHEMISTRY AND MEDICINAL BOTANY | Medicinal botany | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Pharmacognosy | 2 | | |
| | Organoleptic evaluation of crude drugs | 2 | | |
| | Pharmacologically active constituents | 1 | | |
| | Ethnobotany and folk medicine | 2 | | |

DSE-A PRACTICAL- PHYTOCHEMISTRY AND MEDICINAL BOTANY (BOT-G-DSE-A-5-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|---|------------|---------|---------------------------------------|
| PHYTOCHEMISTRY AND MEDICINAL BOTANY | Preparations of solution and buffers | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Acquaintance with laboratory instruments | 3 | | |
| | Qualitative test for proteins and carbohydrates | 4 | | |
| | Tests (chemical) for tannin and alkaloid | 2 | | |
| | Identification of medicinal plants | 1 | | |

SEC-A BIOFERTILIZERS (BOT-G-SEC-A-3/5-2)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------|-------------------------|------------|---------|---------------------------------------|
| BIOFERTILIZERS | Biofertilizers | 2 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Azospirillum | 2 | | |
| | Cyanobacteria | 2 | | |
| | Mycorrhizal association | 2 | | |
| | Organic farming | 2 | | |

TEACHING PLAN
FOR HONOURS AND GENERAL COURSES
(UNDER CBCS SYSTEM)
ACADEMIC SESSION 2020-2021
(JANUARY- JUNE- 2021)

TEACHERS:

MM- DR. MRIGANKA MANDAL

DS- DR. DIPU SAMANTA

RP- RIMLI PAUL

SEMESTER- II HONOURS

CC- 3 PLANT ANATOMY (THEORY) (BOT-A-CC-2-3-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---|------------|---------|---|
| PLANT ANATOMY | Cell wall | 2 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Stomata | 1 | | |
| | Stele | 1 | | |
| | Primary structure of stem and root | 2 | | |
| | Secondary growth | 3 | | |
| | Mechanical tissues and the Principles governing their distribution in plants | 2 | | |
| | Developmental Anatomy | 2 | | |
| | Ecological Anatomy | 1 | | |
| | Scope of plant anatomy: application in systematics, forensics and pharmacognosy | 4 | | |

CC-3 PLANT ANATOMY (PRACTICAL) (BOT-A-CC-2-3-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|--|------------|---------|---|
| PLANT ANATOMY | Microscopic studies | 2 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Study of anatomical details through permanent slides/ temporary stained mounts | 2 | | |
| | Study of anomalous secondary structure | 5 | | |
| | Study of adaptive anatomical features | 2 | | |

CC-4 (THEORITICAL) ARCHAEGONIATE (BOT-A-CC-2-4-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---------------|------------|---------|---|
| ARCHAEGONIATE | BRYOPHYTES | 8 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | PTERIDOPHYTES | 8 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | GYMNOSPERMS | 7 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |

CC- 4 (PRACTICAL) ARCHAEGONIATE (BOT-A-CC-2-4-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---------------|------------|---------|---|
| ARCHAEGONIATE | BRYOPHYTES | 4 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | PTERIDOPHYTES | 6 | | |
| | GYMNOSPERMS | 4 | | |

SEMESTER- II GENERAL

GE-2/CC-2 PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS, PALAEOBOTANY, MORPHOLOGY AND TAXONOMY) (BOT-G-CC-2-2-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------------|---------------|------------|---------|---------------------------------------|
| PLANT DIVERSITY II | PTERIDOPHYTES | 4 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | GYMNOSPERMS | 6 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | PALAEOBOTANY | 4 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | MORPHOLOGY | 5 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | TAXONOMY | 7 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |

GE-2/CC-2 PRACTICAL- PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS, PALAEOBOTANY, MORPHOLOGY AND TAXONOMY) (BOT-G-CC-2-2-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------|----------------------------|------------|---------|---|
| PRACTICAL- PLANT DIVERSITY II | MORPHOLOGY AND TAXONOMY | 6 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | PTERIDOPHYTES, GYMNOSPERMS | 6 | DS | DEMONSTRATION, INTERACTION, WORK OUT |

SEMESTER IV- HONOURS**CC-8 (THEORETICAL) PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION (BOT-A-CC-4-8-TH)**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--|-----------------|------------|---------|---|
| PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION | PLANT GEOGRAPHY | 4 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | ECOLOGY | 4 | | |
| | EVOLUTION | 3 | | |

CC-8 (PRACTICAL) PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION (BOT-A-CC-4-8-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---|
| PLANT GEOGRAPHY | Study of local flora and submission of a project report highlighting phytogeographical characteristics of the region | 4 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| ECOLOGY | Study of community structure by quadrat method | 3 | | |
| | Comparative anatomical studies of leaves from polluted and less polluted areas | 2 | | |
| | Measurement of dissolved O ₂ by Azide modification of Winkler's method | 2 | | |
| | Comparison of free CO ₂ from different sources | 2 | | |

CC-9 (THEORETICAL) ECONOMIC BOTANY (BOT-A-CC-4-9-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|----------------------------|------------|---------|---|
| ECONOMIC BOTANY | Origin of cultivated crops | 1 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Cereals | 2 | | |
| | Legumes | 2 | | |
| | Sugar and starches | 2 | | |
| | Spices | 2 | | |
| | Beverages | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Oil and fats | 2 | | |
| | Drug-yielding plants | 2 | | |
| | Timber | 1 | | |
| | Fibers | 2 | | |

CC- 9 (PRACTICAL) ECONOMIC BOTANY (BOT-A-CC-4-9-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|---|------------|---------|---|
| ECONOMIC BOTANY | Cereals | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Legume | 2 | | |
| | Sugars and starches | 2 | | |
| | Tea | 1 | | |
| | Mustard | 2 | | |
| | Habit sketch of Digitalis, Papaver and Cannabis | 1 | | |
| | Sal, Teak | 2 | | |
| | Jute | 2 | | |

CC-10 (THEORETICAL) GENETICS (BOT-A-CC-4-10-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------|--|------------|---------|---|
| GENETICS | Introduction: Mendelian genetics and its extension | 2 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Linkage, Crossing over and Gene Mapping | 3 | | |
| | Epistasis and Polygenic inheritance in plants | 2 | | |
| | Aneuploidy and Polyploidy | 2 | | |
| | Chromosomal aberration | 2 | | |
| | Mutation | 3 | | |
| | Structural organisation of Gene | 2 | | |

CC-10 (PRACTICAL) GENETICS (BOT-A-CC-4-10-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------|--|------------|---------|---|
| GENETICS | Introduction to chromosome preparation | 2 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Determination of mitotic index and frequency of different mitotic stages in pre-fixed root tips of Allium cepa | 4 | | |
| | Study of mitotic chromosome | 4 | | |
| | Study of chromosomal aberrations developed due to exposure to any two pollutants/ pesticides etc. | 2 | | |
| | Study of meiotic chromosome | 4 | | |
| | Identification from permanent slides | 2 | | |

SKILL ENHANCEMENT COURSE- ELECTIVE (SEC)

SEC-B MUSHROOM CULTURE TECHNOLOGY (BOT-A-SEC-B-4-4) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|------------------------|------------|---------|---|
| MUSHROOM CULTURE TECHNOLOGY | INTRODUCTION | 2 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | CULTIVATION TECHNOLOGY | 2 | | |
| | STORAGE AND NUTRITION | 2 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | FOOD PREPARATION | 2 | | |

SEMESTER IV GENERAL

GE-4/CC-4 (THEORETICAL) PLANT PHYSIOLOGY AND METABOLISM (BOT-G-CC-4-4-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------------|-------------------------|------------|---------|---------------------------------------|
| PLANT PHYSIOLOGY AND METABOLISM | Proteins | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Transport in plants | 2 | | |
| | Transpiration | 2 | | |
| | Photosynthesis | 2 | | |
| | Respiration | 2 | | |
| | Nitrogen metabolism | 2 | | |
| | Plant Growth regulators | 2 | | |
| | Photoperiodism | 1 | | |
| | Senescence | 1 | | |

GE-4/CC-4 (PRACTICAL) PLANT PHYSIOLOGY AND METABOLISM (BOT-G-CC-4-4-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------------|--|------------|---------|---------------------------------------|
| PLANT PHYSIOLOGY AND METABOLISM | Experiment on Plasmolysis | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Measurement of leaf area (graphical method) and determination of transpiration rate per unit area by weighing method | 2 | | |
| | Imbibition of water by dry seeds | 2 | | |
| | Evolution of O ₂ during photosynthesis | 2 | | |
| | Evolution of CO ₂ during aerobic respiration and measurement of volume | 2 | | |

SEC-B MUSHROOM CULTURE TECHNOLOGY (BOT-G-SEC-D-4/6-4) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|---------------------------------------|
| MUSHROOM CULTURE TECHNOLOGY | Mushroom | 2 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Cultivation techniques/ technology of edible mushrooms in India | 2 | | |
| | Storage | 2 | | |
| | Food preparation | 2 | | |
| | Research centers | 2 | | |

SEMESTER VI HONOURS

CC-13 (THEORETICAL) PLANT PHYSIOLOGY (BOT-A-CC-6-13-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------|-------------------------------------|------------|---------|---|
| PLANT PHYSIOLOGY | Plant-water relations | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Mineral nutrition | 2 | | |
| | Organic Translocation | 2 | | |
| | Plant Growth Regulators | 3 | | |
| | Photomorphogenesis | 2 | | |
| | Seed dormancy | 2 | | |
| | Physiology of Senescence and Ageing | 2 | | |

CC-13 (PRACTICAL) PLANT PHYSIOLOGY PLANT PHYSIOLOGY (BOT-A-CC-6-13-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------|---|------------|---------|---|
| PLANT PHYSIOLOGY | Determination of loss of water per stoma per hour | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Relationship between transpiration and evaporation | 2 | | |
| | Measurement of osmotic pressure of storage tissue by weighing method | 2 | | |
| | Measurement of osmotic pressure of Rheo leaf by plasmolytic method. | 2 | | |
| | Effect of temperature on absorption of water by storage tissue and determination of Q_{10} | 2 | | |
| | Rate of imbibition of water by starchy, proteinaceous and fatty seeds and effect of seed coat | 2 | | |
| | To study the phenomenon of seed germination | 2 | | |
| | To study the induction of amylase activity in germinating grains | 2 | | |
| | To study the effect of different concentrations of IAA on Avena coleoptile elongation | 2 | | |

CC-14 (THEORETICAL) PLANT METABOLISM (BOT-A-CC-6-14-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------|----------------------------------|------------|---------|---|
| PLANT METABOLISM | Concept of metabolism | 1 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Photosynthesis | 2 | | |
| | Respiration | 2 | | |
| | Nitrogen Metabolism | 1 | | |
| | Lipid metabolism | 1 | | |
| | Mechanism of signal transduction | 2 | | |

CC- 14 (PRACTICAL) PLANT METABOLISM (BOT-A-CC-6-14-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------|--|------------|---------|---|
| PLANT METABOLISM | Chromatography | 2 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Separation of plastidial pigments | 2 | | |
| | Estimation of total chlorophyll content | 2 | | |
| | Effect of HCO ₃ concentration on oxygen evolution during photosynthesis in an aquatic plant | 2 | | |
| | Measurement of oxygen uptake by respiring tissue | 2 | | |
| | Determination of the RQ of germinating seeds | 2 | | |
| | Test of seed viability by TTC method | 2 | | |

DISCIPLINE SPECIFIC ELECTIVE COURSES

DSE-A MEDICINAL AND ETHNOBOTANY (BOT-A-DSE-A-6-3-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------|---------------------------------------|------------|---------|---|
| MEDICINAL AND ETHNOBOTANY | Medicinal botany | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Pharmacognosy | 2 | | |
| | Secondary metabolites | 2 | | |
| | Pharmacologically active constituents | 2 | | |
| | Ethnobotany and folk medicine | 3 | | |

DSE-A MEDICINAL AND ETHNOBOTANY (BOT-A-DSE-A-6-3-P) (PRACTICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------|---------------------|------------|---------|---|
| MEDICINAL AND ETHNOBOTANY | Chemical tests | 4 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Powder microscopy | 4 | | |
| | Histochemical tests | 3 | | |

DSE-B NATURAL RESOURCE MANAGEMENT (BOT-A-DSE-B-6-8-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|---|
| NATURAL RESOURCE MANAGEMENT | NATURAL RESOURCES | 2 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | SUSTAINABLE UTILIZATION | 2 | | |
| | LAND | 2 | | |
| | WATER | 2 | | |
| | BIOLOGICAL RESOURCES | 2 | | |
| | FORESTS | 2 | | |
| | ENERGY | 2 | | |
| | CONTEMPORARY PRACTICES IN RESOURCE MANAGEMENT | 2 | | |
| | NATIONAL AND INTERNATIONAL EFFORTS | 2 | | |

DSE-B NATURAL RESOURCE MANAGEMENT (BOT-A-DSE-B-6-8-P) (PRACTICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|---|
| NATURAL RESOURCE MANAGEMENT | Estimation of solid waste generated by a domestic system | 2 | MM | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Estimation of foliar dust deposition | 2 | | |
| | Determination of total solid in water | 4 | | |
| | Determination of chemical properties of soil by rapid spot test | 2 | | |
| | Estimation of organic carbon percentage present in soil sample | 2 | | |

SEMESTER VI GENERAL**DSE-B HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY****(BOT-G-DSE-B-6-4-TH) THEORETICAL**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|--|------------|---------|---------------------------------------|
| HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY | Horticulture | 2 | DS | ONLINE CLASS THROUGH GOOGLE CLASSROOM |
| | Ornamental plants | 2 | | |
| | Identification of some fruits and vegetable plants | 4 | | |
| | Horticultural techniques | 2 | | |
| | Post harvest technology | 2 | | |
| | Disease control and management | 1 | | |

DSE-B PRACTICAL- HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY**(BOT-G-DSE-B-6-4-P)**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|--|------------|---------|---|
| HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY | Field trips to gardens, standing crop sites, nurseries, vegetable gardens, horticultural fields and cold storages. | 8 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |

SEC-B MUSHROOM CULTURE TECHNOLOGY (BOT-G-SEC-D-4/6-4) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|---|
| MUSHROOM CULTURE TECHNOLOGY | Mushroom | 2 | RP | ONLINE CLASS THROUGH GOOGLE CLASSROOM AND GOOGLE MEET |
| | Cultivation techniques/ technology of edible mushrooms in India | 2 | | |
| | Storage | 2 | | |
| | Food preparation | 2 | | |
| | Research centres | 2 | | |

DEPARTMENT OF BOTANY
TEACHING PLAN
FOR HONOURS AND GENERAL COURSES
(UNDER CBCS SYSTEM)
ACADEMIC SESSION 2021-2022

TEACHERS:

MM- DR. MRIGANKA MANDAL

DS- DR. DIPU SAMANTA

RP- RIMLI PAUL

(JULY- DECEMBER- 2021)- BLENDED MODE

SEMESTER I- HONOURS

CC-1 (THEORITICAL)

PHYCOLOGY AND MICROBIOLOGY (BOT-A-CC-1-1-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|-----------------|------------|---------|---|
| PHYCOLOGY | General account | 3 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | Classification | 3 | | |
| | Cyanobacteria | 1 | | |
| | Bacillariophyta | 2 | | |
| | Life History | 6 | | |
| MICROBIOLOGY | Virus | 3 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | Bacteria | 4 | | |

CC-1 (PRACTICAL)

PHYCOLOGY AND MICROBIOLOGY (BOT-A-CC-1-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|--|------------|---------|---------------------------------------|
| PHYCOLOGY | Work out: | 4 | RP | DEMONSTRATION, INTERACTION, WORK OUT, |
| | Identification | 2 | | |
| MICROBIOLOGY | Preparation of bacterial media | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Sub-culturing | 1 | | |
| | Gram staining from | 2 | | |
| | Microscopic examination of bacteria from natural habitat | 2 | | |

CC-2 (THEORY)

MYCOLOGY AND PHYTO-PATHOLOGY (BOT-A-CC-1-2-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---|
| MYCOLOGY | General Account | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | Classification | 2 | | |
| | Life history | 4 | | |
| | Mycorrhiza | 2 | | |
| | Lichen | 1 | | |
| PHYTO-PATHOLOGY | Terms and Definitions | 2 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | Host – Parasite Interaction | 3 | | |
| | Plant Disease Management | 3 | | |
| | Symptoms , Causal organism, Disease cycle and Control measures of different diseases | 4 | | |

CC-2 (PRACTICAL)

MYCOLOGY AND PHYTO-PATHOLOGY (BOT-A-CC-1-2-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|--------------------------------------|
| MYCOLOGY | Work out | 8 | RP | DEMONSTRATION, INTERACTION, WORK OUT |
| | Study from permanent slides | 2 | | |
| | Morphological study of Fungi | 2 | | |
| PHYTO-PATHOLOGY | Preparation of fungal media | 2 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Sterilization process | 1 | | |
| | Isolation of pathogen from diseased leaf | 2 | | |
| | Inoculation of fruit and subculturing | 2 | | |
| | Identification | 2 | | |

SEMESTER I- GENERAL

GE-1/CC-1 PLANT DIVERSITY I (PHYCOLOGY, MYCOLOGY, PHYTOPATHOLOGY, BRYOPHYTES
AND ANATOMY) (BOT-G-CC-1-1-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------|----------------|------------|---------|---|
| PLANT DIVERSITY I | PHYCOLOGY | 6 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | MYCOLOGY | 5 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | PHYTOPATHOLOGY | 6 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | BRYOPHYTES | 6 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | ANATOMY | 5 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |

GE-1/CC-1 PRACTICAL- PLANT DIVERSITY I (PHYCOLOGY, MYCOLOGY, PHYTOPATHOLOGY, BRYOPHYTES AND ANATOMY) (BOT-G-CC-1-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------------------|----------------|------------|---------|---|
| PRACTICAL- PLANT DIVERSITY I | PHYCOLOGY | 3 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | MYCOLOGY | 2 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | PHYTOPATHOLOGY | 2 | DS | DEMONSTRATION, INTERACTION |
| | BRYOPHYTES | 2 | DS | DEMONSTRATION, INTERACTION |
| | ANATOMY | 6 | RP | DEMONSTRATION, INTERACTION, WORK OUT |

SEMESTER- III HONOURS

CC-5 (THEORETICAL) PALAEOBOTANY AND PALYNOLOGY (BOT-A-CC-3-5-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|--------------|------------|---------|---|
| PALAEOBOTANY AND PALYNOLOGY | PALAEOBOTANY | 8 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | PALYNOLOGY | 4 | | |

CC-5 (PRACTICAL) PALAEOBOTANY AND PALYNOLOGY (BOT-A-CC-3-5-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|--------------|------------|---------|--------------------------------------|
| PALAEOBOTANY AND PALYNOLOGY | PALAEOBOTANY | 4 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | PALYNOLOGY | 4 | | |

CC 6 (THEORETICAL) REPRODUCTIVE BIOLOGY OF ANGIOSPERMS (BOT-A-CC-3-6-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|---------------------------|------------|---------|---|
| REPRODUCTIVE BIOLOGY OF ANGIOSPERMS | MORPHOLOGY OF ANGIOSPERMS | 8 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | EMBRYOLOGY | 4 | | |

CC- 6 (PRACTICAL) REPRODUCTIVE BIOLOGY OF ANGIOSPERMS (BOT-A-CC-3-6-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|---------------------|------------|---------|--------------------------------------|
| REPRODUCTIVE BIOLOGY OF ANGIOSPERMS | Inflorescence types | 2 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Flowers | 2 | | |
| | Fruits- | 2 | | |
| | Study of ovules | 2 | | |

CC - 7 (THEORETICAL) PLANT SYSTEMATICS (BOT-A-CC-3-7-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------|--|------------|---------|---|
| TAXONOMY OF ANGIOSPERMS | Introduction | 2 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | Nomenclature | 2 | | |
| | Systems of classification | 2 | | |
| | Phenetics and Cladistics | 2 | | |
| | Data sources in Taxonomy | 2 | | |
| | Diagnostic features, Systematic position (Bentham & Hooker and Cronquist), Economically important plants (parts used and uses) of different families | 6 | | |

CC7 (PRACTICAL) PLANT SYSTEMATICS (BOT-A-CC-3-7-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------|------------------------|------------|---------|--------------------------------------|
| ANGIOSPERMS | Workout on Angiosperms | 12 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Spot Identification | 2 | | |

**SKILL ENHANCEMENT COURSE- ELECTIVE (SEC) SEC-A BIOFERTILIZERS (BOT-A-SEC-A-3-2)
(THEORETICAL)**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------|--|------------|---------|---|
| BIOFERTILIZERS | GENERAL ACCOUNT ABOUT THE MICROBES USED AS BIOFERTILIZERS, RHIZOBIUM | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | AZOSPIRILLUM | 2 | | |
| | AZOTOBACTER | 2 | | |
| | CYANOBACTERIA (BLUE GREEN ALGAE) | 2 | | |
| | MYCORRHIZAL ASSOCIATION | 2 | | |
| | ORGANIC FARMING | 2 | | |

SEMESTER- III GENERAL

GE-3/CC-3 CELL BIOLOGY, GENETICS AND MICROBIOLOGY (BOT-G-CC-3-3-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|--------------|------------|---------|---|
| CELL BIOLOGY, GENETICS AND MICROBIOLOGY | CELL BIOLOGY | 4 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | GENETICS | 6 | | |
| | MICROBIOLOGY | 4 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |

GE-3/CC-3 PRACTICAL- CELL BIOLOGY, GENETICS AND MICROBIOLOGY

(BOT-G-CC-3-3-P)

| TOPIC | SUBTOPIC | CLASS HOUR | | TEACHER | TEACHING METHODS |
|--|------------------------|------------|--|---------|--------------------------------------|
| PRACTICAL- CELL BIOLOGY, GENETICS AND MICROBIOLOGY | CELL BIOLOGY, GENETICS | 6 | | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | MICROBIOLOGY | 4 | | DS | DEMONSTRATION, INTERACTION, WORK OUT |

SEC-A BIOFERTILIZERS (BOT-G-SEC-A-3/5-2)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------|-------------------------|------------|---------|---|
| BIOFERTILIZERS | Biofertilizers | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | Azospirillum | 2 | | |
| | Cyanobacteria | 2 | | |
| | Mycorrhizal association | 2 | | |
| | Organic farming | 2 | | |

SEMESTER V HONOURS

CC- 11 (THEORETICAL)

CELL AND MOLECULAR BIOLOGY (BOT-A-CC-5-11-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------------------|-------------------|------------|---------|---|
| CELL AND MOLECULAR BIOLOGY | CELL BIOLOGY | 8 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | MOLECULAR BIOLOGY | 6 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |

CC-11 (PRACTICAL) CELL AND MOLECULAR BIOLOGY (BOT-A-CC-5-11-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------------------|------------------------------|------------|---------|--------------------------------------|
| CELL AND MOLECULAR BIOLOGY | Work out | 10 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Identification | 2 | | |
| | Preparation of models/charts | 2 | | |
| | | | | |

CC-12 (THEORETICAL) BIOCHEMISTRY (BOT-A-CC-5-12-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHOD |
|--------------|----------------------------|------------|---------|---|
| BIOCHEMISTRY | Biochemical Foundations | 2 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | Molecules of life | 2 | | |
| | Energy flow and enzymology | 3 | | |
| | Cell membrane | 2 | | |
| | Phosphorylation | 2 | | |

CC-12 (PRACTICAL) BIOCHEMISTRY (BOT-A-CC-5-12-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|---------------------------|------------|---------|--------------------------------------|
| BIOCHEMISTRY | Biochemistry-qualitative | 8 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Biochemistry-quantitative | 12 | | |

DISCIPLINE SPECIFIC ELECTIVE COURSES

DSE-A BIOSTATISTICS (BOT-A-DSE-A-5-1-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|-------------------------------|------------|---------|---|
| BIOSTATISTICS | Biostatistics | 2 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | Biometry | 2 | | |
| | Central tendency | 2 | | |
| | Test of significance | 2 | | |
| | Probability | 3 | | |
| | Measurement of gene frequency | 2 | | |

DSE-A BIOSTATISTICS (BOT-A-DSE-A-5-1-P) (PRACTICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---|------------|---------|--------------------------------------|
| BIOSTATISTICS | Univariate analysis of statistical data | 2 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Calculation of correlation coefficient values and finding out the probability | 2 | | |
| | Determination of goodness of fit in Mendellian and modified mono-and dihybrid ratios | 4 | | |
| | Calculation of 'F' value and finding out the probability value for the F value | 2 | | |
| | Basic idea of computer programme for statistical analysis of correlation coefficient, 't' test, standard error, standard deviation. | 2 | | |

DSE-B PLANT BIOTECHNOLOGY (BOT-A-DSE-B-5-5-TH) (THEORETICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------|-------------------------------------|------------|---------|---|
| PLANT BIOTECHNOLOGY | PLANT TISSUE CULTURE – INTRODUCTION | 1 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | CALLUS CULTURE | 2 | | |
| | PLANT REGENERATION | 2 | | |
| | HAPLOID CULTURE | 2 | | |
| | PROTOPLAST CULTURE | 2 | | |
| | PLANT GENETIC ENGINEERING | 2 | | |

DSE-B PLANT BIOTECHNOLOGY (BOT-A-DSE-B-5-5-P) (PRACTICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------|--|------------|---------|--------------------------------------|
| PLANT BIOTECHNOLOGY | Familiarization of basic equipments in plant tissue culture | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Study through photographs/ charts/ models of anther culture, somatic embryogenesis, endosperm and embryo culture, micropropagation | 4 | | |
| | Preparation of basal media. Sterilization techniques | 4 | | |

SEMESTER V GENERAL

DSE A PHYTOCHEMISTRY AND MEDICINAL BOTANY

(BOT-G-DSE-A-5-1-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|--|------------|---------|---|
| PHYTOCHEMISTRY AND MEDICINAL BOTANY | Medicinal botany | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | Pharmacognosy | 2 | | |
| | Organoleptic evaluation of crude drugs | 2 | | |
| | Pharmacologically active constituents | 1 | | |
| | Ethnobotany and folk medicine | 2 | | |

DSE-A PRACTICAL- PHYTOCHEMISTRY AND MEDICINAL BOTANY (BOT-G-DSE-A-5-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|---|------------|---------|--|
| PHYTOCHEMISTRY AND MEDICINAL BOTANY | Preparations of solution and buffers | 2 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Acquaintance with laboratory instruments | 3 | | |
| | Qualitative test for proteins and carbohydrates | 4 | | |
| | Tests (chemical) for tannin and alkaloid | 2 | | |
| | Identification of medicinal plants | 1 | | |

SEC-A BIOFERTILIZERS (BOT-G-SEC-A-3/5-2)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------|-------------------------|------------|---------|---|
| BIOFERTILIZERS | Biofertilizers | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | Azospirillum | 2 | | |
| | Cyanobacteria | 2 | | |
| | Mycorrhizal association | 2 | | |
| | Organic farming | 2 | | |

TEACHING PLAN
FOR HONOURS AND GENERAL COURSES
(UNDER CBCS SYSTEM)
ACADEMIC SESSION 2021-2022
(JANUARY- JUNE- 2022)

TEACHERS:

MM- DR. MRIGANKA MANDAL

DS- DR. DIPU SAMANTA

RP- RIMLI PAUL

SEMESTER- II HONOURS

CC- 3 PLANT ANATOMY (THEORY) (BOT-A-CC-2-3-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---|------------|---------|---|
| PLANT ANATOMY | Cell wall | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Stomata | 1 | | |
| | Stele | 1 | | |
| | Primary structure of stem and root | 2 | | |
| | Secondary growth | 3 | | |
| | Mechanical tissues and the Principles governing their distribution in plants | 2 | | |
| | Developmental Anatomy | 2 | | |
| | Ecological Anatomy | 1 | | |
| | Scope of plant anatomy: application in systematics, forensics and pharmacognosy | 4 | | |

CC-3 PLANT ANATOMY (PRACTICAL) (BOT-A-CC-2-3-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|--|------------|---------|--------------------------------------|
| PLANT ANATOMY | Microscopic studies | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Study of anatomical details through permanent slides/ temporary stained mounts | 2 | | |
| | Study of anomalous secondary structure | 5 | | |
| | Study of adaptive anatomical features | 2 | | |

CC-4 (THEORITICAL) ARCHAEGONIATE (BOT-A-CC-2-4-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---------------|------------|---------|---|
| ARCHAEGONIATE | BRYOPHYTES | 8 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | PTERIDOPHYTES | 8 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | GYMNOSPERMS | 7 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |

CC- 4 (PRACTICAL) ARCHAEGONIATE (BOT-A-CC-2-4-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---------------|------------|---------|---|
| ARCHAEGONIATE | BRYOPHYTES | 4 | DS | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | PTERIDOPHYTES | 6 | | |
| | GYMNOSPERMS | 4 | | |

SEMESTER- II GENERAL

GE-2/CC-2 PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS, PALAEOBOTANY, MORPHOLOGY AND TAXONOMY) (BOT-G-CC-2-2-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------------|---------------|------------|---------|---|
| PLANT DIVERSITY II | PTERIDOPHYTES | 4 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | GYMNOSPERMS | 6 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | PALAEOBOTANY | 4 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | MORPHOLOGY | 5 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | TAXONOMY | 7 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |

GE-2/CC-2 PRACTICAL- PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS, PALAEOBOTANY, MORPHOLOGY AND TAXONOMY) (BOT-G-CC-2-2-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------|----------------------------|------------|---------|---|
| PRACTICAL- PLANT DIVERSITY II | MORPHOLOGY AND TAXONOMY | 6 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | PTERIDOPHYTES, GYMNOSPERMS | 6 | DS | DEMONSTRATION, INTERACTION, WORK OUT |

SEMESTER IV- HONOURS**CC-8 (THEORETICAL) PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION (BOT-A-CC-4-8-TH)**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--|-----------------|------------|---------|---|
| PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION | PLANT GEOGRAPHY | 4 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | ECOLOGY | 4 | | |
| | EVOLUTION | 3 | | |

CC-8 (PRACTICAL) PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION (BOT-A-CC-4-8-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---|
| PLANT GEOGRAPHY | Study of local flora and submission of a project report highlighting phytogeographical characteristics of the region | 4 | DS | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| ECOLOGY | Study of community structure by quadrat method | 3 | | |
| | Comparative anatomical studies of leaves from polluted and less polluted areas | 2 | | |
| | Measurement of dissolved O ₂ by Azide modification of Winkler's method | 2 | | |
| | Comparison of free CO ₂ from different sources | 2 | | |

CC-9 (THEORETICAL) ECONOMIC BOTANY (BOT-A-CC-4-9-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|----------------------------|------------|---------|---|
| ECONOMIC BOTANY | Origin of cultivated crops | 1 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Cereals | 2 | | |
| | Legumes | 2 | | |
| | Sugar and starches | 2 | | |
| | Spices | 2 | | |
| | Beverages | 2 | | |
| | Oil and fats | 2 | | |
| | Drug-yielding plants | 2 | | |
| | Timber | 1 | | |
| | Fibers | 2 | | |

CC- 9 (PRACTICAL) ECONOMIC BOTANY (BOT-A-CC-4-9-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|---|------------|---------|---|
| ECONOMIC BOTANY | Cereals | 2 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Legume | 2 | | |
| | Sugars and starches | 2 | | |
| | Tea | 1 | | |
| | Mustard | 2 | | |
| | Habit sketch of Digitalis, Papaver and Cannabis | 1 | | |
| | Sal, Teak | 2 | | |
| | Jute | 2 | | |

CC-10 (THEORETICAL) GENETICS (BOT-A-CC-4-10-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------|--|------------|---------|---|
| GENETICS | Introduction: Mendelian genetics and its extension | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Linkage, Crossing over and Gene Mapping | 3 | | |
| | Epistasis and Polygenic inheritance in plants | 2 | | |
| | Aneuploidy and Polyploidy | 2 | | |
| | Chromosomal aberration | 2 | | |
| | Mutation | 3 | | |
| | Structural organisation of Gene | 2 | | |

CC-10 (PRACTICAL) GENETICS (BOT-A-CC-4-10-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------|--|------------|---------|--------------------------------------|
| GENETICS | Introduction to chromosome preparation | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Determination of mitotic index and frequency of different mitotic stages in pre-fixed root tips of Allium cepa | 4 | | |
| | Study of mitotic chromosome | 4 | | |
| | Study of chromosomal aberrations developed due to exposure to any two pollutants/ pesticides etc. | 2 | | |
| | Study of meiotic chromosome | 4 | | |
| | Identification from permanent slides | 2 | | |

SKILL ENHANCEMENT COURSE- ELECTIVE (SEC)

SEC-B MUSHROOM CULTURE TECHNOLOGY (BOT-A-SEC-B-4-4) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|------------------------|------------|---------|---|
| MUSHROOM CULTURE TECHNOLOGY | INTRODUCTION | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | CULTIVATION TECHNOLOGY | 2 | | |
| | STORAGE AND NUTRITION | 2 | | |
| | FOOD PREPARATION | 2 | | |

SEMESTER IV GENERAL

GE-4/CC-4 (THEORETICAL) PLANT PHYSIOLOGY AND METABOLISM (BOT-G-CC-4-4-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------------|-------------------------|------------|---------|---|
| PLANT PHYSIOLOGY AND METABOLISM | Proteins | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Transport in plants | 2 | | |
| | Transpiration | 2 | | |
| | Photosynthesis | 2 | | |
| | Respiration | 2 | | |
| | Nitrogen metabolism | 2 | | |
| | Plant Growth regulators | 2 | | |
| | Photoperiodism | 1 | | |
| | Senescence | 1 | | |

GE-4/CC-4 (PRACTICAL) PLANT PHYSIOLOGY AND METABOLISM (BOT-G-CC-4-4-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------------|--|------------|---------|--------------------------------------|
| PLANT PHYSIOLOGY AND METABOLISM | Experiment on Plasmolysis | 2 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Measurement of leaf area (graphical method) and determination of transpiration rate per unit area by weighing method | 2 | | |
| | Imbibition of water by dry seeds | 2 | | |
| | Evolution of O ₂ during photosynthesis | 2 | | |
| | Evolution of CO ₂ during aerobic respiration and measurement of volume | 2 | | |

SEC-B MUSHROOM CULTURE TECHNOLOGY (BOT-G-SEC-D-4/6-4) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|---|
| MUSHROOM CULTURE TECHNOLOGY | Mushroom | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Cultivation techniques/ technology of edible mushrooms in India | 2 | | |
| | Storage | 2 | | |
| | Food preparation | 2 | | |
| | Research centers | 2 | | |

SEMESTER VI HONOURS

CC-13 (THEORETICAL) PLANT PHYSIOLOGY (BOT-A-CC-6-13-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------|-------------------------------------|------------|---------|---|
| PLANT PHYSIOLOGY | Plant-water relations | 2 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Mineral nutrition | 2 | | |
| | Organic Translocation | 2 | | |
| | Plant Growth Regulators | 3 | | |
| | Photomorphogenesis | 2 | | |
| | Seed dormancy | 2 | | |
| | Physiology of Senescence and Ageing | 2 | | |

CC-13 (PRACTICAL) PLANT PHYSIOLOGY PLANT PHYSIOLOGY (BOT-A-CC-6-13-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------|---|------------|---------|--------------------------------------|
| PLANT PHYSIOLOGY | Determination of loss of water per stoma per hour | 2 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Relationship between transpiration and evaporation | 2 | | |
| | Measurement of osmotic pressure of storage tissue by weighing method | 2 | | |
| | Measurement of osmotic pressure of Rhoeo leaf by plasmolytic method. | 2 | | |
| | Effect of temperature on absorption of water by storage tissue and determination of Q_{10} | 2 | | |
| | Rate of imbibition of water by starchy, proteinaceous and fatty seeds and effect of seed coat | 2 | | |
| | To study the phenomenon of seed germination | 2 | | |
| | To study the induction of amylase activity in germinating grains | 2 | | |
| | To study the effect of different concentrations of IAA on Avena coleoptile elongation | 2 | | |

CC-14 (THEORETICAL) PLANT METABOLISM (BOT-A-CC-6-14-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------|----------------------------------|------------|---------|---|
| PLANT METABOLISM | Concept of metabolism | 1 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Photosynthesis | 2 | | |
| | Respiration | 2 | | |
| | Nitrogen Metabolism | 1 | | |
| | Lipid metabolism | 1 | | |
| | Mechanism of signal transduction | 2 | | |

CC- 14 (PRACTICAL) PLANT METABOLISM (BOT-A-CC-6-14-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------|--|------------|---------|--------------------------------------|
| PLANT METABOLISM | Chromatography | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Separation of plastidial pigments | 2 | | |
| | Estimation of total chlorophyll content | 2 | | |
| | Effect of HCO ₃ concentration on oxygen evolution during photosynthesis in an aquatic plant | 2 | | |
| | Measurement of oxygen uptake by respiring tissue | 2 | | |
| | Determination of the RQ of germinating seeds | 2 | | |
| | Test of seed viability by TTC method | 2 | | |

DISCIPLINE SPECIFIC ELECTIVE COURSES

DSE-A MEDICINAL AND ETHNOBOTANY (BOT-A-DSE-A-6-3-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------|---------------------------------------|------------|---------|---|
| MEDICINAL AND ETHNOBOTANY | Medicinal botany | 2 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Pharmacognosy | 2 | | |
| | Secondary metabolites | 2 | | |
| | Pharmacologically active constituents | 2 | | |
| | Ethnobotany and folk medicine | 3 | | |

DSE-A MEDICINAL AND ETHNOBOTANY (BOT-A-DSE-A-6-3-P) (PRACTICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------|---------------------|------------|---------|--------------------------------------|
| MEDICINAL AND ETHNOBOTANY | Chemical tests | 4 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Powder microscopy | 4 | | |
| | Histochemical tests | 3 | | |

DSE-B NATURAL RESOURCE MANAGEMENT (BOT-A-DSE-B-6-8-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|---|
| NATURAL RESOURCE MANAGEMENT | NATURAL RESOURCES | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | SUSTAINABLE UTILIZATION | 2 | | |
| | LAND | 2 | | |
| | WATER | 2 | | |
| | BIOLOGICAL RESOURCES | 2 | | |
| | FORESTS | 2 | | |
| | ENERGY | 2 | | |
| | CONTEMPORARY PRACTICES IN RESOURCE MANAGEMENT | 2 | | |
| | NATIONAL AND INTERNATIONAL EFFORTS | 2 | | |

DSE-B NATURAL RESOURCE MANAGEMENT (BOT-A-DSE-B-6-8-P) (PRACTICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|--------------------------------------|
| NATURAL RESOURCE MANAGEMENT | Estimation of solid waste generated by a domestic system | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Estimation of foliar dust deposition | 2 | | |
| | Determination of total solid in water | 4 | | |
| | Determination of chemical properties of soil by rapid spot test | 2 | | |
| | Estimation of organic carbon percentage present in soil sample | 2 | | |

SEMESTER VI GENERAL**DSE-B HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY****(BOT-G-DSE-B-6-4-TH) THEORETICAL**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|--|------------|---------|---|
| HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY | Horticulture | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Ornamental plants | 2 | | |
| | Identification of some fruits and vegetable plants | 4 | | |
| | Horticultural techniques | 2 | | |
| | Post harvest technology | 2 | | |
| | Disease control and management | 1 | | |

DSE-B PRACTICAL- HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY**(BOT-G-DSE-B-6-4-P)**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|--|------------|---------|---|
| HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY | Field trips to gardens, standing crop sites, nurseries, vegetable gardens, horticultural fields and cold storages. | 8 | DS | DEMONSTRATION, INTERACTION, FIELD VISIT |

SEC-B MUSHROOM CULTURE TECHNOLOGY (BOT-G-SEC-D-4/6-4) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|---|
| MUSHROOM CULTURE TECHNOLOGY | Mushroom | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Cultivation techniques/ technology of edible mushrooms in India | 2 | | |
| | Storage | 2 | | |
| | Food preparation | 2 | | |
| | Research centres | 2 | | |

DEPARTMENT OF BOTANY
TEACHING PLAN
FOR HONOURS AND GENERAL COURSES
(UNDER CBCS SYSTEM)
ACADEMIC SESSION 2022-2023

TEACHERS:

MM- DR. MRIGANKA MANDAL

DS- DR. DIPU SAMANTA

RP- RIMLI PAUL

BM- DR. BISWAJIT MUKHERJEE

(JULY- DECEMBER- 2022)

SEMESTER I- HONOURS

CC-1 (THEORITICAL)

PHYCOLOGY AND MICROBIOLOGY (BOT-A-CC-1-1-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|-----------------|------------|---------|---|
| PHYCOLOGY | General account | 3 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Classification | 3 | | |
| | Cyanobacteria | 1 | | |
| | Bacillariophyta | 2 | | |
| | Life History | 6 | | |
| MICROBIOLOGY | Virus | 3 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Bacteria | 4 | | |

CC-1 (PRACTICAL)

PHYCOLOGY AND MICROBIOLOGY (BOT-A-CC-1-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|--|------------|---------|---|
| PHYCOLOGY | Work out: | 4 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Identification | 2 | | |
| MICROBIOLOGY | Preparation of bacterial media | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Sub-culturing | 1 | | |
| | Gram staining from | 2 | | |
| | Microscopic examination of bacteria from natural habitat | 2 | | |

CC-2 (THEORY)

MYCOLOGY AND PHYTO-PATHOLOGY (BOT-A-CC-1-2-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---|
| MYCOLOGY | General Account | 2 | BM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Classification | 2 | | |
| | Life history | 4 | | |
| | Mycorrhiza | 2 | | |
| | Lichen | 1 | | |
| PHYTO-PATHOLOGY | Terms and Definitions | 2 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Host – Parasite Interaction | 3 | BM | |
| | Plant Disease Management | 3 | DS | |
| | Symptoms , Causal organism, Disease cycle and Control measures of different diseases | 4 | | |

CC-2 (PRACTICAL)

MYCOLOGY AND PHYTO-PATHOLOGY (BOT-A-CC-1-2-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---|
| MYCOLOGY | Work out | 8 | BM | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Study from permanent slides | 2 | | |
| | Morphological study of Fungi | 2 | | |
| PHYTO-PATHOLOGY | Preparation of fungal media | 2 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Sterilization process | 1 | | |
| | Isolation of pathogen from diseased leaf | 2 | | |
| | Inoculation of fruit and subculturing | 2 | | |
| | Identification | 2 | | |

SEMESTER I- GENERAL

GE-1/CC-1 PLANT DIVERSITY I (PHYCOLOGY, MYCOLOGY, PHYTOPATHOLOGY, BRYOPHYTES
AND ANATOMY) (BOT-G-CC-1-1-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------|----------------|------------|---------|---|
| PLANT DIVERSITY I | PHYCOLOGY | 6 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | MYCOLOGY | 5 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | PHYTOPATHOLOGY | 6 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | BRYOPHYTES | 6 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | ANATOMY | 5 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |

GE-1/CC-1 PRACTICAL- PLANT DIVERSITY I (PHYCOLOGY, MYCOLOGY, PHYTOPATHOLOGY, BRYOPHYTES AND ANATOMY) (BOT-G-CC-1-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------------------|----------------|------------|---------|---|
| PRACTICAL- PLANT DIVERSITY I | PHYCOLOGY | 3 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | MYCOLOGY | 2 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | PHYTOPATHOLOGY | 2 | DS | DEMONSTRATION, INTERACTION |
| | BRYOPHYTES | 2 | DS | DEMONSTRATION, INTERACTION |
| | ANATOMY | 6 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |

SEMESTER- III HONOURS

CC-5 (THEORETICAL) PALAEOBOTANY AND PALYNOLOGY (BOT-A-CC-3-5-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|--------------|------------|---------|---|
| PALAEOBOTANY AND PALYNOLOGY | PALAEOBOTANY | 8 | BM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | PALYNOLOGY | 4 | | |

CC-5 (PRACTICAL) PALAEOBOTANY AND PALYNOLOGY (BOT-A-CC-3-5-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|--------------|------------|---------|--------------------------------------|
| PALAEOBOTANY AND PALYNOLOGY | PALAEOBOTANY | 4 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | PALYNOLOGY | 4 | | |

CC 6 (THEORETICAL) REPRODUCTIVE BIOLOGY OF ANGIOSPERMS (BOT-A-CC-3-6-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|---------------------------|------------|---------|---|
| REPRODUCTIVE BIOLOGY OF ANGIOSPERMS | MORPHOLOGY OF ANGIOSPERMS | 8 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | EMBRYOLOGY | 4 | | |

CC- 6 (PRACTICAL) REPRODUCTIVE BIOLOGY OF ANGIOSPERMS (BOT-A-CC-3-6-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|---------------------|------------|---------|---|
| REPRODUCTIVE BIOLOGY OF ANGIOSPERMS | Inflorescence types | 2 | DS | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Flowers | 2 | | |
| | Fruits- | 2 | | |
| | Study of ovules | 2 | | |

CC - 7 (THEORETICAL) PLANT SYSTEMATICS (BOT-A-CC-3-7-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------|--|------------|---------|---|
| TAXONOMY OF ANGIOSPERMS | Introduction | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Nomenclature | 2 | | |
| | Systems of classification | 2 | | |
| | Phenetics and Cladistics | 2 | | |
| | Data sources in Taxonomy | 2 | | |
| | Diagnostic features, Systematic position (Bentham & Hooker and Cronquist), Economically important plants (parts used and uses) of different families | 6 | | |

CC7 (PRACTICAL) PLANT SYSTEMATICS (BOT-A-CC-3-7-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------|------------------------|------------|---------|---|
| ANGIOSPERMS | Workout on Angiosperms | 12 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Spot Identification | 2 | | |

**SKILL ENHANCEMENT COURSE- ELECTIVE (SEC) SEC-A BIOFERTILIZERS (BOT-A-SEC-A-3-2)
(THEORETICAL)**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------|--|------------|---------|---|
| BIOFERTILIZERS | GENERAL ACCOUNT ABOUT THE MICROBES USED AS BIOFERTILIZERS, RHIZOBIUM | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | AZOSPIRILLUM | 2 | | |
| | AZOTOBACTER | 2 | | |
| | CYANOBACTERIA (BLUE GREEN ALGAE) | 2 | | |
| | MYCORRHIZAL ASSOCIATION | 2 | | |
| | ORGANIC FARMING | 2 | | |

SEMESTER- III GENERAL

GE-3/CC-3 CELL BIOLOGY, GENETICS AND MICROBIOLOGY (BOT-G-CC-3-3-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|--------------|------------|---------|---|
| CELL BIOLOGY, GENETICS AND MICROBIOLOGY | CELL BIOLOGY | 4 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | GENETICS | 6 | | |
| | MICROBIOLOGY | 4 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |

**GE-3/CC-3 PRACTICAL- CELL BIOLOGY, GENETICS AND MICROBIOLOGY
(BOT-G-CC-3-3-P)**

| TOPIC | SUBTOPIC | CLASS HOUR | | TEACHER | TEACHING METHODS |
|--|------------------------|------------|--|---------|--------------------------------------|
| PRACTICAL- CELL BIOLOGY, GENETICS AND MICROBIOLOGY | CELL BIOLOGY, GENETICS | 6 | | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | MICROBIOLOGY | 4 | | DS | DEMONSTRATION, INTERACTION, WORK OUT |

SEC-A BIOFERTILIZERS (BOT-G-SEC-A-3/5-2)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------|-------------------------|------------|---------|---|
| BIOFERTILIZERS | Biofertilizers | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION, GOOGLE CLASSROOM |
| | Azospirillum | 2 | | |
| | Cyanobacteria | 2 | | |
| | Mycorrhizal association | 2 | | |
| | Organic farming | 2 | | |

SEMESTER V HONOURS

CC- 11 (THEORETICAL)

CELL AND MOLECULAR BIOLOGY (BOT-A-CC-5-11-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------------------|-------------------|------------|---------|---|
| CELL AND MOLECULAR BIOLOGY | CELL BIOLOGY | 8 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | MOLECULAR BIOLOGY | 6 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |

CC-11 (PRACTICAL) CELL AND MOLECULAR BIOLOGY (BOT-A-CC-5-11-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------------------|------------------------------|------------|---------|--------------------------------------|
| CELL AND MOLECULAR BIOLOGY | Work out | 10 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Identification | 2 | | |
| | Preparation of models/charts | 2 | | |
| | | | | |

CC-12 (THEORETICAL) BIOCHEMISTRY (BOT-A-CC-5-12-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHOD |
|--------------|----------------------------|------------|---------|---|
| BIOCHEMISTRY | Biochemical Foundations | 2 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Molecules of life | 2 | BM | |
| | Energy flow and enzymology | 3 | DS | |
| | Cell membrane | 2 | | |
| | Phosphorylation | 2 | | |

CC-12 (PRACTICAL) BIOCHEMISTRY (BOT-A-CC-5-12-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------|---------------------------|------------|---------|--------------------------------------|
| BIOCHEMISTRY | Biochemistry-qualitative | 8 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Biochemistry-quantitative | 12 | | |

DISCIPLINE SPECIFIC ELECTIVE COURSES

**DSE-A INDUSTRIAL AND ENVIRONMENTAL MICROBIOLOGY (BOT-A-DSE-A-5-2-TH)
THEORETICAL**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|--|------------|---------|---|
| INDUSTRIAL AND ENVIRONMENTAL MICROBIOLOGY | Scope of microbes in industry and environment | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Bioreactors/ Fermenters and fermentation process | 2 | | |
| | Microbial production of industrial products | 2 | | |
| | Microbial enzymes of industrial interest and enzyme immobilization | 2 | | |
| | Microbes and quality of environment | 3 | | |
| | Microbial flora of water | 2 | | |
| | Microbes in agriculture and remediation of contaminated soils | 3 | | |

DSE-A INDUSTRIAL AND ENVIRONMENTAL MICROBIOLOGY (BOT-A-DSE-A-5-2-P) (PRACTICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|---|------------|---------|--|
| INDUSTRIAL AND ENVIRONMENTAL MICROBIOLOGY | Principals and functioning of instruments in microbiology laboratory | 2 | RP | DEMONSTRATION , INTERACTION, WORK OUT, FIELD VISIT |
| | Hands on sterilization techniques and preparation of culture media | 2 | | |
| | Preparation of slant, stab and pouring petriplate | 4 | | |
| | A visit to any educational institute/ industry to see an industrial fermenter, and other downstream processing operations | 4 | | |

DSE-B PLANT BIOTECHNOLOGY (BOT-A-DSE-B-5-5-TH) (THEORETICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------|-------------------------------------|------------|---------|---|
| PLANT BIOTECHNOLOGY | PLANT TISSUE CULTURE – INTRODUCTION | 1 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | CALLUS CULTURE | 2 | | |
| | PLANT REGENERATION | 2 | | |
| | HAPLOID CULTURE | 2 | | |
| | PROTOPLAST CULTURE | 2 | | |
| | PLANT GENETIC ENGINEERING | 2 | | |

DSE-B PLANT BIOTECHNOLOGY (BOT-A-DSE-B-5-5-P) (PRACTICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------|--|------------|---------|--------------------------------------|
| PLANT BIOTECHNOLOGY | Familiarization of basic equipments in plant tissue culture | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Study through photographs/ charts/ models of anther culture, somatic embryogenesis, endosperm and embryo culture, micropropagation | 4 | | |
| | Preparation of basal media. Sterilization techniques | 4 | | |

SEMESTER V GENERAL

DSE A PHYTOCHEMISTRY AND MEDICINAL BOTANY

(BOT-G-DSE-A-5-1-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|--|------------|---------|---|
| PHYTOCHEMISTRY AND MEDICINAL BOTANY | Medicinal botany | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Pharmacognosy | 2 | | |
| | Organoleptic evaluation of crude drugs | 2 | | |
| | Pharmacologically active constituents | 1 | | |
| | Ethnobotany and folk medicine | 2 | | |

DSE-A PRACTICAL- PHYTOCHEMISTRY AND MEDICINAL BOTANY (BOT-G-DSE-A-5-1-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------------|---|------------|---------|---|
| PHYTOCHEMISTRY AND MEDICINAL BOTANY | Preparations of solution and buffers | 2 | DS | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Acquaintance with laboratory instruments | 3 | | |
| | Qualitative test for proteins and carbohydrates | 4 | | |
| | Tests (chemical) for tannin and alkaloid | 2 | | |
| | Identification of medicinal plants | 1 | | |

SEC-A BIOFERTILIZERS (BOT-G-SEC-A-3/5-2)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------------|-------------------------|------------|---------|---|
| BIOFERTILIZERS | Biofertilizers | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Azospirillum | 2 | | |
| | Cyanobacteria | 2 | | |
| | Mycorrhizal association | 2 | | |
| | Organic farming | 2 | | |

TEACHING PLAN
FOR HONOURS AND GENERAL COURSES
(UNDER CBCS SYSTEM)
ACADEMIC SESSION 2022-2023
(JANUARY- JUNE- 2023)

TEACHERS:

MM- DR. MRIGANKA MANDAL

DS- DR. DIPU SAMANTA

RP- RIMLI PAUL

BM- DR. BISWAJIT MUKHERJEE

SEMESTER- I HONOURS

CC- 3 PLANT ANATOMY (THEORY) (BOT-A-CC-2-3-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---|------------|---------|---|
| PLANT ANATOMY | Cell wall | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Stomata | 1 | | |
| | Stele | 1 | | |
| | Primary structure of stem and root | 2 | | |
| | Secondary growth | 3 | | |
| | Mechanical tissues and the Principles governing their distribution in plants | 2 | | |
| | Developmental Anatomy | 2 | | |
| | Ecological Anatomy | 1 | | |
| | Scope of plant anatomy: application in systematics, forensics and pharmacognosy | 4 | | |

CC-3 PLANT ANATOMY (PRACTICAL) (BOT-A-CC-2-3-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|--|------------|---------|--------------------------------------|
| PLANT ANATOMY | Microscopic studies | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Study of anatomical details through permanent slides/ temporary stained mounts | 2 | | |
| | Study of anomalous secondary structure | 5 | | |
| | Study of adaptive anatomical features | 2 | | |

CC-4 (THEORITICAL) ARCHAEGONIATE (BOT-A-CC-2-4-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---------------|------------|---------|---|
| ARCHAEGONIATE | BRYOPHYTES | 8 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | PTERIDOPHYTES | 8 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | GYMNOSPERMS | 7 | BM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |

CC- 4 (PRACTICAL) ARCHAEGONIATE (BOT-A-CC-2-4-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------|---------------|------------|---------|---|
| ARCHAEGONIATE | BRYOPHYTES | 4 | DS | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | PTERIDOPHYTES | 6 | | |
| | GYMNOSPERMS | 4 | | |

SEMESTER- IIGENERAL

GE-2/CC-2 PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS, PALAEOBOTANY, MORPHOLOGY AND TAXONOMY) (BOT-G-CC-2-2-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--------------------|---------------|------------|---------|---|
| PLANT DIVERSITY II | PTERIDOPHYTES | 4 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | GYMNOSPERMS | 6 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | PALAEOBOTANY | 4 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | MORPHOLOGY | 5 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | TAXONOMY | 7 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |

GE-2/CC-2 PRACTICAL- PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS, PALAEOBOTANY, MORPHOLOGY AND TAXONOMY) (BOT-G-CC-2-2-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-------------------------------|----------------------------|------------|---------|---|
| PRACTICAL- PLANT DIVERSITY II | MORPHOLOGY AND TAXONOMY | 6 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | PTERIDOPHYTES, GYMNOSPERMS | 6 | DS | DEMONSTRATION, INTERACTION, WORK OUT |

SEMESTER IV- HONOURS

CC-8 (THEORETICAL) PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION (BOT-A-CC-4-8-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|--|-----------------|------------|---------|---|
| PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION | PLANT GEOGRAPHY | 4 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | ECOLOGY | 4 | | |
| | EVOLUTION | 3 | | |

CC-8 (PRACTICAL) PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION (BOT-A-CC-4-8-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|--|------------|---------|---|
| PLANT GEOGRAPHY | Study of local flora and submission of a project report highlighting phytogeographical characteristics of the region | 4 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| ECOLOGY | Study of community structure by quadrat method | 3 | | |
| | Comparative anatomical studies of leaves from polluted and less polluted areas | 2 | | |
| | Measurement of dissolved O ₂ by Azide modification of Winkler's method | 2 | | |
| | Comparison of free CO ₂ from different sources | 2 | | |

CC-9 (THEORETICAL) ECONOMIC BOTANY (BOT-A-CC-4-9-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|----------------------------|------------|---------|---|
| ECONOMIC BOTANY | Origin of cultivated crops | 1 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Cereals | 2 | | |
| | Legumes | 2 | | |
| | Sugar and starches | 2 | | |
| | Spices | 2 | | |
| | Beverages | 2 | MM | |
| | Oil and fats | 2 | | |
| | Drug-yielding plants | 2 | | |
| | Timber | 1 | | |
| | Fibers | 2 | | |

CC- 9 (PRACTICAL) ECONOMIC BOTANY (BOT-A-CC-4-9-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------|---|------------|---------|---|
| ECONOMIC BOTANY | Cereals | 2 | RP | DEMONSTRATION, INTERACTION, WORK OUT, FIELD VISIT |
| | Legume | 2 | | |
| | Sugars and starches | 2 | | |
| | Tea | 1 | | |
| | Mustard | 2 | | |
| | Habit sketch of Digitalis, Papaver and Cannabis | 1 | | |
| | Sal, Teak | 2 | | |
| | Jute | 2 | | |

CC-10 (THEORETICAL) GENETICS (BOT-A-CC-4-10-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------|--|------------|---------|---|
| GENETICS | Introduction: Mendelian genetics and its extension | 2 | BM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Linkage, Crossing over and Gene Mapping | 3 | | |
| | Epistasis and Polygenic inheritance in plants | 2 | | |
| | Aneuploidy and Polyploidy | 2 | | |
| | Chromosomal aberration | 2 | | |
| | Mutation | 3 | | |
| | Structural organisation of Gene | 2 | | |

CC-10 (PRACTICAL) GENETICS (BOT-A-CC-4-10-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|----------|--|------------|---------|--------------------------------------|
| GENETICS | Introduction to chromosome preparation | 2 | BM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Determination of mitotic index and frequency of different mitotic stages in pre-fixed root tips of Allium cepa | 4 | | |
| | Study of mitotic chromosome | 4 | | |
| | Study of chromosomal aberrations developed due to exposure to any two pollutants/ pesticides etc. | 2 | | |
| | Study of meiotic chromosome | 4 | | |
| | Identification from permanent slides | 2 | | |

SKILL ENHANCEMENT COURSE- ELECTIVE (SEC)

SEC-B MUSHROOM CULTURE TECHNOLOGY (BOT-A-SEC-B-4-4) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|------------------------|------------|---------|---|
| MUSHROOM CULTURE TECHNOLOGY | INTRODUCTION | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | CULTIVATION TECHNOLOGY | 2 | | |
| | STORAGE AND NUTRITION | 2 | | |
| | FOOD PREPARATION | 2 | | |

SEMESTER IV GENERAL

GE-4/CC-4 (THEORETICAL) PLANT PHYSIOLOGY AND METABOLISM (BOT-G-CC-4-4-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------------|-------------------------|------------|---------|---|
| PLANT PHYSIOLOGY AND METABOLISM | Proteins | 2 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Transport in plants | 2 | | |
| | Transpiration | 2 | | |
| | Photosynthesis | 2 | | |
| | Respiration | 2 | | |
| | Nitrogen metabolism | 2 | | |
| | Plant Growth regulators | 2 | | |
| | Photoperiodism | 1 | | |
| | Senescence | 1 | | |

GE-4/CC-4 (PRACTICAL) PLANT PHYSIOLOGY AND METABOLISM (BOT-G-CC-4-4-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------------|--|------------|---------|-------------------------------------|
| PLANT PHYSIOLOGY AND METABOLISM | Experiment on Plasmolysis | 2 | DS | DEMONSTRATIO, INTERACTION, WORK OUT |
| | Measurement of leaf area (graphical method) and determination of transpiration rate per unit area by weighing method | 2 | | |
| | Imbibition of water by dry seeds | 2 | | |
| | Evolution of O ₂ during photosynthesis | 2 | | |
| | Evolution of CO ₂ during aerobic respiration and measurement of volume | 2 | | |

SEC-B MUSHROOM CULTURE TECHNOLOGY (BOT-G-SEC-D-4/6-4) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|---|
| MUSHROOM CULTURE TECHNOLOGY | Mushroom | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Cultivation techniques/ technology of edible mushrooms in India | 2 | | |
| | Storage | 2 | | |
| | Food preparation | 2 | | |
| | Research centers | 2 | | |

SEMESTER VI HONOURS

CC-13 (THEORETICAL) PLANT PHYSIOLOGY (BOT-A-CC-6-13-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------|-------------------------------------|------------|---------|---|
| PLANT PHYSIOLOGY | Plant-water relations | 2 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Mineral nutrition | 2 | | |
| | Organic Translocation | 2 | | |
| | Plant Growth Regulators | 3 | | |
| | Photomorphogenesis | 2 | | |
| | Seed dormancy | 2 | | |
| | Physiology of Senescence and Ageing | 2 | | |

CC-13 (PRACTICAL) PLANT PHYSIOLOGY PLANT PHYSIOLOGY (BOT-A-CC-6-13-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------|---|------------|---------|--------------------------------------|
| PLANT PHYSIOLOGY | Determination of loss of water per stoma per hour | 2 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Relationship between transpiration and evaporation | 2 | | |
| | Measurement of osmotic pressure of storage tissue by weighing method | 2 | | |
| | Measurement of osmotic pressure of Rhoeo leaf by plasmolytic method. | 2 | | |
| | Effect of temperature on absorption of water by storage tissue and determination of Q_{10} | 2 | | |
| | Rate of imbibition of water by starchy, proteinaceous and fatty seeds and effect of seed coat | 2 | | |
| | To study the phenomenon of seed germination | 2 | | |
| | To study the induction of amylase activity in germinating grains | 2 | | |
| | To study the effect of different concentrations of IAA on Avenacoleoptile elongation | 2 | | |

CC-14 (THEORETICAL) PLANT METABOLISM (BOT-A-CC-6-14-TH)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------|----------------------------------|------------|---------|---|
| PLANT METABOLISM | Concept of metabolism | 1 | MM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Photosynthesis | 2 | | |
| | Respiration | 2 | | |
| | Nitrogen Metabolism | 1 | | |
| | Lipid metabolism | 1 | | |
| | Mechanism of signal transduction | 2 | | |

CC- 14 (PRACTICAL) PLANT METABOLISM (BOT-A-CC-6-14-P)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|------------------|--|------------|---------|--------------------------------------|
| PLANT METABOLISM | Chromatography | 2 | MM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Separation of plastidial pigments | 2 | | |
| | Estimation of total chlorophyll content | 2 | | |
| | Effect of HCO ₃ concentration on oxygen evolution during photosynthesis in an aquatic plant | 2 | | |
| | Measurement of oxygen uptake by respiring tissue | 2 | | |
| | Determination of the RQ of germinating seeds | 2 | | |
| | Test of seed viability by TTC method | 2 | | |

DISCIPLINE SPECIFIC ELECTIVE COURSES

DSE-A MEDICINAL AND ETHNOBOTANY (BOT-A-DSE-A-6-3-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------|---------------------------------------|------------|---------|---|
| MEDICINAL AND ETHNOBOTANY | Medicinal botany | 2 | DS | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Pharmacognosy | 2 | | |
| | Secondary metabolites | 2 | | |
| | Pharmacologically active constituents | 2 | | |
| | Ethnobotany and folk medicine | 3 | | |

DSE-A MEDICINAL AND ETHNOBOTANY (BOT-A-DSE-A-6-3-P) (PRACTICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---------------------------|---------------------|------------|---------|--------------------------------------|
| MEDICINAL AND ETHNOBOTANY | Chemical tests | 4 | DS | DEMONSTRATION, INTERACTION, WORK OUT |
| | Powder microscopy | 4 | | |
| | Histochemical tests | 3 | | |

DSE-B NATURAL RESOURCE MANAGEMENT (BOT-A-DSE-B-6-8-TH) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|---|
| NATURAL RESOURCE MANAGEMENT | NATURAL RESOURCES | 2 | BM | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | SUSTAINABLE UTILIZATION | 2 | | |
| | LAND | 2 | | |
| | WATER | 2 | | |
| | BIOLOGICAL RESOURCES | 2 | | |
| | FORESTS | 2 | | |
| | ENERGY | 2 | | |
| | CONTEMPORARY PRACTICES IN RESOURCE MANAGEMENT | 2 | | |
| | NATIONAL AND INTERNATIONAL EFFORTS | 2 | | |

DSE-B NATURAL RESOURCE MANAGEMENT (BOT-A-DSE-B-6-8-P) (PRACTICAL)

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|--------------------------------------|
| NATURAL RESOURCE MANAGEMENT | Estimation of solid waste generated by a domestic system | 2 | BM | DEMONSTRATION, INTERACTION, WORK OUT |
| | Estimation of foliar dust deposition | 2 | | |
| | Determination of total solid in water | 4 | | |
| | Determination of chemical properties of soil by rapid spot test | 2 | | |
| | Estimation of organic carbon percentage present in soil sample | 2 | | |

SEMESTER VI GENERAL**DSE-B HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY****(BOT-G-DSE-B-6-4-TH) THEORETICAL**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|--|------------|---------|---|
| HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY | Horticulture | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Ornamental plants | 2 | | |
| | Identification of some fruits and vegetable plants | 4 | | |
| | Horticultural techniques | 2 | | |
| | Post harvest technology | 2 | | |
| | Disease control and management | 1 | | |

DSE-B PRACTICAL- HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY**(BOT-G-DSE-B-6-4-P)**

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|---|--|------------|---------|---|
| HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY | Field trips to gardens, standing crop sites, nurseries, vegetable gardens, horticultural fields and cold storages. | 8 | DS | DEMONSTRATION, INTERACTION, FIELD VISIT |

SEC-B MUSHROOM CULTURE TECHNOLOGY (BOT-G-SEC-D-4/6-4) THEORETICAL

| TOPIC | SUBTOPIC | CLASS HOUR | TEACHER | TEACHING METHODS |
|-----------------------------|---|------------|---------|---|
| MUSHROOM CULTURE TECHNOLOGY | Mushroom | 2 | RP | CLASS LECTURE, POWER POINT PRESENTATION, INTERACTIVE DISCUSSION |
| | Cultivation techniques/ technology of edible mushrooms in India | 2 | | |
| | Storage | 2 | | |
| | Food preparation | 2 | | |
| | Research centres | 2 | | |