



R. C. Patel Educational Trust's
R. C. Patel Arts, Commerce and Science College
Shirpur-425405, Karvand Naka, Dist.- Dhule (Maharashtra)
E-mail - principal@repasc.ac.in

Affiliated to: K. B. C. North Maharashtra University, Jalgaon-425001

Self Study Report (SSR): 2024 (4th Cycle)



Criteria - 1
Curricular Aspects

Key Indicator - 1.3
Curriculum Enrichment

Metric No. - 1.3.1 (QIM)

Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum

Submitted to
National Assessment and Accreditation Council, Bangalore



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce and Science College

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President

Hon. Bhupeshbhai Patel

Principal

Dr. D. R. Patil

Date: 15/06/2024

Declaration

This is to declare that, the information, reports, true copies of the supporting documents, numerical data etc. submitted in these files is verified by Internal Quality Assurance Cell (IQAC) and it is correct as per the office record.

This declaration is for the purpose of NAAC accreditation of the HEI for the 4th cycle assessment period 2018-19 to 2022-23.

Place: Shirpur

Date: 15/06/2024

Dr. Sandip P. Patil

IQAC Co-ordinator

IQAC Coordinator

R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce and Science College

Shirpur, Dist.-Dhule (M.S.) 425405



Dr. D. R. Patil

IQAC Chairman & Principal

PRINCIPAL

R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce and Science College

Shirpur, Dist.-Dhule (M.S.) 425405

1.3.1 Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum

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Dr. D. R. Patil

Dr. D. R. Patil
(Principal)





॥ अंतरी पेटवू ज्ञानज्योत ॥

कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव
Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon

अभ्यास मंडळ विभाग

जा.क्र. : उमवि/२१/Environmental Studies/५२७/२०१८

दिनांक:- २२/११/२०१८

प्रति,
 क.ब.चौ.उमविशी संलग्न सर्व महाविद्यालयांचे मा.प्राचार्य
 व मान्यता प्राप्त परिसंस्थांचे मा. संचालक आणि
 मा.विभाग प्रमुख विद्यापीठ शैक्षणिक प्रशाळा / विभाग यांना...

विषय :- Environmental Studies या विषयाचे अभ्यासक्रमा संदर्भात.

महोदय / महोदया,

उपरोक्त विषयांस अनुसरून आपणांस कळविण्यात येते की, मा.सर्वोच्च न्यायालयाचे निर्णयानुसार पर्यावरण संतुलन राखण्यासाठी प्रथम वर्षास प्रवेशित विद्यार्थ्यांसाठी सहा महिन्यांचा पर्यावरणशास्त्र विषयाचा अभ्यासक्रम जून, २००४ पासून सर्व विद्याशाखांमध्ये समाविष्ट करण्यात आलेला आहे.

शैक्षणिक वर्ष २०१८-१९ पासून प्रथम वर्ष कला विज्ञान व वाणिज्य वर्गांना Choice Based Credit System लागू करण्यात आलेली असल्याने Environmental Studies या विषयाचा अभ्यासक्रम Ability Enhancement Course अंतर्गत Choice Based Credit System प्रमाणे तयार करणेसाठी नियुक्त समितीच्या सभेत Environmental Studies विषयाच्या गुणांची विभागणी (Marks Pattern) देखील ६०:४० प्रमाणे करण्यात यावी, व गुणांकन (Marks Pattern) पुढील प्रमाणे करण्यात यावे, असे ठरले आहे.

लेखी परीक्षा (Theory)

६० गुण

अंतर्गत (Internal) परीक्षा फिल्ड वर्क / व्हायवा

४० गुण

एकूण १०० गुण

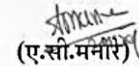
अंतर्गत ४० गुणांची विभागणी पुढील प्रमाणे करण्यात यावी.

| | |
|-----------------------------------|---------------|
| उपस्थिती (Attendance) | ०५ गुण |
| वर्तणूक (Behaviour) | ०५ गुण |
| व्हायवा (Viva-voce) | १० गुण |
| फिल्ड वर्क (Report of field Work) | २० गुण |
| | ४० गुण |

त्याअनुषंगाने Environmental Studies या विषयाचा अभ्यासक्रम विद्यापीठ अनुदान आयोगाने दिलेला असून तो जसाचे तसा लागू करण्यात आलेला असल्याने अभ्यासक्रमात बदल न करता अभ्यासक्रम तोच ठेवण्यात आला आहे. सदरचा अभ्यासक्रम उमविच्या संकेत स्थळावर अपलोड करण्यात आला आहे. तरी वरील आशय सर्व संबंधित प्राध्यापक व विद्यार्थी यांचे निदर्शनास आणून देवून पुढील योग्य ती कार्यवाही करून विद्यापीठास सहकार्य करावे, ही विनंती.

म.कळावे,

आपला विश्वासू,


(ए.सी.मनोर)

उपकुलसचिव

अभ्यास मंडळ विभाग

☎ : (९१) ०२५७- २२५७२९४, २९७

फॅक्स : (९१) ०२५७- २२५८४०६

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CORE MODULE SYLLABUS FOR ENVIRONMENTAL STUDIES
FOR UNDER GRADUATE COURSES OF ALL BRANCHES
OF HIGHER EDUCATION

Vision

The importance of environmental science and environmental studies cannot be disputed. The need for sustainable development is a key to the future of mankind. Continuing problems of pollution, loss of forest, solid waste disposal, degradation of environment, issues like economic productivity and national security, Global warming, the depletion of ozone layer and loss of biodiversity have made everyone aware of environmental issues. The United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 and World Summit on Sustainable Development at Johannesburg in 2002 have drawn the attention of people around the globe to the deteriorating condition of our environment. It is clear that no citizen of the earth can afford to be ignorant of environmental issues. Environmental management has captured the attention of health care managers. Managing environmental hazards has become very important.

Human beings have been interested in ecology since the beginning of civilization. Even our ancient scriptures have emphasized about practices and values of environmental conservation. It is now even more critical than ever before for mankind as a whole to have a clear understanding of environmental concerns and to follow sustainable development practices.

India is rich in biodiversity which provides various resources for people. It is also a basis for biotechnology.

Only about 1.7 million living organisms have been described and named globally. Still many more remain to be identified and described. Attempts are made to

conserve them in ex-situ and in-situ situations. Intellectual property rights (IPRs) have become important in a biodiversity-rich country like India to protect microbes, plants and animals that have useful genetic properties. Destruction of habitats, over-use of energy resource and environmental pollution have been found to be responsible for the loss of a large number of life-forms. It is feared that a large proportion of life on earth may get wiped out in the near future.

In spite of the deteriorating status of the environment, study of environment has so far not received adequate attention in our academic programmes. Recognizing this, the Hon'ble Supreme Court directed the UGC to introduce a basic course on environment at every level in college education. Accordingly, the matter was considered by UGC and it was decided that a six months compulsory core module course in environmental studies may be prepared and compulsorily implemented in all the University/Colleges of India.

The experts committee appointed by the UGC has looked into all the pertinent questions, issues and other relevant matters. This was followed by framing of the core module syllabus for environmental studies for undergraduate courses of all branches of Higher Education. We are deeply conscious that there are bound to be gaps between the ideal and real. Genuine endeavour is required to minimize the gaps by intellectual and material inputs. The success of this course will depend on the initiative and drive of the teachers and the receptive students.

SYLLABUS

Unit 1 : Multidisciplinary nature of environmental studies

Definition, scope and importance

(2 lectures)

Need for public awareness.

Unit 2 : Natural Resources :**Renewable and non-renewable resources :**

Natural resources and associated problems.

- a) Forest resources : Use and over-exploitation, deforestation, case studies.
Timber extraction, mining, dams and their effects on forest and tribal people.
- b) Water resources : Use and over-utilization of surface and ground water,
floods, drought, conflicts over water, dams-benefits and problems.
- c) Mineral resources : Use and exploitation, environmental effects of extracting
and using mineral resources, case studies.
- d) Food resources : World food problems, changes caused by agriculture and
overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water
logging, salinity, case studies.
- e) Energy resources : Growing energy needs, renewable and non renewable
energy sources, use of alternate energy sources. Case studies.
- f) Land resources : Land as a resource, land degradation, man induced
landslides, soil erosion and desertification.
 - Role of an individual in conservation of natural resources.
 - Equitable use of resources for sustainable lifestyles.

(8 lectures)

Unit 3 : Ecosystems

- Concept of an ecosystem.

- Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following ecosystem :-
 - a. Forest ecosystem
 - b. Grassland ecosystem
 - c. Desert ecosystem
 - d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

(6 lectures)

Unit 4 : Biodiversity and its conservation

- Introduction – Definition : genetic, species and ecosystem diversity.
- Biogeographical classification of India
- Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation

- Hot-spots of biodiversity.
- Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

(8 lectures)

Unit 5 : Environmental Pollution

Definition

- Cause, effects and control measures of :-
 - a. Air pollution
 - b. Water pollution
 - c. Soil pollution
 - d. Marine pollution
 - e. Noise pollution
 - f. Thermal pollution
 - g. Nuclear hazards
- Solid waste Management : Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster management : floods, earthquake, cyclone and landslides.

(8 lectures)

Unit 6 : Social Issues and the Environment

- From Unsustainable to Sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case Studies
- Environmental ethics : Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation.
- Public awareness.

(7 lectures)

Unit 7 : Human Population and the Environment

- Population growth, variation among nations.
- Population explosion – Family Welfare Programme.

- Environment and human health.
 - Human Rights.
 - Value Education.
 - HIV/AIDS.
 - Women and Child Welfare.
 - Role of Information Technology in Environment and human health.
 - Case Studies.
- (6 lectures)

Unit 8 : Field work

- Visit to a local area to document environmental assets-
river/forest/grassland/hill/mountain
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes, etc. (Field work Equal to 5
lecture hours)

SIX MONTHS COMPULSORY CORE MODULE COURSE IN
ENVIRONMENTAL STUDIES : FOR UNDERGRADUATES

Teaching Methodologies

The core Module Syllabus for Environment Studies includes class room teaching and Field Work. The syllabus is divided into eight units covering 50 lectures. The first seven units will cover 45 lectures which are class room based to enhance knowledge skills and attitude to environment. Unit eight is based on field activities which will be covered in five lecture hours and would provide student first hand knowledge on various local environmental aspects. Field experience is one of the most effective learning tools for environmental concerns. This moves out of the scope of the text book mode of teaching into the realm of real learning in the field, where the teacher merely acts as a catalyst to interpret what the student observes or discovers in his/her own environment. Field studies are as essential as class work and form an irreplaceable synergistic tool in the entire learning process.

Course material provided by UGC for class room teaching and field activities be utilized.

The universities/colleges can also draw upon expertise of outside resource persons for teaching purpose.

Environmental Core Module shall be integrated into the teaching programmes of all undergraduate courses.

Annual System : The duration of the course will be 50 lectures. The exam will be conducted along with the Annual Examination.

- t) Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Stadards, Vol I and II, Enviro Media (R)
- u) Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
- v) Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadclphia, USA 499p

(M) Magazine

(R) Reference

(TB) Textbook

Mmbers of the Expert Committee on Environmental Studies

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UGC OFFICIALS

6. Dr. N. K. Jain
Joint Secretary
UGC, New Delhi

FYBA Compulsory English**CENG-101 & 201**

Syllabus (w.e.f. 2022-23)

Course Credits: 3 per Semester Examination Marks: External (60) + Internal (40)

Lectures Required: 45 hrs

Course Objectives:

- To introduce students with prose and poetic forms in English literature
- To enable students learn and appreciate literature and its genres like prose, short story, and poetry.
- To provide students opportunity to learn English language Communication skills in and outside classroom situation
- To help the students practice English grammar and make correct use in everyday English communication

Semester-I

Unit: 1 Prose

- a. The Mark of Vishnu- Khushwant Singh
- b. A Cup of Tea- Katherine Mansfield
- c. India's Message to the World- Swami Vivekanand

Unit: 2 Poetry

- a. Where the Mind is Without Fear- Rabindranath Tagore
- b. A Quality of Mercy- William Shakespeare
- c. The Bangle Sellers- Sarojini Naidu
- d. The Lake Isle of Innisfree- W.B. Yeats

Unit: 3 Communication Skills

- a. Comprehension
- b. Introduce Yourself
- c. Information Transfer- Verbal to Non-verbal

Unit: 4 Grammar

- a. Parts of Speech:
 - i) Noun
 - ii) Pronoun
 - iii) Verb
 - iv) Adverb
- d. Articles

FYBA Optional English

OENG-101 & 201

Syllabus (w.e.f.2022-23)

Core Course - Discipline Specific Course 1- English (A) and (B)

Introduction to Literature: Short Story and Poetry

Course Credits: 3 per Semester Examination Marks: External (60) + Internal (40)

Lectures Required: 45 hrs

Course Objectives:

- To acquaint students with the forms, elements and types of literary genres like short story and poetry
- To enable students learn and appreciate literature and its forms
- To enable students to understand that literature is an expression of human values within a historical and social context
- To help the students learn the difference between day-today language and literary language

Semester-I

DSC-1(A) Introduction to Literature: Short Story

Unit: 1 Introduction to Short Story: Definitions and Elements

Unit: 2 Types of Short Story: Fable, Parable, Drabble, Anecdote, and Adventurous Story,

Unit: 3 Study in Texts:

a. The Barber's Trade Union – Mulk Raj Anand

b. A Horse and Two Goats- R.K.Narayan

Unit: 4 Study in Texts:

a. The Necklace -Guy de Maupassant

b. The Romance of a Busy Broker- O' Henry

Semester-II

DSC-1(B) Introduction to Literature: Poetry

Unit: 1 Introduction to Poetry: Definitions, Elements, & Major Figures of Speech

Unit: 2 Types of Poetry: Brief Introduction to Lyric, Sonnet, Ode, Elegy, Epic, Ballad

Unit: 3 Study in Poetry: Lyric, Sonnet, and Ode

a. A Red, Red Rose - Robert Burns

b. Shall I Compare Thee to a Summer's Day? (Sonnet-18) –William Shakespeare

c. Ode to the West Wind- Percy Bysshe Shelley

Unit: 4 Study in Poetry: Elegy, Epic, and Ballad

- a. O Captain! My Captain!- : Walt Whitman
- b. From Paradise Lost-Book-I (First 26 Lines)-John Milton
- c. La Belle Dame sans Merci- John Keats

Recommended Reading

1. Abrams, M. H. A Glossary of Literary Terms. Delhi: Prism, 1999.
2. Goodman, W.R, A History of English Literature Vol. I and II, Delhi:Doaba House, 1994.
3. Hudson, W.H. An Introduction to the Study of English Literature. Delhi:Macmillan Press 1995.
4. www.poetryfoundation.or

Semester-II

Unit: 1 Prose

- a. The Lumber Room- Saki
- b. The Lottery Ticket – Anton Chekov
- c. A Lesson My Father Taught Me- Dr. A P J Abdul Kalam

Unit: 2 Poetry

- a. Stopping by Woods on a Snowy Evening- Robert Frost
- b. Poet. Lover and Bird Watcher- Nissim Ezekiel
- c. The Solitary Reaper- William Wordsworth
- d. Sea-Fever- John Masefield

Unit: 3 Communication Skills

- a. Greeting and Leave Taking
- b. Application Letter
- c. Information Transfer- (Non-verbal to Verbal)

Unit: 4 Grammars

- a. Parts of Speech
 - i) Adjective
 - ii) Preposition
 - iii) Conjunction
 - iv) Interjection
- b. Subject-Verb Agreement

॥ अंतरी पेटवू ज्ञानज्योत ॥
उत्तर महाराष्ट्र विद्यापीठ, जळगाव

Choice Based Credit System
शैक्षणिक वर्ष 2018-2019 पासून लागू

प्रथम वर्ष कला
F. Y. B. A.
Discipline Specific Core Course (DSC)
मराठी

DSC A – वाङ्मयीन मराठी

विशिष्ट वाङ्मयप्रकारांचा अभ्यास

सत्र पहिले

MAR G – 111(A)

DSC A 1 – विशिष्ट वाङ्मयप्रकाराचा अभ्यास—कथा

- पुस्तक : 'निवडक दहा कथा' – हमीद दलवाई, साधना प्रकाशन, पुणे. जुलै 2018.

टीप - सदर पुस्तकात 'लाट' (हमीद दलवाई, मौज प्रकाशन गृह, मुंबई. चौथी आवृत्ती : 25 मे 2016) या कथासंग्रहातील 'छप्पर', 'कफनचोर', 'बेकार (पण कलावंत) माणसाची गोष्ट', 'माणूस आणि गाढव', 'खुदा हाफिज' या पाच कथा आणि 'जमीला जावद आणि इतर कथा' (हमीद दलवाई, साधना प्रकाशन, पुणे. दुसरी आवृत्ती : 14 जुलै 2017) या कथासंग्रहातील 'बाबूखानचा ग्रामोफोन', 'दहा रुपयांची नोट', 'आहमद', 'कोल्हा आणि कोकरू', 'एका अव्यवहारी अपूर्णाकाची गोष्ट' या पाच कथा अशा एकूण दहा कथा समाविष्ट आहेत.

- अभ्यासक्रमाची उद्दिष्टे -
 1. कथा या वाङ्मयप्रकाराचे स्वरूप आणि त्याची वैशिष्ट्ये यांचे आकलन करून घेणे.
 2. कथारचनेच्या प्रमुख घटकांचे आकलन करून घेणे.
 3. कथेच्या महत्त्वपूर्ण अशा प्रकारांचा परिचय करून घेणे.
 4. मराठी कथेची वाटचाल ठळक टप्प्यांच्या आधारे जाणून घेणे.

5. हमीद दलवाई यांच्या निवडक दहा कथांच्या कथानकाचे आकलन करून घेणे आणि त्यातील व्यक्तिचित्रणाची वैशिष्ट्ये जाणून घेणे.
6. हमीद दलवाई यांच्या निवडक दहा कथांमधील प्रसंगवर्णने आणि वातावरणनिर्मिती यांचे विशेष जाणून घेणे.
7. हमीद दलवाई यांच्या निवडक दहा कथांतील संघर्ष, निवेदनशैली, भाषाविशेष या घटकांचे आकलन करून घेणे.

घटक विश्लेषण –

एकूण तीन (03) श्रेयांक

| क्र. | घटक | श्रेयांक | तासिका (घड्याळी) |
|------|--|----------|---------------------|
| 1. | अ) कथा या वाङ्मयप्रकाराची ओळख | 01 | 15 |
| | • कथा : संकल्पना व स्वरूप | | |
| | • कथेचे घटक – कथानक, व्यक्तिचित्रण, प्रसंगवर्णन, संघर्ष, निवेदनशैली व भाषा | | |
| | • अन्य वाङ्मयप्रकारांहून कथा या वाङ्मयप्रकाराचे निराळेपण | | |
| | • कथेच्या प्रमुख प्रकारांचा परिचय – स्फुट गोष्ट, लघुकथा, दीर्घकथा | | |
| | • मराठी कथेच्या वाटचालीचा परिचय | | |
| 2. | अ) हमीद दलवाई यांच्या निवडक दहा कथांची कथानके आणि त्या कथांमधील व्यक्तिचित्रणे | 01 | 15 |
| | ब) हमीद दलवाई यांच्या निवडक दहा कथांमधील प्रसंगवर्णने व वातावरणनिर्मिती | | |
| 3. | अ) हमीद दलवाई यांच्या निवडक दहा कथांची निवेदनशैली व भाषाविशेष | 01 | 15 |
| | ब) हमीद दलवाई यांच्या निवडक दहा कथांमधील जीवनचित्रण आणि संघर्ष | | |
| | एकूण श्रेयांक व तासिका | 03 | 45 |

संदर्भसाहित्य —

1. कथा : एक साहित्यप्रकार (लेख) — सुधा जोशी, साहित्य : अध्यापन आणि प्रकार, संपा. श्री. पु. भागवत व अन्य, पॉप्युलर व मौज, मुंबई. पृ. क्र. 279-300.
2. समाज आणि साहित्य — सदा कऱ्हाडे, लोकवाङ्मय गृह, मुंबई.
3. साहित्य आणि सामाजिक संदर्भ — रा. ग. जाधव, कॉन्टिनेन्टल, पुणे.
4. लघुकथा : तंत्र आणि मंत्र — ना. सी. फडके, व्हीनस, पुणे.
5. मराठी कथा : उगम आणि विकास — इंदुमती शेवडे, सोमैया, मुंबई.
6. कथा : संकल्पना आणि समीक्षा — सुधा जोशी, मराठी विभाग, मुंबई विद्यापीठ आणि मौज, मुंबई.
7. मराठी कथा : रूप आणि परिसर - म. द. हातकणंगलेकर, सुपर्ण, पुणे.
8. मराठी कथासाहित्य — म. ना. अदवंत, नीहारा, पुणे.
9. मराठी लघुकथेचा इतिहास — म. ना. अदवंत, नीहारा, पुणे.
10. मराठी कथेची स्थितिगती — अंजली सोमण, प्रतिमा, पुणे.
11. कथाशताब्दी — विजया राजाध्यक्ष, अशोक रानडे, ग्रंथाली, मुंबई.
12. मराठी कथा : स्वरूप आणि आस्वाद — दा. वि. कुलकर्णी, स्वाध्याय महाविद्यालय, पुणे.
13. मराठी साहित्य : प्रेरणा आणि स्वरूप — संपा. गो. मा. पवार, म. द. हातकणंगलेकर, पॉप्युलर, मुंबई.
14. मराठी नवकथा : रंग आणि रूप — सुभाष पुलावळे, चिन्मय, औरंगाबाद.
15. मुस्लिम मराठी साहित्य : स्वरूप आणि समीक्षा — नसीम एहतेशाम देशमुख, अध्यक्ष, महाराष्ट्र मुस्लिम मराठी साहित्य चळवळ, जळगाव.
16. मुस्लिम मराठी साहित्य : प्रेरणा आणि स्वरूप — फ. म. शहाजिंदे, फारुक तांबोळी
17. हमीद दलवाई : क्रांतिकारी विचारवंत — शमसुद्दिन तांबोळी, डायमंड, पुणे.
18. हमीद — अनिल अवचट, नीळकंठ, पुणे.
19. मी भरून पावले आहे — मेहरुन्निसा दलवाई, साधना, पुणे.
20. दगडावरची पेरणी — सय्यदभाई, अक्षरमानव, पुणे.
21. मेकर्स ऑफ मॉडर्न इंडिया — रामचंद्र गुहा, पेंग्विन, दिल्ली.
22. हमीद दलवाई (लेख) — शमसुद्दिन तांबोळी, www.uniquefeatures.in
23. व्यक्तिवेध (नरहर कुरुंदकर यांच्या निवडक लेखनाचा पहिला खंड) — संपा. विनोद शिरसाठ, देशमुख आणि कंपनी, पुणे.
24. हमीद : द अनसंग ह्युमनिस्ट (लघुपट)
25. मुस्लिम सत्यशोधक मंडळाचे संकेतस्थळ.

टीप –

1. प्रत्येक विद्यार्थ्यांचे मूल्यमापन एकूण शंभर गुणांमध्ये होईल. त्यात साठ गुणांची विद्यापीठ परीक्षा होईल आणि चाळीस गुण अंतर्गत मूल्यमापनासाठी असतील.
2. अंतर्गत मूल्यमापनाच्या चाळीस गुणांची विभागणी पुढीलप्रमाणे—
 - विद्यार्थ्यांची तासिकांना हजेरी— 10 गुण, विद्यार्थ्यांचे वर्तन— 10 गुण आणि एक चाचणी—20 गुण

प्रश्नपत्रिकेचे स्वरूप

| प्रश्न क्र. 1 | प्रश्नांचे स्वरूप | गुण |
|---------------|---------------------------------------|-----|
| अ) | योग्य पर्याय निवडा. (आठपैकी सहा) | 06 |
| ब) | एका वाक्यात उत्तरे लिहा. (आठपैकी सहा) | 06 |
| प्रश्न क्र. 2 | थोडक्यात उत्तरे लिहा. (चारपैकी तीन) | 12 |
| प्रश्न क्र. 3 | थोडक्यात उत्तरे लिहा. (पाचपैकी चार) | 12 |
| प्रश्न क्र. 4 | दीर्घांतरी प्रश्न (दोनपैकी एक) | 12 |
| प्रश्न क्र. 5 | टीपा लिहा. (तीनपैकी दोन) | 12 |
| | एकूण गुण | 60 |

॥ अंतरी पेटवू ज्ञानज्योत ॥
उत्तर महाराष्ट्र विद्यापीठ, जळगाव

Choice Based Credit System
शैक्षणिक वर्ष 2018-2019 पासून लागू

प्रथम वर्ष कला
F. Y. B. A.
Discipline Specific Core Course (DSC)
मराठी

DSC A – वाङ्मयीन मराठी

विशिष्ट वाङ्मयप्रकारांचा अभ्यास

सत्र दुसरे

MAR G – 121(A)

DSC A 2 – विशिष्ट वाङ्मयप्रकाराचा अभ्यास – कविता

- संपादित कवितासंग्रह
(प्रेमकविता, सामाजिक जाणीवेची कविता, निसर्गपर कविता, राष्ट्रभक्तीपर कविता अशा चार प्रकारांतील एकूण वीस कविता)
- अभ्यासक्रमाची उद्दिष्टे -
 1. कविता या वाङ्मयप्रकाराचे स्वरूप आणि वैशिष्ट्ये यांचे आकलन करून घेणे.
 2. काव्यरचनेच्या प्रमुख घटकांचा परिचय करून घेणे.
 3. कविता या वाङ्मयप्रकाराच्या दोन महत्त्वपूर्ण प्रकारांचे स्वरूप जाणून घेणे.
 4. आधुनिक मराठी कवितेची वाटचाल ठळक टप्प्यांच्या आधारे जाणून घेणे.
 5. संपादित कवितासंग्रहातील विविध प्रकारांतील कवितांचे आशयविशेष जाणून घेणे.
 6. संपादित कवितासंग्रहातील विविध प्रकारांतील कवितांचे आशयविशेष जाणून घेणे.
 7. संपादित कवितासंग्रहातील विविध प्रकारांतील कवितांचे अभिव्यक्तीविशेष जाणून घेणे.

घटक विश्लेषण —

एकूण तीन (03) श्रेयांक

| क्र. | घटक | श्रेयांक | तासिका (घड्याळी) |
|------|--|----------|---------------------|
| 1. | अ) कविता या वाङ्मयप्रकाराची ओळख • कविता : संकल्पना व स्वरूप • कवितेचे घटक — अनुभव, नाद, लय, प्रतिमा-प्रतीक, काव्यभाषा, रचना • कवितेच्या प्रमुख प्रकारांचा परिचय — छंदोबद्ध (अष्टाक्षरी व अर्ध छंद) व मुक्तछंद | 01 | 15 |
| 2. | अ) प्रेमकविता (आशयविशेष व अभिव्यक्तीविशेष) ब) निसर्गपर कविता (आशयविशेष व अभिव्यक्तीविशेष) | 01 | 15 |
| 3. | अ) सामाजिक जाणीवेच्या कविता (आशयविशेष व अभिव्यक्तीविशेष) ब) राष्ट्रभक्तीपर कविता (आशयविशेष व अभिव्यक्तीविशेष) | 01 | 15 |
| | एकूण श्रेयांक व तासिका | 03 | 45 |

संदर्भसाहित्य —

- साहित्यप्रकार : कविता (लेख) — रमेश तेंडुलकर, साहित्य : अध्यापन आणि प्रकार — संपा. श्री. पु. भागवत व अन्य, पॉप्युलर, मुंबई.
- कविता : संकल्पना, निर्मिती आणि समीक्षा — वसंत पाटणकर, मराठी विभाग, मुंबई विद्यापीठ आणि अनुभव प्रकाशन, मुंबई.
- कवितेचा शोध — वसंत पाटणकर, मौज, मुंबई.
- कविता आणि प्रतिमा — सुधीर रसाळ, मौज, मुंबई.
- कवितेचा रूपशोध — म. सु. पाटील, शब्दालय, श्रीरामपूर.
- कवितेविषयी — वसंत आबाजी डहाके, स्वरूप, औरंगाबाद.
- काव्यप्रतीती — वसंत आबाजी डहाके, विजय, नागपूर.
- मराठी काव्याचे मानदंड भाग एक, दोन — स. रा. गाडगीळ, पद्मगंधा, पुणे.
- अर्वाचीन मराठी काव्यमीमांसा — अक्षयकुमार काळे, पद्मगंधा, पुणे.

10. आधुनिक मराठी कविता : एक विश्लेषण – प्रकाश देशपांडे केजकर, स्वरूप, औरंगाबाद.
11. समकालीन मराठी कविता : एक निरीक्षण – प्रकाश देशपांडे केजकर, स्वरूप, औरंगाबाद.
12. स्वातंत्र्योत्तर मराठी कविता : भाग एक – वसंत पाटणकर, साहित्य अकादेमी, नवी दिल्ली.
13. स्वातंत्र्योत्तर मराठी कविता – संपा. सुषमा करोगल, प्रतिमा, पुणे.
14. कवितेपासून कवितेकडे – विजया राजाध्यक्ष, विजय, नागपूर.
15. कविता आणि रसिकता – रा. ग. जाधव, परिमल, औरंगाबाद.
16. मराठी ग्रामीण कवितेचा इतिहास – कैलास सार्वेकर, मेहता, पुणे.
17. मराठी कवितेच्या नव्या दिशा – महेंद्र भवरे, लोकवाङ्मय गृह, मुंबई.
18. प्रवाह आणि प्रतिक्रिया (1975 नंतरची कविता) – रवींद्र ठाकूर, स्वरूप, औरंगाबाद.
19. विद्रोही कविता – संपा. केशव मेश्राम, कॉन्टिनेन्टल, पुणे.
20. कवितेची शैली – महेंद्र कदम, भूमी, लातूर.
21. कविता : भाषा व परिसर – शिवाजी पाटील, रजत, औरंगाबाद.

टीप –

1. प्रत्येक विद्यार्थ्यांचे मूल्यमापन एकूण शंभर गुणांमध्ये होईल. त्यात साठ गुणांची विद्यापीठ परीक्षा होईल आणि चाळीस गुण अंतर्गत मूल्यमापनासाठी असतील.
2. अंतर्गत मूल्यमापनाच्या चाळीस गुणांची विभागणी पुढीलप्रमाणे—
 - विद्यार्थ्यांची तासिकांना हजेरी— 10 गुण, विद्यार्थ्यांचे वर्तन— 10 गुण आणि एक चाचणी—20 गुण

प्रश्नपत्रिकेचे स्वरूप

| प्रश्न क्र. 1 | प्रश्नांचे स्वरूप | गुण |
|---------------|---------------------------------------|-----|
| अ) | योग्य पर्याय निवडा. (आठपैकी सहा) | 06 |
| ब) | एका वाक्यात उत्तरे लिहा. (आठपैकी सहा) | 06 |
| प्रश्न क्र. 2 | थोडक्यात उत्तरे लिहा. (चारपैकी तीन) | 12 |
| प्रश्न क्र. 3 | थोडक्यात उत्तरे लिहा. (पाचपैकी चार) | 12 |
| प्रश्न क्र. 4 | दीर्घोत्तरी प्रश्न (दोनपैकी एक) | 12 |
| प्रश्न क्र. 5 | टीपा लिहा. (तीनपैकी दोन) | 12 |
| | एकूण गुण | 60 |

Kavayitri Bahinabai Chaudhari
NORTH MAHARASHTRA UNIVERSITY, JALGAON

Syllabus of F. Y. B. A. History

Semester First

Choice Based Credit System, Semester System

Core Course-(HIS. – DSC A 1)

HISTORY OF INDIA (1857-1950)

Marks 60 Period 52 Credits 03

Chapter 1: Socio-religious reform movements (Credits: 01, Marks: 20)

- a. Brahma Samaj, Prathana Samaj, Ramkrishna Mission, AaryaSamaj
- b. Wahabi, Deoband, Aligarh and Singh Sabha Movement
- c. Debates around Gender
- d. Caste; Sanskritising and anti Brahminical trends

Chapter 2: Political Trends up to 1919 (Credits : 01, Marks:20)

- a. Political Ideology and Organization
- b. Formation of Indian National Congress
- c. Moderates and Extremists
- d. Swadeshi Movement
- e. Revolutionaries

Chapter 3: Nationalism and Social Groups: Interfaces (Credits :01, Marks:20)

- a. Landlords, Professionals and Middle Classes
- b. Peasants
- c. Tribal
- d. Labour
- e. Dalit
- f. Women

With Effect from June 2018
FYBSc Zoology Semester I
 Core Course A-I
ZOO 101: ANIMAL DIVERSITY I

| | CREDITS |
|---|---------|
| Unit 1: Kingdom Protista | 4 |
| General characters and classification up to classes; Locomotory Organelles and locomotion in Protozoa | |
| Unit 2: Phylum Porifera | 3 |
| General characters and classification up to classes; Canal System in Sycon | |
| Unit 3: Phylum Cnidaria | 3 |
| General characters and classification up to classes; Polymorphism in Hydrozoa | |
| Unit 4: Phylum Platyhelminthes | 3 |
| General characters and classification up to classes; Life history of Taenia solium | |
| Unit 5: Phylum Nematelminthes | 4 |
| General characters and classification up to classes; Life history of Ascaris lumbricoides and its parasitic adaptations | |
| Unit 6: Phylum Annelida | 3 |
| General characters and classification up to classes; Metamerism in Annelida | |
| Unit 7: Phylum Arthropoda | 4 |
| General characters and classification up to classes; Vision in Arthropoda, Metamorphosis in Insects | |
| Unit 8: Phylum Mollusca | 3 |
| General characters and classification up to classes; Torsion in gastropods | |
| Unit 9: Phylum Echinodermata | 3 |
| General characters and classification up to classes; Water-vascular system in Asteroidea | |

SUGGESTED READINGS

- Ruppert and Barnes, R.D. (2006). Invertebrate Zoology, VIII Edition. Holt Saunders International Edition.
- Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). The Invertebrates: A New Synthesis, III Edition, Blackwell Science
- Kotpal R L (2009): Modern textbook of Zoology Invertebrates, Rastogi Publication. .
- Hall B.K. and Hallgrimsson B. (2008). Strickberger's Evolution. IV Edition. Jones and Bartlett Publishers Inc.

With Effect from June 2018
FYBSc Zoology Semester I
 Core Course A-I
ZOO 102: ANIMAL DIVERSITY II

CREDITS 2

| | |
|---|---|
| Unit 1: Protochordates | 3 |
| General features and Phylogeny of Protochordata | |
| Unit 2: Agnatha | 3 |
| General features of Agnatha and classification of cyclostomes up to classes | |
| Unit 3: Pisces | 4 |
| General features and Classification up to orders; Osmoregulation in Fishes | |
| Unit 4: Amphibia | 5 |
| General features and Classification up to orders; Metamorphosis in frog, Parental care, | |
| Unit 5: Reptiles | 5 |
| General features and Classification up to orders; Extinct reptiles, Poisonous and nonpoisonous snakes, Biting mechanism in snakes | |
| Unit 6: Aves | 5 |
| General features and Classification up to orders; Flight adaptations in birds | |
| Unit 7: Mammals | 5 |
| Classification up to orders; Origin of mammals | |

SUGGESTED READINGS

- Young, J. Z. (2004). The Life of Vertebrates. III Edition. Oxford university press.
- Kotpal R L (2009): Modern textbook of Zoology Vertebrates, Rastogi Publication. .
- Hall B.K. and Hallgrimsson B. (2008). Strickberger's Evolution. IV Edition. Jones and Bartlett Publishers Inc.
- Lal S.S. (1996): Textbook of Practical Zoology Vertebrates, Rastogi Publications

Kavayitri Bahinabai Chaudhari
NORTH MAHARASHTRA UNIVERSITY, JALGAON

Syllabus for S.Y.B.A. (CBCS)

SEMESTER PATTERN

ENGLISH

(With effect from 2019-20)

Learning Outcome of SYBA Special English Syllabus

1. The papers framed for this course are in accordance with the norms of CBCS pattern
2. Discipline specific papers will acquaint the students with the rich legacy of English Literature and the contribution of legendary writers to the development of English Literature.
3. The papers of skill and ability enhancement are framed not only to orient the students the use of language but how to use the language creatively and professionally.
4. The paper of Project writing will inculcate the skills of explanation, interpretation and visualization in the students.
5. The Paper of Compulsory English is specifically framed from the viewpoint of value education which is the basis of quality life.
6. Selection of contents in all the courses will help the students to comprehend the worldly wisdom and commercial perception which will ultimately lead them to be successful and enjoy quality life.
7. The special papers will open up traditional job opportunities for the students but the papers of skill and ability enhancement will open up corporate, govt. and private sectors for the students of English literature.

S.Y.B.A.
Compulsory English
Text- English for Humanities

External – 60 marks
marksSemester-III-

Internal- 40
Credits -03 (45 clock

hours) Unit 1 – Literature

I) Short Stories:

1. The Lady or a Tiger?: Frank R. Stockton
2. Kabuliwala: Rabindranath Tagore

II) Essays:

1. Spoken English, Broken English: G. B. Shaw
2. Modern Improvements: John Ruskin

III) Poems:

1. A Red Red Rose: Robert Burns
2. All the world's a Stage: William Shakespeare

Unit 2 - Word Formation

1. Affixation
2. Compound Words

Unit 3 - Skills in writing

1. SMS
2. E-Mail
3. Net Lingo

Sem. IV- Compulsory English

Credits – 03 (45 clock hours)

Unit 1 - Literature

I) Short Stories:

1. Salt Inspector: Premchand
2. All About a Dog: A. G. Gardiner

II) Essays:

1. The Power of Prayer: A. P. J. Abdul Kalam

2. Values in Life: Rudyard Kipling

III) Poems:

1. Stopping by Woods On a Snowy Evening: Robert Frost
2. Ozymandias: P. B. Shelley

Unit 2 - Grammar

1. Sentences: Kinds and Functions
2. Clauses (Noun Clause, Adverbial Clause)

Unit 3 - Communication Skills

1. Situational Dialogues
2. Small News Writing
3. Information Transfer: Non-verbal, Verbal

Sem. IV- Compulsory English

Credits – 03 (45 clock hours)

Unit 1 - Literature

IV) Short Stories:

3. Salt Inspector: Premchand
4. All About a Dog: A. G. Gardiner

V) Essays:

3. The Power of Prayer: A. P. J. Abdul Kalam
4. Values in Life: Rudyard Kipling

VI) Poems:

3. Stopping by Woods On a Snowy Evening: Robert Frost
4. Ozymandias: P. B. Shelley

Unit 2 - Grammar

3. Sentences: Kinds and Functions
4. Clauses (Noun Clause, Adverbial Clause)

Unit 3 - Communication Skills

4. Situational Dialogues
5. Small News Writing
6. Information Transfer: Non-verbal, Verbal

S.Y.B.A.

DSE 1 A and B (Equivalent to S-I)

Title: 16th and 17th Century English Literature

External- 60 marks Internal- 40 marks

Credit Points- 03 (45 clock hours)

OBJECTIVES:

1. To acquaint the students with the major literary trends and tendencies and prominent writers of the 16th and 17th Century English Literature.
2. To make the students aware about the literary history, salient features and socio-cultural background of the period.
3. To help the students to grasp the content and critically appreciate the prescribed texts.
4. To inculcate amongst students a liking for the Elizabethan and Post-Shakespearean literature.

Semester – III- DSE 1 A- 16th Century Literature

Prescribed Units

(i) Growth and development of Drama and Poetry in the 16th century.

(ii) Poetry:

A) **John Donne:** a) Good Morrow, b) The Dream

B) **Edmund Spenser:** a) Ice and Fire, b) Mutability

C) **Philip Sidney:** a) Sleep, b) Reason

(iii) Drama:

The Merchant of Venice by William Shakespeare

Semester - IV – DSE 1 B- 17th Century Literature-Credits- 03 (45 clock hours)

Prescribed Units

(i) Growth and development of Novel and Essay in the 17th century.

(ii) Essays:

A) **Francis Bacon:** a) Of Studies,

b) Of Anger,

c) Of Unity In Religion

B) Jonathan Swift: a) A Treatise on Good Manners and Good Breeding

b) Hints Towards an Essay on Conversation

c) Of the Education of Ladies

(iii) Novel:

Pilgrim's Progress by John Bunyan

Recommended Reading:

1. B. K. Mullik: (1964) *English Poetry (Its Background and Development)*: S. Chand & Co.

2. H. M. Williams & George Allen, (1972): *Six Ages of English Poetry*

3. Helen Gardner: (1973) *The Metaphysical Poets*: Penguin Books Ltd.

4. David Greene: *The Winged World: An Anthology of Poems for Degree Course*: The Macmillan Co. of India Ltd.

6. Mayhead Robin: (1965) *Understanding Literature*: Cambridge Univ. Press.

7. W. R. Goodman: (2006) *A History of English Literature: V-I, V-II*, DoabaHouse Delhi Shakespeare William. *The Merchant of Venice*. Orient Blackswan (Paperback), 2009

8. John Pitcher (Ed.). *The Essays* (1985)-by Francis Bacon, Penguin.

9. Kiernan, Michael (2000/1985) *The Essays or Counsels Civil and Moral*. New York: Oxford Univ. Press.

10. Whately R & Franklin Heard (2012) *Bacon's Essays (1561-1625)* Oxford: Oxford Univ. Press.

11. Emile Legouis (2007) *A Short History of English Literature*, Oxford Univ. Press.

12. John Hayward ED.(1964) *The Penguin Book of English Verse* Penguin Books Ltd.

SYBA

DSE 2A and B (equivalent to Special Paper-II)

Title: 18th and 19th Century English Literature

External – 60 marks

Internal – 40 marks

Credit Points- 03 (45 clock hours)

(I) OBJECTIVES:

1. To impart basic ideas about the 18th and 19th Century English Literature with

special reference to Poetry and Novel.

2. To make the students aware about the literary history, salient features, socio-political and cultural background of the Romantic and Victorian age.
3. To help the students to grasp the content and critically appreciate the prescribed Texts.
4. To inculcate amongst students a liking for the Romantic and Victorian literature.

Semester – III DSE 2 A- 18th Century Literature

Prescribed Units

- i) **Background study of poetry and novel in the 18th Century Literature.**
- ii) **William Wordsworth:** Lines Composed a Few Miles above Tintern Abbey
- iii) **S. T. Coleridge:** Rhyme to an Ancient Mariner
- iv) **John Keats:** Ode on a Grecian Urn.
- v) **P B Shelley:** One Word is too often Profaned
- vi) **Lord Byron:** She Walks in Beauty.
- (vii) **Jane Austen:** *Sense and Sensibility.* (Novel)

Semester – IV DSE 2 B- (19th Century Literature)-Credits- 03

(45 clockhours)

Prescribed Units

- (i) **Background study of Poetry and Novel of the 19th Century literature.**
- (ii) **Alfred Lord Tennyson: The Lotus Eaters**
- (iii) **Robert Browning: Rabbi Ben Ezra**
- (iv) **Matthew Arnold: Dover Beach**
- (v) **D G Rossetti: The Blessed Damozel**
- (vi) **G M Hopkins: Pied Beauty**
- (vii) **Thomas Hardy: *Tess of the d'Urbervilles*.(Novel)**

Recommended Reading:

1. H. M. Williams & George Allen, (1972): *Six Ages of English Poetry*
2. David Greene: *The Winged World: An Anthology of Poems for Degree Course*.The Macmillan Co. of India Ltd.
3. Mayhead Robin: (1965) *Understanding Literature*. Cambridge Univ. Press.
4. W.R. Goodman: (2006) *History of English Literature*. Doaba House Delhi
5. Victorian Poetry: (1988) *A Selection, Macmillan's Annotated Classics- V S Seturaman*
6. E Albert: (1997) *History of English Literature*. Oxford Univ. Press.
7. *Fifteen Poets*: (1994) Oxford University Press, Delhi.
- 8 Jane Austen: (2008) *Sense and Sensibility*, Oxford Uni. Press, 2008.
9. Thomas Hardy:() *Tess of the d'Urbervilles*. Orient Blackswan, 2014.

DSC 1 C (equivalent to Sp. English -General Paper II)

The Study of Novel and Drama

External- 60 marks

Internal- 40 marks (practical)

Total credits- 02- Theory- 01 credit (15 clock hours).

Practical – 01 credit is equal to 02 (30 clock hours)

SEM: III- DSC 1 C The Study of Novel

Objectives:

1. To develop the interest of students in reading/understanding novel and drama.
2. To acquaint students with Novel and Drama as genres of literature.
3. To develop students' competence to study, understand, analyse and interpret novel and drama.
4. To introduce students with the key terms useful in the study of novel and drama.
5. To orient students with major types of novel and drama.

Unit 1 A) Definitions of Novel

B) Aspects of Novel (only Introduction):

Plot, Characters (Flat, Round, Hero, Anti-hero), Theme, Setting, Point of view and Narration.

C) Types of Novel: Social, Historical, Picaresque, Psychological

D) Novel- *Passage to India*- E. M. Forster

SEM: IV – DSC 1 D- The Study of Drama

Total credits- 02- Theory- 01 credit (15 clock hours). Practical – 01 credit is equal to 02 (30 clock hours)

Unit 1 A) Definitions of Drama

B) Elements of Drama (only Introduction):

Plot, characters (protagonist, Antagonist), setting, dramatic devices (music, symbolism, parallelism and contrast, Irony)

C) Types of Drama: Tragedy, Comedy, Problem Play, Absurd Drama

D) Drama- *Arms and The Man*- G. B. Shaw

Recommended Reading:

1. Abrahms, M. H. *A Glossary of Literary Terms*. Banglore: Prism Books Pvt. Ltd.1993.
2. Bonn, Julien D. ed. *A Comprehensive Dictionary of Literature*. Chandigarh: AbhishekPublications, 2004.
3. Boulton, M. *The Anatomy of Novel*. London: Routledge and Kegan Paul Ltd. 1975.
4. Cuddon, J. A. *A Dictionary of Literary Terms and Literary Theory* (IVth edition). Delhi:Doaba House, 1998.
5. Davies Tony & Nigel Wooded., *A Passage to India: Theory in Practice*, Philadelphia,Open University Press, 1994.
6. Evans. T. F. *George Bernard Shaw*. Routledge, 2013.
7. Forster E. M. *Aspects of Novel*. New York: Hartcourt Brace, 1927.
8. Hoy, Cyrus. *Forster's Metaphysical Novel*. New Delhi: Creative Books, 2001.
9. Innes, Christopher. *The Cambridge Companion to George Bernard Shaw*. CUP, 2000.
10. Judy, Pearsall (Ed). *The Concise Oxford Dictionary*, 10th Edition. New Delhi: OxfordUniversity Press. 1999.
11. Luckhurst, Mary. *A Companion to Modern British and Irish Drama (1880-2005)*,Blackwell Publishing, 2006.
12. Rees, R. J. *English Literature: An Introduction for Foreign Students*. Delhi: Macmillan,2000

DSC 1 C (equivalent to Sp. English -General Paper II)

The Study of Novel and Drama

External- 60 marks

Internal- 40 marks (practical)

Total credits- 02- Theory- 01 credit (15 clock hours).

Practical – 01 credit is equal to 02 (30 clock hours)

SEM: III- DSC 1 C The Study of Novel

Objectives:

6. To develop the interest of students in reading/understanding novel and drama.
7. To acquaint students with Novel and Drama as genres of literature.
8. To develop students' competence to study, understand, analyse and interpret novel and drama.
9. To introduce students with the key terms useful in the study of novel and drama.
10. To orient students with major types of novel and drama.

Unit 1 A) Definitions of Novel

E) Aspects of Novel (only Introduction):

Plot, Characters (Flat, Round, Hero, Anti-hero), Theme, Setting, Point of view and Narration.

F) Types of Novel: Social, Historical, Picaresque, Psychological

G) Novel- *Passage to India*- E. M. Forster

SEM: IV – DSC 1 D- The Study of Drama

Total credits- 02- Theory- 01 credit (15 clock hours).

Practical – 01 credit is equal to 02 (30 clock hours)

Unit 1 A) Definitions of Drama

E) Elements of Drama (only Introduction):

Plot, characters (protagonist, Antagonist), setting, dramatic devices (music, symbolism, parallelism and contrast, Irony)

F) Types of Drama: Tragedy, Comedy, Problem Play, Absurd Drama

G) Drama- *Arms and The Man*- G. B. Shaw

Recommended Reading:

13. Abrahms, M. H. *A Glossary of Literary Terms*. Banglore: Prism Books Pvt. Ltd.1993.
14. Bonn, Julien D. ed. *A Comprehensive Dictionary of Literature*. Chandigarh: AbhishekPublications, 2004.
15. Boulton, M. *The Anatomy of Novel*. London: Routledge and Kegan Paul Ltd. 1975.
16. Cuddon, J. A. *A Dictionary of Literary Terms and Literary Theory* (IVth edition). Delhi:Doaba House, 1998.
17. Davies Tony & Nigel Wooded., *A Passage to India: Theory in Practice*, Philadelphia,Open University Press, 1994.
18. Evans. T. F. *George Bernard Shaw*. Routledge, 2013.
19. Forster E. M. *Aspects of Novel*. New York: Hartcourt Brace, 1927.
20. Hoy, Cyrus. *Forster's Metaphysical Novel*. New Delhi: Creative Books, 2001.
21. Innes, Christopher. *The Cambridge Companion to George Bernard Shaw*. CUP, 2000.
22. Judy, Pearsall (Ed). *The Concise Oxford Dictionary*, 10th Edition. New Delhi: OxfordUniversity Press. 1999.
23. Luckhurst, Mary. *A Companion to Modern British and Irish Drama (1880-2005)*,Blackwell Publishing, 2006.
24. Rees, R. J. *English Literature: An Introduction for Foreign Students*. Delhi: Macmillan,2000

Kavyitri Bahinabai Chaudhari North Maharashtra University, Jalgaon

S.Y.B.A. - CBCS Pattern

Proposed Syllabus w.e.f. June-2019

SEMISTER-III&IV

1. Paper course no. DSE Eco 232 A & DSE Eco 242 B
2. Paper title: Agricultural Economics –I&II
3. Credit-3 Total Periods -60/ Clock Hours 45
4. External Marks 60+Internal marks 40=Total Marks 100

SEMISTER-III

DSE Eco 232 A - AGRICULTURAL ECONOMICS-I

Unit I- Introduction to Agricultural Economics (Periods-20)

- a) Agricultural Economics: Definition and meaning; nature scope and Importance.
- b) Role of Agriculture sector in Economic Development. (Special Reference to Indian Economy)
- c) Dependency between Agriculture and Industry.

Unit II –Land holding & Organization (Periods-20)

- a) Types of land holding (Basic holding optimum holding, family holding, operating holding, Marginal and small size holding, medium and large size holding)
- b) Size, productivity and efficiency of land holding.
- c) Farm organization: peasant/ farming, capitalist farming, state farming, collective farming, Cooperative farming, group farming, contract farming, organic farming.
- d) Most suitable farm organization for Indian Agriculture.

Unit III –Risk and uncertainty in agriculture (Periods-20)

- a) Differences between risk and uncertainty, types of uncertainty, measures to deal with uncertainty.
- b) Instability of agriculture: Types of instability in agriculture (Price instability, income instability)
- c) Types of fluctuation and their causes (Long term movement, cyclical fluctuation, seasonal fluctuation, annual fluctuation, irregular fluctuations.)

SEMISTER-IV**DSE Eco 242 B - AGRICULTURAL ECONOMICS- II****Unit I- Agricultural price policy in developing countries (Periods-20)**

- a) Objectives of agricultural price policy.
- b) Bases of price fixation.
- c) Price policy for agricultural inputs.
- d) Consumer protection and agricultural price policy.
- e) Agricultural price policy in India : Agricultural price policy before 1965, positive Agricultural price policy after 1965 (Agricultural prices commission, objectives of Agricultural price policy in India, Important constituents of Agricultural price policy in India, fixation of minimum support prices, distinction between support prices and procurement prices)
- f) Recent price policy of India (Reforms period)

Unit II–Agricultural marketing system and mechanization (Periods-20)

- a) Importance of an efficient system of agricultural marketing.
- b) Efficiency criteria for agricultural marketing.
- c) Efficiency of the Indian agricultural marketing.
- d) Mechanization in agriculture, meaning, Desirability of mechanization of Indian agriculture, arguments for and against.

Unit III - Agricultural Labour (Periods-20)

- a) Meaning of Agricultural labour, classification of Agricultural labour.
- b) Growth in the number of Agricultural labours in India and its causes.
- c) Minimum wages of Agricultural labour.
- d) Migration of Agricultural labours.
- e) Problems and difficulties of Agricultural labours, suggestion to solve the problems of Agricultural labours.

References: -

- 1) Mishra Jayprakash (2007) Agricultural Economics, Sahitya Bhavan Prakashan, Agra.
- 2) Soni R., (2007) Agricultural Economics, Vishal Pub. Co. ND.
- 3) Gupta P. (2013) Agricultural Economics, Vrunda Pub. ND.
- 4) Desai S.M. (1991) Agricultural Economics & Indian Agriculture, Nirali Prakashan, Pune.
- 5) Professor (Dr.) N. L. Chavhan, Dr. Manoj Gaikwad (2019), Agricultural Economics, Prashant Publications, Jalgaon.
- 6) Kayande Patil (2007) Agricultural Economics, Chaitanya Pub., Nashik.
- 7) Narkhede V.P. (2015) Agricultural Economics, Atharv Pub. Jalgaon.

बी.ए. द्वितीय वर्ष - तृतीय सत्र
DSE-II (A) HINDI : उपन्यास विधा

✦ **पाठ्यक्रम के उद्देश्य :-**

- 1) हिंदी उपन्यास विधा का विकासात्मक परिचय करना।
- 2) हिंदी के प्रमुख उपन्यासकारों का सामान्य परिचय देना।
- 3) निर्धारित उपन्यास के माध्यम से छात्रों को मानवीय जीवन में समय का महत्व, व्यक्ति की विश्वव्यापी स्वाधीनता, वृद्धों की समस्या, मूल्य संवर्धन, संयुक्त परिवार आदि से अवगत करना।
- 4) उपन्यास के माध्यम से सामाजिक उत्तरदायित्व के प्रति छात्रों में एहसास जगाना।

पाठ्यक्रम का स्वरूप

इकाई I -

- उपन्यास विधा का अर्थ, स्वरूप एवं परिभाषाएँ।
- उपन्यास विधा का तात्त्विक विवेचन।

इकाई II -

- हिंदी उपन्यास-साहित्य का विकासात्मक परिचय :- प्रेमचंद पूर्व, प्रेमचंदयुगीन तथा प्रेमचंदोत्तर उपन्यासों का सामान्य परिचय।
- हिंदी उपन्यास विधा में कृष्णा सोवती का योगदान।

इकाई III :-

समय सरगम - कृष्णा सोवती
प्रथम संस्करण 2008 दूसरी आवृत्ति 2014
राजकमल प्रकाशन, 1-थी, नेताजी सुभाष मार्ग,
दरियागंज, नई दिल्ली

● **संदर्भ ग्रंथ :-**

- 1) रामेय राघव के जीवनीपरक उपन्यास - डॉ. छाया पाटील, विश्वा प्रकाशन, कानपुर
- 2) हिंदी के कालजयी उपन्यास - डॉ. आमप्रकाश त्रिपाठी, विश्वा प्रकाशन, कानपुर
- 3) माँहला उपन्यासकार : पारिवारिक जीवन के बदलते रूप - डॉ. कल्पना किरण पाटील, विश्वा प्रकाशन, कानपुर
- 4) कृष्णा सोवती की कथा-भाषा - डॉ. एन. जयश्री, विश्वा प्रकाशन, कानपुर

KBC NORTH MAHARSHTRA UNIVERSITY, JALGAON

Syllabus for SYBSc ZOOLOGY under CBCS Pattern

(W.e.f. June 2019)

Skill Enhancement Course I (Section I)

SEC I

Apiculture

Credit 2

Unit 1: Biology of Bees (4)

History, Classification and Biology of Honey Bees, Social Organization of Bee Colony

Unit 2: Rearing of Bees (12)

Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth Bee Pasturage Selection of Bee Species for Apiculture, Bee Keeping Equipment Methods of Extraction of Honey (Indigenous and Modern)

Unit 3: Diseases and Enemies (5)

Bee Diseases and Enemies Control and Preventive measures

Unit 4: Bee Economy (4)

Products of Apiculture Industry and its Uses (Honey, Bees Wax, Propolis, Pollen, etc)

Unit 5: Entrepreneurship in Apiculture (5)

Bee Keeping Industry – Recent Efforts, Modern Methods in employing artificial Beehives for cross pollination in horticultural gardens

SUGGESTED READINGS

- Prost, P. J. (1962). Apiculture. Oxford and IBH, New Delhi.
- Bisht D.S., Apiculture, ICAR Publication.
- Singh S., Beekeeping in India, Indian council of Agricultural Research, NewDelhi.

Skill Enhancement Course II (Section II)**SEC II****Medical Diagnostics**

THEORY Credit 2

Unit 1: Introduction to Medical Diagnostics and its Importance (2)

Unit 2: Diagnostics Methods Used for Analysis of Blood (10)

Blood composition, Preparation of blood smear and Differential Leucocyte Count (D.L.C) using Leishman's stain, Platelet count using haemocytometer, Erythrocyte Sedimentary Rate (E.S.R), Packed Cell Volume (P.C.V.)

Unit 3: Diagnostic Methods Used for Urine Analysis (6)

Urine Analysis: Physical characteristics, normal and abnormal constituents

Unit 4: Non-infectious Diseases (6)

Causes, types, symptoms, complications, diagnosis and prevention of Diabetes (Type I and Type II), Hypertension (Primary and secondary), Testing of blood glucose using Glucometer/ diagnostic kit

Unit 5: Infectious Diseases (3)

Causes, types, symptoms, diagnosis and prevention of Tuberculosis and Hepatitis

Unit 6: Tumours (3)

Types (Benign/Malignant), Detection and metastasis; Medical imaging: X-Ray of Bone fracture, PET, MRI and CT Scan (using photographs).

SUGGESTED READINGS

- Park, K. (2007), Preventive and Social Medicine, B.B. Publishers
- Godkar P.B. and Godkar D.P. Textbook of Medical Laboratory Technology
- Edition, Bhalani Publishing House Cheesbrough M., A Laboratory Manual for Rural Tropical Hospitals, A Basis for Training Courses
- Guyton A.C. and Hall J.E. Textbook of Medical Physiology, Saunders
- Robbins and Cortan, Pathologic Basis of Disease, VIII Edition, Saunders

• Prakash, G. (2012), Lab Manual on Blood Analysis and Medical Diagnostics, S. Chand and Co. Ltd

Ability Enhancement Course (AEC)

AEC: Developing Communication Skills

Semester V

Objectives

1. To acquaint students with various modes of communication
2. To intimate students about various types of written communication
3. To inform students about various types of oral communication
4. To give practice to students in various modes of communication

External- 60 marks Internal- 40 marks

Credits: 02 Theory- 01 credit (15 clock hrs)

Practical- 01 credit = 02 credits (30 hrs)

Unit 1. Written Communication

I) Letter Writing:

A) Formal Letters:

- i) Business Correspondence: Sales letter, Enquiry letter, Order and Replies
- ii) Application for Jobs

B) Goodwill Letters: Invitation, Congratulations, Thanking

II) Notice, Agenda, Minutes of Meeting.

III) Advertisement Writing.

Unit 2. Comprehension and Writing Skills

I) Summarization

II) Reading Comprehension

III) Expansion of an Idea

IV) Story Building

V) Report Writing: Types, Structure, Parts, Examples

VI) Usages of Punctuations

Semester VI

External- 60 marks Internal- 40 marks

Credits: 02 Theory- 01 credit (15 clock hrs)

Practical- 01 credit = 02 credits (30 hrs)

Unit 1. Oral Communication

I) Interviews: Types, Preparation, Self-Assessment, Questions Commonly asked in an Interview

II) Presentation Skills

III) Speeches: Stages, Occasions and Examples

IV) Dialogue Skills

V) Group Discussion: Group Dynamics, Purposes and Tips for Preparation

Unit 2. Methods of Communication: Non-verbal and Technical

I) Non Verbal Aspects of Written Communication

II) Body Language

III) Paralanguage

IV) Modes of Communication and Technical Communication

Recommended Books:

1. Rai, Urmila and S.M. Rai Business Communication. Mumbai: Himalaya Publishing House, 2013,

2. Mohan, Krishna and Meera Bannerji Developing Communication Skills. Bengaluru: Trinity Press, 2018,

Recommended Readings:

1. Badi, R. V. and K. Aruna. Business Communication. Delhi: Vrinda Publications (P) Ltd., 2008.

2. Chanda, P. R. and Sangeeta Magan. Elements of Business Communication. Delhi: International Book House Pvt. Ltd., 2013.
3. Chaturvedi, P.D. Professional Communication. Delhi: Pearson, 2011.
4. Dey, Sushmit. et.al. Business Communication. Mumbai: Reliable Publications, 2012.
5. Murphy, Herta A. and et.al. Effective Business Communication. New Delhi: Tata McGraw Hill Foundation Private Limited, 2009.
6. Prasad, Sona. Business Communication. Nagpur: Sai Jyoti Publication, 2011.
7. Raman, Meenakshi and Prakash Singh. Business Communication. New Delhi: Oxford University Press, 2012.
8. Rao, Nageshwar and Rajendra Rao. Communication Skills. Mumbai: Himalaya Publishing House, 2012.
9. Rizvi, M. Ashraf. Effective Technical Communication. New Delhi: Tata McGraw Hill Education Private Limited, 2012.
10. Taylor, Shirley and V. Chandra. Communication for Business: A Practical Approach. Delhi: Pearson, 2011.

Discipline Specific Elective 3 A (DSE 3 A)

DSE 3 ENG A: Twentieth Century English Literature

SEM –V

External- 60 marks Internal- 40 marks

Credits – 03 (45 clock hrs)

Objectives 1. To explain the students development of poetry in English

2. To acquaint the students with features and types of modern poetry, drama and novel

3. To introduce the students with major poets, novelists and dramatists in modern English literature.

Credits-03

Unit 1. Background: i) Literary Trends and Tendencies in British Poetry, Drama and Novel

ii) Contribution of the major poets, dramatists and novelists to English Literature.

Unit 2. Poetry Section:

I) W. B. Yeats- i. A Prayer for My Daughter. ii. Sailing to Byzantium.

II) T.S. Eliot - i. Journey of Magi. ii. Morning at the Window.

III) W.H. Davies- i. The Kingfisher ii. Money.

Unit 3. Drama: Waiting for Godot- Samuel Backett

Discipline Specific Elective 3 B (DSE 3 B)

DSE 3 ENG B: Twentieth Century English Literature

SEM-VI

External- 60 marks Internal- 40 marks

Credits – 03 (45 clock hrs)

Unit 1. Background: i) Literary Trends, Tendencies in twentieth century British Poetry, Drama and Novel.

ii) Contributions of the major poets, dramatists and novelists to British Literature.

Unit2. Poetry Section:

I) Dylan Thomas - i. A Fern Hill ii. The Hunchback in the Park.

II) Wilfred Owen – i. Dulce et Decorum Est. ii. Futility.

III) W.H. Auden - i. The Shield of Achilles ii. Now the leaves are Falling Fast.

Unit 3. Novel: Lord of the Flies- William Golding

Recommended Books:

1. Abrams, M. H. A Glossary of Literary Terms, 3rd edn. Macmillan Company of India Ltd. 1978.
2. Blamires, Harry. Twentieth Century English Literature. Macmillan, 1982.
3. Boris Ford, ed. The Pelican Guide to English Literature, Vol. VII 3rd Edn. Penguin Books Ltd. New York, 1973.
4. C.B. Cox and A. E. Dyson, ed. Poems of This Century. 1970.
5. Cronin, A. Samuel Beckett: The Last Modernist. London : Flamingo, 1997
6. Esslin, Martin. The Theatre of the Absurd, revised and enlarged edition, Penguin Books, 1976.
7. John Hayward, edit. The Penguin Book of English Verse, 1987.
8. Laura Marcus and Peter Nicholls. Ed. The Cambridge History of Twentieth Century English Literature, Cambridge University Press, 2004.
9. Margaret Drabble. edit. The Oxford Companion to English Literature. O.U.P. 1996
10. Press. John. A Map of Modern English Verse. London: Oxford University Press, 1969.
11. Philip Larkin, edit. The Oxford Book of Twentieth Century English Verse. O.U.P. U.K. 1973
12. Scully, James. Modern Poets on Modern Poetry: A Critical Introduction. New York: Oxford University Press, 1960.
13. Sheppard, C.A. ed. A Pageant of Poems. Orient Longman Ltd. New Delhi, 1977.

14. Tuma Keith, ed. *Anthology of Twentieth Century British and Irish Poetry*. O.U.P. 2001.

कवयित्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव
 मानव्यविज्ञान विद्याशाखा
 Choice Based Credit System
 तृतीय वर्ष कला – मराठी
 सत्र पाचवे व सहावे
 (शैक्षणिक वर्ष 2020 - 2021 पासून लागू)

DSE 3 Marathi
मध्ययुगीन मराठी वाङ्मयाचा इतिहास

सत्र पाचवे

DSE Marathi 3 A: मध्ययुगीन मराठी वाङ्मयाचा इतिहास
(श्रेयांक –तीन)

• अभ्यासक्रमाची उद्दिष्टे-

1. मध्ययुगीन मराठी वाङ्मयाच्या इतिहासाचा परिचय करून घेणे.
2. मध्ययुगीन मराठी वाङ्मयाच्या निर्मितीमागील प्रेरणा जाणून घेणे.
3. महानुभाव संप्रदायाच्या वाङ्मयनिर्मितीचे स्वरूप लक्षात घेऊन त्याची वैशिष्ट्ये जाणून घेणे.
4. शाहिरी काव्याचे स्वरूप लक्षात घेऊन त्याची ठळक वैशिष्ट्ये जाणून घेणे.
5. निवडक ग्रंथकारांच्या वाङ्मयनिर्मितीचा वा साहित्यकृतींचा परिचय करून घेणे.

• घटक विश्लेषण -

| घटक क्र. | घटक | श्रेयांक | घड्याळी तासिका |
|----------|--|-----------|----------------|
| 1. | महानुभाव संप्रदायाची वाङ्मयनिर्मिती | 01 | 15 |
| | 1.1 महानुभाव संप्रदाय: तत्त्वज्ञान व आचारधर्म 1.2 महानुभाव संप्रदायाच्या पद्य व गद्य वाङ्मयाचा परिचय 1.3 महानुभाव संप्रदायाच्या वाङ्मयाची ठळक वैशिष्ट्ये | | |
| 2. | शाहिरींची वाङ्मयनिर्मिती | 01 | 15 |
| | 2.1 शाहिरी काव्य: प्रेरणा व भूमिका 2.2 शाहिरींच्या पोवाडा व लावणी वाङ्मयाचा परिचय 2.3 शाहिरी काव्याची ठळक वैशिष्ट्ये | | |
| 3. | निवडक ग्रंथकारांच्या वाङ्मयनिर्मितीचा वा साहित्यकृतींचा परिचय | 01 | 15 |
| | 3.1 म्हाईभट 3.2 'दृष्टांतपाठ' 3.3 अनंत फंदी 3.4 'सुंदरा मनामध्ये भरली...' | | |
| | एकूण श्रेयांक व घड्याळी तासिका | 03 | 45 |

सत्र सहावे
DSE Marathi 3 B: मध्ययुगीन मराठी वाङ्मयाचा अभ्यास
(श्रेयांक –तीन)

• **अभ्यासक्रमाची उद्दिष्टे-**

1. मध्ययुगीन मराठी वाङ्मयाच्या इतिहासाचा परिचय करून घेणे.
2. मध्ययुगीन मराठी वाङ्मयाच्या निर्मितीमागील प्रेरणा जाणून घेणे.
3. वारकरी संप्रदायातील प्रमुख संतकवींच्या काव्यनिर्मितीचे स्वरूप जाणून घेऊन त्याची वैशिष्ट्ये लक्षात घेणे.
4. बखर वाङ्मयनिर्मितीचा परिचय करून घेऊन त्याची ठळक वैशिष्ट्ये जाणून घेणे.
5. निवडक ग्रंथकारांच्या वाङ्मयनिर्मितीचा वा साहित्यकृतींचा परिचय करून घेणे.

• **घटक विश्लेषण -**

| घटक क्र. | घटक | श्रेयांक | घड्याळी तासिका |
|---------------------------------------|--|-----------|----------------|
| 1. | वारकरी संप्रदायाची वाङ्मयनिर्मिती 1.1 वारकरी संप्रदाय: तत्त्वज्ञान व आचारधर्म 1.2 वारकरी संप्रदायातील प्रमुख संतकवींच्या स्फुट व ग्रंथरूप काव्यनिर्मितीचा परिचय 1.3 वारकरी संप्रदायाच्या वाङ्मयनिर्मितीची ठळक वैशिष्ट्ये | 01 | 15 |
| 2. | बखर वाङ्मयनिर्मिती 2.1 बखरलेखन: प्रेरणा व भूमिका 2.2 बखरलेखनाचा परिचय (शिवपूर्वकालीन, शिवकालीन व पेशवेकालीन बखरी) 2.3 बखरलेखनाची ठळक वैशिष्ट्ये | 01 | 15 |
| 3. | निवडक ग्रंथकारांच्या वाङ्मयनिर्मितीचा वा साहित्यकृतींचा परिचय 3.1 ज्ञानेश्वर 3.2 'तुकारामगाथा' 3.3 मल्हार रामराव चिटणीस 3.4 'भाऊसाहेबांची बखर' | 01 | 15 |
| एकूण श्रेयांक व घड्याळी तासिका | | 03 | 45 |

• **संदर्भग्रंथ-**

1. मराठी वाङ्मयाचा इतिहास खंड 1, 2, 3 – संपा. रा. श्री. जोग, महाराष्ट्र साहित्य परिषद, पुणे.
2. प्राचीन मराठी वाङ्मयाचे स्वरूप – ह. श्री. शेणोलीकर, मोघे प्रकाशन, कोल्हापूर.
3. प्राचीन मराठी वाङ्मयाचा इतिहास खंड 1 ते 4 – अ. ना. देशपांडे, कॉन्टिनेन्टल, पुणे.
4. महाराष्ट्र सारस्वत खंड 1, 2 – वि. ल. भावे, पॉप्युलर, मुंबई.
5. मराठी साहित्य, इतिहास आणि संस्कृती – वसंत आबाजी डहाके, भटकळ फाँडेशन, मुंबई.

6. प्राचीन मराठी वाङ्मयाचा इतिहास — ल. रा. नशिराबादकर, फडके, कोल्हापूर.
7. मराठी साहित्याचे आदिबंध — उषा देशमुख
8. पाच भक्तिसंप्रदाय — र. रा. गोसावी
9. पाच संतकवी — शं. गो. तुळपुळे
10. वारकरी संप्रदाय: उदय आणि विकास — भा. पं. बहिरट व अन्य
11. धर्मसंप्रदाय आणि मध्ययुगीन मराठी वाङ्मय — र. बा. मंचरकर
12. संत वाङ्मयाची सामाजिक फलश्रुती — गं. बा. सरदार, लोकवाङ्मय गृह, मुंबई.
13. महाराष्ट्रीय संतमंडळाचे ऐतिहासिक कार्य — बा. रं. सुंठणकर, लोकवाङ्मय गृह, मुंबई.
14. संत, पंत आणि तंत — श्री. म. माटे
15. मध्ययुगीन साहित्याचा पुनर्विचार — श्री. रं. कुलकर्णी, राजहंस, पुणे.
16. मध्ययुगीन साहित्याविषयी — सतीश बडवे, मीरा बुक्स अॅण्ड पब्लिकेशन्स, औरंगाबाद.
17. महानुभाव पंथ आणि त्याचे वाङ्मय — शं. गो. तुळपुळे, व्हीनस, पुणे.
18. प्राचीन मराठी संतकवयित्रींचे वाङ्मयीन कार्य — सुहासिनी इल्लेकर, परिमल, औरंगाबाद.
19. संत कवयित्री — इंदुमती शेवडे
20. रोकडे पाझर — राजन गवस, दर्या प्रकाशन, पुणे.
21. संतसाहित्यमीमांसा — संपा. ताहेर पठाण, न. ब. कदम, शब्दालय, श्रीरामपूर.
22. प्राचीन मराठीच्या नवधारा — रा. चिं. ढेरे, मोघे, कोल्हापूर.
23. प्राचीन मराठी गद्य: प्रेरणा व परंपरा — श्री. रं. कुलकर्णी, सिंधु पब्लिकेशन, मुंबई.
24. बखर वाङ्मय: उद्गम आणि विकास — बापूजी संकपाळ
25. बखरवाङ्मय — र. वि. हेरवाडकर, व्हीनस, मुंबई.
26. मराठी बखरवाङ्मयाचा पुनर्विचार — गं. ब. ग्रामोपाध्ये, मेहता, पुणे.
27. मराठी कवितेचा उषःकाल — श्री. म. वर्दे, मौज, मुंबई.
28. शाहिरी कविता: एक चिकित्सा - प्रकाश देशपांडे केजकर, स्वरूप, औरंगाबाद.
29. मन्हाटी लावणी — संपा. म. बा. धोंड
30. मराठी शाहिरी वाङ्मय — म. ना. सहस्त्रबुध्दे

Semester V Elective Course**CH-506(B)****Subject- Green Chemistry****(Theory: Lectures = 45 hrs.', Marks 60) (Credits: 03)****Course Objectives:**

1. There is rising concern since 1970 about environmental pollution, depleting resources, climate change, ozone depletion, legislation which is getting stringent with strict environmental laws, rising cost of waste deposits, health concern and so on.
2. We are facing the challenge to work towards sustainable development.
3. Since 1990, today's society is moving towards becoming more and more environmentally conscious.
4. Green chemistry has been introduced in 1990 for overall sustainable development against the environmental concerns.
5. Green chemistry is not a new branch of chemistry, but it is a new way chemistry, which should be practiced regularly.
6. Innovations and applications of green chemistry in education has helped companies not only to gain environmental benefits but at the same time to achieve economic and societal goals also.
7. This is possible because these undergraduate students are ultimate scientific community of tomorrow.

Learning Outcomes:

1. With this course, the graduate students will be able to understand the twelve principles of green chemistry that will help to build the basic understanding of toxicity, hazards and risk of chemical substances.
2. The course will help to understand stoichiometric calculations and relate them to green chemistry metrics. The students will learn about atom economy and understand its importance over percentage yield.
3. The students will learn to design safer chemicals, products and processes that are less toxic than the conventional chemistry, understand significance of catalysis, use of renewable feed stock, renewable energy sources, importance of green solvents, etc.
4. The course will train the students to appreciate green chemistry and boost the students to think and develop the skills to innovate and search for the solutions to environmental problems.
5. Green chemistry is only way of future chemistry to ensure sustainability with absolute zero waste. The success stories and real-world cases will motivate the young generation to practice green chemistry.

UNIT 1. Introduction to Green Chemistry (L-04, M-04)

Definition of Green Chemistry. Drawbacks of conventional chemistry. Need of Green Chemistry, Minamata disease. Goals of Green Chemistry.

UNIT 2. Principles of Green Chemistry and Designing a Chemical Synthesis (L-12, M-18)

Twelve principles of Green Chemistry, role of Paul T. Anastas, importance of green chemistry with examples: Prevention of waste/by-products, Atom economy, Prevention or Minimization of hazardous products, Designing safer chemicals, Energy requirements for synthesis, Selection of suitable solvents, Selection of starting materials, Use of protecting groups, Use of catalysts, Designing of biodegradable products, Prevention of chemical accidents, Strengthening of analytical techniques, industrial safety.

UNIT 3. Techniques in Green Chemistry (L-12, M-16)

a) Microwave assisted synthesis- Introduction and importance, Applications- Esterification, Fries rearrangement, Orthoester Claisen Rearrangement, Diels-Alder Reaction, Hofmann Elimination.

b) Ultrasound assisted reactions- Introduction and importance, Application- Esterification, Saponification, aromatic substitution reactions, alkylation, oxidation, reduction.

UNIT 4. Solvents, Reagents and Catalysts in Green Chemistry (L-14, M-18)

a) Solvents- Introduction and Importance, Examples- Michael Addition in water, Bis-indolyl methane in ionic liquid, tetrazole synthesis in deep eutectic solvent.

b) Reagents- Introduction and Importance, Examples- Alkylation using dimethyl carbonate, Solid phase peptide synthesis using Merrifield reagent.

c) Catalysts- Introduction and Importance, Examples- Reduction of carbonyl group using Baker's yeast, Esterification using Lipase enzyme, Zeolite clay and Cyclodextrin.

UNIT 5. Future Trends in Green Chemistry (L-03, M-04)

Biomimetic, Photochemical reactions, Multifunctional Reagents, Green chemistry in sustainable development.

Reference Books:

1. New Trends in Green Chemistry, V.K. Ahluwalia and M.R. Kidwai: Anamalaya Publishers (2005).
2. Green Chemistry- Theory and Practical, P.T. Anastas and J.K. Warner: Oxford University Press (1998).
3. Introduction to Green Chemistry, A. S. Matlack: Marcel Dekker (2001).
4. Real-World Cases in Green Chemistry, M.C. Cann & M.E. Connely: American Chemical Society, Washington (2000).
5. Introduction to Green Chemistry, M. A. Ryan & M. Tinnesand, American Chemical Society, Washington, (2002).

6. Silent Spring, Rachel Carson, Houghton Mifflin Company, (1962).

With effect from 2020-2021

DSC Core Courses

Zoo - 504: Animal Biotechnology

Teaching Hours: 45 Credits: 03

Units Topics Lectures 45 Marks 60

Course objective:

- Studying animal cell and tissue culture techniques
- DE developing genetically engineered products for human animal welfare,
- Developing gene transfer technologies, cloning, transgenic animals
- Studying hybridoma technique and production of antibodies
- Impart knowledge about stem cell research

Learning outcomes:

After successful completion of this course, students are expected to:

- acquire knowledge about animal cell and tissue culture techniques.
- become familiar with genetically engineered products for human animal welfare.
- Developing embryo - transfer technology, cloning, transgenic animals.
- understand applications of hybridoma technique and functions of antibodies.
- acquire knowledge about stem cell research and its ethical issues.

Unit I 1.1 Introduction, scope and significance of Biotechnology

1.2 Animal cell and tissue culture

1.2.1 Definition and Types of culture media

1.2.2 Advantages and disadvantages of animal cell/tissue culture

1.2.3 Laboratory facility for animal tissue culture

1.2.4 Applications of animal cell and tissue culture

1.2.5 Primary culture, Examples of Cell lines

1.2.6 Applications of somatic cell fusion

1.3 Examples of Tissue and organ cultures

Unit II Recombinant DNA technology

2.1 Introduction

2.2 Restriction enzymes- classification with examples

2.3 Identification and isolation of desired gene

2.4 Types and properties of vectors

2.5 Construction of genomic and cDNA libraries

2.6 Application of genetic engineering e.g. production of human Insulin, Growth hormone, TPA and vaccines.

Unit III Transgenic animals

3.1 Introduction

3.2 Methods of Transfection (Physical, Chemical, Viral and Bacterial)

3.3 Examples and significance of transgenic animals

Unit IV Hybridoma technology

4.1 Introduction

4.2 Methods for production of monoclonal and polyclonal antibodies

4.3 Significance of Monoclonal antibodies

4.4 Types and significance of immunoglobulin

Unit V Stem Cell Biotechnology

5.1 Introduction

5.2 Types of Stem Cell and their uses

5.3 Now and Future of Stem cell Biotechnology

5.4 Ethical issues in stem cell technology

Suggested Readings

- 1) Brooks G (ed.) (2002) Gene therapy. The use of DNA as a drug. Pharmaceutical Press, London.
- 2) Gerald C., (1996) Cell and Molecular Biology –Concept and Experiment, John Wiley and Sons, Inc., U.S.A.
- 3) Lewin, B., (2004), Genes VIII, Oxford University Press, New York
- 4) Lohar Prakash S. (2012) Textbook of Biotechnology ISBN: 9788180941047 MJP Publishers, Chennai
- 5) Sing, B.D.(2014) Biotechnology Expanding horizons. Kalyani Publishers, Delhi.
- 6) Stem Cell Biology (2001) Cold Spring Harbor Laboratory Press
- 7) Watson, J.D. et al, (1987) Molecular Biology of Gene, 4th ed., The Benjamin / Cummings Publishing

DSC Skill Enhancement Course [SEC]

Zoo - 505: Public Health and Hygiene

Course objective

- To provide knowledge and understanding regarding life style diseases.
- To promote an understanding of the value of good life style practices, physical fitness and healthy food habits for life style disease management.
- To motivate them to practice yoga and meditation in day-to-day life Teaching Hours

Learning outcomes

After successful completion of this course, students are expected to:

- Get familiarized with various aspects of environmental risks and hazards.
- Acquire knowledge regarding epidemiology, prevention, control and management of diseases of public health importance.
- learn about diagnosis of various diseases and methods to prevent them.

Unit I Public Health and Hygiene:

- 1.1 Introduction and scope,
- 1.2 Nutrition and health,
- 1.3 Classification of food,
- 1.4 Nutritional deficiencies,
- 1.5 Vitamin deficiencies,
- 1.6 Hygiene: Introduction, definition and types of hygiene.

Unit II Environment and health hazards:

- 2.1 Environmental degradation,
- 2.2 Pollution and associated health hazards

Unit III Sanitation and Diseases:

- 3.1 Definition and concept,
- 3.2 Disposal of human & animal waste, refuse sewage.

Unit IV Communicable disease and their control measures:

- 4.1 Malaria 4.2 Typhoid
- 4.3 Hepatitis-types 4.4 Tuberculosis
- 4.5 Chikungunya 4.6 Dengue and
- 4.7 AIDS.

Unit V Non-communicable diseases and their preventive measures:

- 5.1 Hypertension,
- 5.2 Coronary Heart disease,
- 5.3 Stroke,
- 5.4 Obesity and
- 5.5 Mental ill health

Suggested Readings

- 1) Basu, S.C. Preventive and Social Medicine.
- 2) Clifford Anderson R., Your Guide to Health.
- 3) Gibney, Clinical Health, Blackwell.
- 4) Gibney, Public Health Nutrition, Blackwell.
- 5) Goel, S.O.L. Public Health Administration.
- 6) Mahajan B.K., M.C. Gupta, Preventive and social medicine in India, 2013, 4th Edn., JaypeeBrothers Medical Publishers, New Delhi, India.

- 7) Park K. and Park S, 1995, Text Book of Preventive and Social Medicine. Banarsidas Bhanot Publishers, 1167 Prem Nager, Jabalpur – 482001.
- 8) Sanitarians Hand Book. Theory and Administrative Practice. Pearles Publications, New Orleans, USA.
- 9) Seshu Babu V.V.R, Review of community medicine, 2006, 2ndEdn.,Paras Medical Books Pvt.Ltd., Hyderabad.
- 10)Shoryock Harold and Hubert O. Swartout You and Your Health illustrated Dealing with Diseases..
- 11)Sobti R. C., Medical Zoology and Medical Technology, Shobanlal and Co., Jalandher.

**DSC Skill Enhancement Course [SEC]
DSC ELELCTIVE COURSE (Any one from 506 A or 506 B)
Zoo – 506 (A): Pest Management**

Course objectives:

- To acquire basic skills in the observation and study of nature.
- To inculcate interest in adopting biological control strategies for pest control.
- To know various pests affecting our local crops and select the best method for their control.
- To acquire basic knowledge and skills in agriculture management to enable the learner for self-employment.

Learning outcomes:

After successful completion of this course, students are expected to:

- impart basic awareness regarding pest problem and crop loss due to their dominance.
- understand various pests affecting our local crops and select the best method for their control.
- acquire basic knowledge and skills in agriculture management to enable the learner for self-employment

Unit I Introduction

1.1 Definition of pest

1.2 Classification of pest w.r.t. Systematic position, Marks of identification, Life cycle, Nature of damage and Control measures.

1.2.1 Agricultural pests:

- a) Pest of Cotton – *Dysdercus cingulatus*
- b) Pest of Banana – *Odoiporus longicollis*
- c) Pest of Vegetable (Brinjal) – *Leucinodes or bonalis guenee*
- d) Pest of Sugarcane – *Pyrilla perpusilla*
- e) Pest of Onion- *Thrips tabaci*

1.2.2 Stored grain pest – *Sitophilu soryzae*

1.2.3 Veterinary pest - Flea

1.2.4 Public health pest – *Cimex*

1.2.5 Structural pest – *Odontotermes obesus*

Unit II Insect Vector:

2.1 Definition of vector

2.2 Types of vector (Mosquito, house fly, cockroach)

Unit III Control Measures:

3.1 Primary control and their types.

3.2 Chemical control and their types.

3.3 Biological control and their types.

3.4 Concept of IPM

Unit IV Types of Pesticides and Their Mode of Action:

4.1 Stomach poison

4.2 Contact poison

4.3 Systemic poison

4.4 Fumigants

4.5 Pesticide appliances:

a) Sprayer and b) Duster

Unit V Non Insect Pests:

Study of Non insect pests with reference to habit, habitat, Breeding potential, Nature of damage and control techniques.

5.1 Rat

5.2 Birds.

5.3 Snail

Suggested Readings

1) Crop Pests and How to Fight Them, Director of Publicity, Govt. of Maharashtra.

2) Fadt,: Fundamental of Entomology.

3) Gupta: Essentials of biotechnology.

4) Little and Little: General and Applied Entomology.

5) Pedigo: Entomology and Pest management.

6) Pradhan,: Insect Pest of Crops.

7) Pruthi, H.S.: Textbook of Agricultural Entomology.

8) Ravindranathan K. R.: Economic Zoology, Dominant Pub., New Delhi

9) Shukla and Upadhyay: Economic Zoology, Rastogi publication.

10)Tembhare D.B.: Text Book of Modern Entomology

**DSC SKILL ENHANCEMENT COURSE
SEMESTER - V
PAPER - V
BOT. 505: BIOFERTILIZERS (Lectures: 45)**

AIMS AND OBJECTIVES:

1. To introduce application of Biofertilizer technology in Agriculture
2. To familiarize students with microbes used as biofertilizers
3. To demonstrate the low cost media preparation and cultural practices in biofertilizers
4. To aware the students about benefits of applications of biofertilizers
5. To create self-employment opportunities among the students

Unit 1: Introduction (09 Lectures)

- 1.1. Introduction, Scope and importance of Biofertilizers
- 1.2. General account of the microbes used as Biofertilizers
- 1.3. Isolation of Rhizobium, Identification, Mass multiplication, Carrier based inoculants

Unit 2: Bacterial Biofertilizers (09 Lectures)

- 2.1. Azospirillum isolation and mass multiplication, carrier based inoculants and associative effect of different organisms
- 2.2. Azotobacter, classification and characteristics
- 2.3. Crop response to Azotobacter inoculums, Mass multiplication of Azotobacter
- 2.4. Applications of Azospirillum

Unit 3: Algal Biofertilizers (09 Lectures)

- 3:1. Cyanobacteria (Blue Green Algae): Isolation of Anabaena from Azolla, Mass Multiplication of Anabaena
- 3.2. Azolla - Anabaena relationship
- 3.3. Biological Nitrogen fixation
- 3.4. Blue Green algae in rice cultivation.
- 3.5. Applications of BGA

Unit 4: Fungal Biofertilizers (09 Lectures)

- 4.1. Introduction, Occurrence and Distribution of Mycorrhizal association.
- 4:2. Types of Mycorrhizal association, growth and yield – colonization of VAM - Vesicular Arbuscular Mycorrhiza
- 4.3. Mycorrhizal applications in agriculture

Unit 5: Compost and Manure (09 Lectures)

- 5.1. Organic Farming, green manuring, organic manures and their uses
- 5.2. Recycling by composting method of biodegradable, municipal, agricultural and industrial wastes
- 5.3. Biocompost making methods, Types and methods of vermicomposting
- 5.4. Benefits of vermicompost, field applications

REFERENCE BOOKS

1. Dubey, R. C. (2005). A text book of Biotechnology. S. Chand & Co. New Delhi, India.

2. Kumaresan, V. (2005). Biotechnology. Saras Publication, New Delhi, India.
3. Sathe, T. V. (2004). Vermiculture and Organic Farming. Daya Publishers, Delhi, India.
4. Jshon, Jothi Prakash, E. (2004). Outline of Plant Biotechnology. Emkay Publication, New Delhi, India.
5. Subha Rao, N. S. (2000). Soil Microbiology. Oxford and IBH Publishers, New Delhi, India.
6. Vayas, S. C., Vayas S. and Modi, H. (1990). Biofertilizers and Organic Farming. Ekta Publication, Nanded, India.

Webliography

1. Production of various Biofertilizers. www.biologydiscussion.com
 2. Biofertilizers vikaspedia.in
 3. www.solverchem.com
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**Discipline Specific Elective (DSE) Course
MB 606 (A) - Agricultural Microbiology**

Course Objectives

- To understand concepts in plant pathology.
- To acquaint the students with basic knowledge of plant disease control.
- To complement the students with the concepts in Agricultural Microbiology.

Learning Outcomes

After successful completion of this course, students are expected to:

- Understand classification of plant pathology with regional plant diseases.
- Know the concepts related to methods of plant disease control.
- Comprehend knowledge regarding Agricultural Microbiology.

UNIT-1 Plant Microbe Interactions

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- Rhizosphere: concept, microorganisms, significance and Rhizosphere engineering
- Classification of plant diseases based on symptoms, crop and parts affected
- Terminology: Host, Alternate and Collateral host, Resistance, Susceptibility and Tolerance
- Disease Triangle (Host, environment and pathogen), concept of Disease cycle
- Study of plant diseases with respect to causative agent, host, symptoms and control:
- Wilt of cotton
- Citrus canker Downy mildew of grapes Whip smut of sugarcane Tikka disease of groundnut Banana Bunchy Top Viral disease (BBTV)

UNIT -2 Methods of plant disease control

- Mechanism: Exclusion, Eradication, Reduction of inoculum, Protection and Resistant varieties
- Chemical control: fungicides, bactericides etc. Biological control: microbial herbicides & insecticides
- Cultural methods: Tillage, Deep ploughing and Spacing
- Integrated pest management: Inspection, Identification, Threshold, Employment control and Evaluation
- Modern approaches Application of viral proteins in controlling plant viral diseases Antisense RNA technology in plant disease control.
- RNA interference (RNAi) in controlling plant pathogens Mycoviruses for controlling fungal pathogens

UNIT-3 Agricultural and environmental microbiology 15

- Transgenic plants: Method: Gene construction, vector (Ti/Ri plasmid), Mechanism & importance Example: Development of insect resistant plants (Bt cotton), Biochemical production of Hirudin-A polypeptide & Phytase enzyme
- Waste: source, types and management Liquid waste: primary, secondary and tertiary treatments. Solid waste: Composting: necessity, microbiology, methods, advantages and disadvantages
- Biogas: feedstock, process (hydrolysis, acidogenesis, Methanogenesis), factors affecting biogas production
- Bioremediation: importance, types, methods, example of xenobiotic degradation

Suggested Reading:

1. Dubey R. C. and Maheshwari D. K. (2006), A textbook of microbiology, S Chand, New Delhi.
2. Das H. K. (2005), Textbook of biotechnology, Wiley Dream tech India Pvt. Ltd.
3. Kuderia, V. P., (1998), Water Pollution, Pragati Prakashan, Meerut.
4. Martin Alexander (1977), Introduction to Soil Microbiology, 2nd Ed., John Wiley & Sons.
5. Mitchell, R. (1974), Introduction to Environmental Microbiology Prentice Hall, New Jersey.
6. Pathak, V. N, Khatri, N.K., Pathak, M., (1996), Fundamentals of Plant Pathology, Agro - Botanical Publ., Bikaner.
7. Powar, C. B., Dagainwalla, H. F., (1990), General Microbiology Vol. I & II, Himalaya Publishing House, Mumbai.
8. Rao, M. N. and Rao, H. V N, (1989), Air Pollution, Tata McGraw Hill Publ, Company, Ltd., New Delhi.
9. Salle, A. J., (1990), Fundamentals of Microbiology, Tata McGraw Hill, New Delhi.
10. Satyanarayana U. (2005), Biotechnology, Books and Allied (P) Ltd. Kolkata.
11. Thakur I S (2011), Environmental Biotechnology: Basic concepts and applications, IK International, New Delhi.

Discipline Specific Elective (DSE) Course
BT-506A: Environmental Biotechnology-I

Course objective

An exposure to environmental perspectives.
 Insight into the management of wastewater, biodegradation techniques bioremediation and xenobiotics. Learning outcome after successful completion of this course, students are expected to:

- Domestic wastewater treatment, Classification of Wastewater treatment
- Biodegradation-Concept, Biodegradation of hydrocarbon, Measurement of biodegradation
- Bioremediation-Concept, Methods of Bioremediation (In-situ and Ex-situ Bioremediation)
- Understand Xenobiotic and recalcitrant, Metabolism of Xenobiotics

Unit I Wastewater

Treatment Domestic wastewater treatments –

i) Primary Treatment

ii) Secondary Treatment

iii) Tertiary Treatment Aerobic Biological Treatment – Activated Sludge

Process, Rotating Biological Contactors, Trickling Filters Anaerobic Biological Treatment – Packed bed reactor, Air lift membrane bioreactor, Fluidized bed reactor Important microorganisms and their role in wastewater treatment Plasmid borne metabolic activities of microbes.

Unit II Xenobiotic Introduction - Concept and Definition

Recalcitrance

Xenobiotics degradation –

i) Pesticide degradation (Principle with suitable example)

ii) Herbicide degradation (Principle with suitable example) Metabolism of xenobiotics - Cytochrome P450 system Metabolic reactions - Phase I and Phase II

Unit III Bioremediation Introduction –Definition and Concept Methods of bioremediation (In-situ and Ex-situ Methods) Bioremediation of soil – Bioremediation of saline and alkaline soil Phytoremediation – Concept and Types Applications of bioremediation

Unit IV Biodegradation

Techniques Concept and Definition

Types - Ready, ultimate and inherent biodegradation

Aerobic degradation pathways in microbes Anaerobic degradation pathways in microbes

Biodegradation of hydrocarbon with suitable examples

References

- Asthana D.K. and Asthana M. (2001), Environment: Problems and Solutions, S. Chand and Company Ltd, New Delhi
- Chatterji A.K. (2002), Introduction to Environmental Biotechnology, Prentice Hall of India Pvt.Ltd, New Delhi.
- Gupta P.K. (2004), Biotechnology and Genomics, Rastogi Publication, Meerut. Jogdand S.N.(2006), Environmental Biotechnology, 3rd Edn., Himalaya Publishing House,Mumbai
- Kalaichelvan P.T., I Arul Pandi (2007), Bioprocess Technology, MJP Publishers, Chennai.
- Rittmann B. E. And McCarty P. L. (2001), Environmental Biotechnology Principles And Applications, McGraw Hill, USA

M. Sc. Part II (Semester III) Microbiology
MB-301: Applied and Environmental Microbiology Lectures

Unit I

Food Microbiology

- Methods of sampling: random, representative, attribute sampling
- Preparation of dilutions
- Offline and online approaches of microbial analysis
- Detection and enumeration of indicator bacteria, pathogenic and toxigenic microbes
- Mycotoxins, sources, pathogenesis, prevention, extraction and detection
- Microbiological examination of specific foods
 - o Meat and meat products
 - o Milk and milk products
- Food intoxications: Causes, pathogenesis, prevention and control

Unit II

Microbiological treatment of waste water

- Principles and need for biological waste water treatment
- Conventional treatment process
- Primary- Sedimentation or settling
- Biological treatment process:
 Aerobic treatment: (a) Suspended growth – Oxidation lagoons, activated sludge and membrane bioreactor (b) Attached growth TF, RBC, PBR Anaerobic treatment: (a) Suspended growth – UASB, USB, Clarigester (b) Attached growth (EGSB, AF, FBR)
- Advanced tertiary process: Solids removal, Biological nitrogen removal, Biological phosphorus removal and Disinfection (Clarification, Ozonation)
- Waste water treatment for distillery and antibiotic industries

Unit III

Biological conversion of Lignocellulosic waste

- Structure and composition of lignocelluloses, Degradation of lignin, cellulose and hemicellulose, impediments of degradation
- Pre-treatment of lignocellulosic material: Physical, Chemical and Biological (Microbial and enzymatic) and related issues
- F: fermentation: Submerged, SSF, SHF, SScF
- Applications in lignocellulosic ethanol production

Unit IV

Bioremediation and biodegradation of xenobiotics

- Concept of biodegradability and bioconversion
- Principles for measuring biodegradability
- Mechanism of biodegradation / bioremediation: metabolism, mineralization, conjugation
- Bioremediation treatments: Intrinsic, Bio stimulation, and Bio augmentation, hizostimulation, bioleaching
- Methods for microbial treatments of pollution: Bioreactors, Biopiles,landfilling, Bioventing, biosparging
- Impediments to microbial degradation of compounds
- Biodegradation of xenobiotics
 - o Biochemical/ physiological approach
 - o Molecular techniques and monitoring of bioremediation
 - o Methods for soil bioremediation

Unit V- Microbial waste management

- V: • Solid waste management

- o Composting: Principle, steps, chemistry, microbial succession and biology of composting, technologies of composting (aerobic: windrow, aerated static pile, in vessel composting; Anaerobic composting) criteria of compost maturity, applications of compost.
- o Anaerobic digestion: Feedstocks, Principle, methane potential, requirements of anaerobic digestion, microbiology of biomethanation, biochemistry of methane synthesis, process, dry and wet digestion, factor affecting methanogens, and Types of anaerobic digesters (fixed dome, floating dome, low rate and high rate digesters).

Suggested Readings:

- Singh A and Ward OP. (2004) Biodegradation and Bioremediation, Springer-Verlag,, Berlin (ISBN: 3-540-21101-2).
- Hurst CJ (2002) Manual of Environmental Microbiology, ASM Press, Washington D.C. (ISBN: 1-55581-199-x).
- Demain AL and Davies JE (1999) Manual of Industrial Microbiology and Biotechnology, ASM Press, Washington D.C. (ISBN: 1-55581-128-0).
- Martin AM (1998) Bioconversion of waste materials to Industrial Products, Blackie Academic and Professional, London (ISBN: 0-7514-0423-3).
- Harrigan WF and McCance ME (1994) Laboratory Methods in Food and Dairy Microbiology. Academic Press, London.
- Mossel, DAA, Correy JEL, Struijk CB and Baird RM (1995) Essentials of the Microbiology of Foods, John-Wiley and Sons Inc., New York.
- Satyanaraya U (2005) Biotechnology, Books and Allied (P) Ltd., Kolkata.
- Hobbs B and Roberts D (1993) Food Poisoning & Food Hygiene, Edward Arnold, London.
- Baker KH and Herson DS (1994) Bioremediation, Mc-Graw Hill Inc., New York.
- Pandey A. (2004) Concise Encyclopedia of Bioresource Technology, Food Products Press, The Haworth Reference Press, New York (ISBN: 1-56022-980-2).
- Rehm RG and Reed G (1984) Biotechnology, Vol.1-8, Verlag-Chemie, Weinheim.
- Forster CF (1985) Biotechnology and waste water treatment, Cambridge University Press, Cambridge.
- Maier R Pepper IL and Gerba CP (2000) Environmental Microbiology, Academic Press, London

BT-303: Advanced Environmental Biotechnology

UNIT Topics Lectures

I Pollution

- Air pollution - Ambient air quality: monitoring and standards (National Ambient Air Quality Standards of India); air quality index; sources and types of pollutants (primary and secondary); smog (case study); effects of different pollutants on human health (NO_x, SO_x, PM, CO, CO₂, hydrocarbons and VOCs) and control measures; indoor air pollution: sources, effects on human health and remedial strategies. Vehicular pollution and control measures.
- Soil pollution - Causes of soil pollution and degradation; effect of soil pollution on environment, vegetation and other life forms; control strategies. Global and Indian perspective, major pollutants and Biotechnological approach for soil pollution management like on soil hardening, contaminant detection, soil leached pesticides denaturation or conversion.
- Water pollution - Sources of surface and ground water pollution; water quality parameters and standards; organic waste and water pollution; eutrophication; effect of water contaminants on human health (nitrate, fluoride, arsenic, chlorine, cadmium, mercury, pesticides); water borne diseases; concept and working of effluent treatment plants (ETPs).

II Bioremediation and biodegradation

- Bioremediation: Characterization of site for bioremediation, factors, engineered in situ and intrinsic in situ bioremediation, ex situ bioremediation, Evaluation of bioremediation, Bioremediation of soil contaminated with oil spills.
- Biodegradation: Assimilation, Detoxification, Activation, Bioavailability, Recalcitrance, Co-metabolism and Biotransformation. Factors affecting biodegradation, Predicting products of biodegradation, Biodegradation of environmental contaminants (Pesticides, Lignin, Halogenated hydrocarbons)

III Environmental Monitoring

- Environmental monitoring and sample analysis: Sampling of air and water pollutants;
- Monitoring techniques and methodology: TDS, pH, Dissolved Oxygen (DO); Chemical oxygen demand (COD); Biological Oxygen Demand (BOD); Speculation of metals, monitoring and analysis of CO, NO₂, CO₂, SO₂; Pesticide residue; Phenols and petrochemicals.

IV Regulation and Environmental management

- Activated Sludge Process (ASP) – Trickling Filters – oxidation ponds, fluidized bed reactors, membrane bioreactor neutralization, ETP sludge management; digesters, up flow anaerobic sludge blanket reactor, fixed film reactors, sequencing batch reactors, hybrid reactors, bioscrubbers, bio trickling filters.

▪ Regulatory framework for pollution monitoring and control; case study: Ganga Action Plan; Yamuna Action Plan; implementation of CNG in NCT of Delhi. Application of clean technologies for pollution control, hospital waste management

- Environment management

Problems and need Environmental management Plan: Need of EMP Environmental Impact Assessment: Objectives of EIA EIA and International organizations Stages of EIA process EIA in India: Process Stages of Environmental clearance process ISO 14000 Environmental audits and ethics Environmental Laws and Policies.

V Biotechnological Perspectives for Sustainable Environment

- PGPR bacteria: Bio fertilizers,

- Microbial insecticides and pesticides, bio-control of plant pathogen
- Development of stress tolerant plants,
- Biofuel: first, second and third generation ethanol, Biodiesel

- Mining and metal biotechnology: microbial transformation, accumulation and concentration of metals, metal leaching, extraction; exploitation of microbes in copper and uranium extraction.
- Biosensors: Components, Types and Applications of biosensors in the monitoring of heavy metals, BOD, nitrogen compounds, polychlorinated biphenyls, phenolic and organophosphorus compounds
- Phytoremediation

Suggested readings:

1. Evans, G. G. and Furlong J. (2010) Environmental Biotechnology: Theory and Application (2nd edition). Wiley-Blackwell Publications.
2. Jordening H. J. and Winter J. (2005) Environmental Biotechnology: Concepts and Applications. John Wiley & Sons.
3. Ramtane D.S. and Moghe C. A. (1998) Manual on water and waste water analysis, NEERI, Nagpur.
4. Agarwal S. K. (2005) Advanced Environmental Biotechnology APH Pub Co, New Delhi.
5. Evans G.M. and Furlong J.C. (2003) Environmental Biotechnology: Theory and applications, John Wiley & Sons, England.
6. Sayyed, R.Z. Reddy M. S. and Antonious Sarjiya (2019) Plant Growth Promoting Rhizobacteria (PGPR): Prospects for Sustainable Agriculture, Springer-Nature, ISBN 978-981-13-6789-2.
7. Tiwari G.N. and Mishra R K (2012) Advanced Renewable Energy Sources, RSC Publishing, London

CH-432(B): Analysis of Environmental Pollutants

(60 L, 100 Marks and 4 Credits)

Course Objectives:

1. To introduce the knowledge of environment and its constituents as well as factors affecting it.
2. To gaining the theoretical concepts about the analysis of pollutants their limits in air, water and soil.

Learning Outcomes: After successful completion of this course, students are able to:

1. Understand the about the pollutants, their limits in air, water and soil.
2. Monitor and analyze Air, Water, Soil Pollutants.

1 Environment

Definition, characteristics and pollution, type of environmental pollution, Environmental pollutants: Metallic and nonmetallic, Toxic chemicals: heavy metals, pesticides and carcinogenic compounds.

2. Analytical Methods for Monitoring Air Pollutants

Introduction, sampling of gases and vapours, Sampling of particulate pollutants, Stack sampling, Monitoring of air pollutants, Instrumental techniques for monitoring air pollutants: monitoring of NO_x, Monitoring of Sulphur dioxide, Monitoring of Hydrogen sulphide (H₂S), Monitoring of Oxidants and ozone, Monitoring of Ammonia, Monitoring of hydrocarbons, Determination of lead in petrol by atomic absorption spectroscopy, Monitoring of CO, Monitoring of Particulate matter, Monitoring of trace gases.

3 Analyses of Water Pollutants

- Sampling and sampling methods, Chemical substances affecting potability, Odour, Turbidity, conductivity, Hydrogen ion concentration, Acidity, Alkalinity, Chloride, Total solids, Hardness, Calcium, Magnesium, Iron, Manganese, Mercury, Silver, Zinc, Nitrate and nitrite, Sulphide, Phosphate, Fluoride.
- Chemical substances Indicative of pollution, Analytical technique for dissolved oxygen, Chemical oxygen demand, Biochemical oxygen demand, Total organic Carbon, bacteriological, Biological and radiological examination of water.

4 Analysis of Toxic Chemical Substances in Polluted Water

Inorganic Pollutants and toxic Metals, Detrimental effects of toxic metals, Organic pollutants, Effect of organic pollutants, Analysis of: Beryllium, Cadmium, Copper, Zinc, Arsenic, Chromium, Lead, Selenium, Silica, Determination of oil and gases, Analysis of: Phenols, cyanides, Surfactants, Pesticides.

5 Analysis of Soil Pollutants

Introduction, Control of soil pollution, Effective measures to prevent soil pollution, Soil fertility and productivity, Analysis of: Soil moisture, pH, Total nitrogen, Phosphorus, Sulphur, Total manganese, Iron, Silica, Lime, Salts, Sodium, Potassium, Calcium, Magnesium, Mechanical analysis of soil.

References:

1. Environmental Chemistry by H. Kaur, Pragati prakashan
2. Environmental Chemistry by B. K. Sharma, Goel Publishing House, Meerut
3. Standard Methods of water and waste Water Analysis by A. K. De
4. Standard Methods of Chemical Analysis by F. J. Welcher
5. Environmental Chemistry by S. M. Khopkar
6. Environmental Chemical Analysis by M. S. Cress and Morr
7. Analytical Chemistry by G. D. Christion
8. New Trends in Green Chemistry by V. K. Ahluwali

Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon

Faculty of Commerce and Management

M.Com. I (W.E.F.: June – 2021)

101 – ECONOMICS OF INDUSTRIES-I

SEMESTER – I

Total Lecturers: 60

Total Marks: 100 (Internal Continuous Assessment: 40 Marks + External Theory Exam: 60 Marks)

Learning Objectives –

- Understand basic knowledge about Industrial Economics
- It also provides a detailed understanding of different theories of Industrial Economics
- Understand the advanced knowledge of Industrial Decisions- Market structure, Investment and

Pricing decisions

- Understand the method of pricing in industries and public enterprises
- Understand basics concepts and advanced knowledge of Industrial productivity and Industrial Finance.

Course Outcome –

- To obtain knowledge of need and significance of the study of Industrial Economics
- To obtain practical knowledge about Industrial Locations
- To Obtain an understanding of various types market combinations such as Cartel, Take Over, Mergers & Acquisition
- To Obtain an understanding of various types pricing methods and procedures
- To Understand the preparation of the profile of a project.
- To obtain knowledge on Innovation, Research and Development, Rationalization & Automation

□ To Obtain a theoretical understanding of Price Wars and Non-price competition, Industrial finance and productivity

Course Content –

Unit 1 – Introduction Lectures: 08

- a) Meaning and Scope of Industrial Economics
- b) Need and Significance of The Study of Industrial Economics
- c) Economic & Agricultural Development and Industrialization
- d) Factors Affecting Industrial Development

Unit 2 – Industrial Decisions & Market Structure Lectures: 8

- a) Competition or Co-Operation.
- b) Firm Behavior & Market Outcomes.
- c) Market Structure and Market Performance
- d) Pricing Strategies
- e) Cartel, Collusion, Merger, Take Over & Acquisition Concepts

Unit 3 – Industrial Location Analysis Lectures: 08

- a) Meaning of Industrial Location.
- b) The General determinants of industrial location
- c) Approaches to Location analysis: Technical Factors, Economics and Infrastructural Factors
- d) Rawstron's principles
- e) Weber's & Florence's Theories of Industrial Location

Unit 4 – Investment, Research, Development & Innovation in Industry Lectures: 12

- a) Investment Decisions
 - 1. The Nature & Types of Investment Decisions
 - 2. Preparation of the Profile of a Project.
 - 3. Pricing Methods of Project Evaluation
 - 4. Risk and Uncertainties in Project Appraisal.

b) Research, Development and Innovation.

1. Meaning, Process of Innovation: Concept and Relationship

2. Stages of Innovation, Measurement

3. R & D Expenditure as an Investment Decision.

4. The Relationship between R & D, Inputs & Outputs

5. Rationalization & Automation- Meaning & Objectives, Benefits and Problems, Policy

Unit 5 – Price and Non-Price Competition Lectures: 14

a) Pricing in industry

1. General Situation for Pricing Decisions.

2. Pricing Under Perfect & Imperfect Competition: in theory

3. Pricing Procedures in Practice.

4. Pricing Methods.

5. Pricing in Public Enterprises

6. Price Wars: Theories and Evidence

b) Non-Price Competition

1. Meaning of Non-Price Competition & Product Differentiation

2. Horizontal Product Differentiation

3. Brand Proliferation as an Entry Deterrence Strategy

4. Vertical Product Differentiation

5. Price Discrimination: First- Second- & Third Degree Price Discrimination

Unit 6 – Industrial Productivity and Finance Lectures: 10

a) Factors affecting productivity

b) Importance of Productivity

c) Meaning Scope Importance of Industrial Finance

d) Sources of Industrial Finance :Shares, debentures, bonds, deposits, loan etc

e) Role of IDBI, SIDBI, ICICI and SFC

Books Recommended –

□ Ferguson, Paul R. and Glenys J. Ferguson, (1994), Industrial Economics - Issues and Perspectives,

Macmillan, London.

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