



Maharashtra Mahavidyalaya, Nilanga

## **Program Outcomes, Program Specific Outcomes & Course Outcomes**

- 1. Bachelor of Arts (B.A.)**
- 2. Bachelor of Commerce (B.Com.)**
- 3. Bachelor of Science (B.Sc.)**
- 4. Bachelor of Computer Application (BCA)**
- 5. Master of Science (M.Sc. Computer Science)**
- 6. Bachelor of Vocational (B.Voc.)**

Maharashtra Mahavidyalaya, Nilanga

**Languages**

**English, Hindi, Marathi**

**Maharashtra Mahavidyalaya, Nilanga  
Department of English**

**Course Outcomes and Program Outcomes**

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**Title of the Course: English Compulsory- Paper I (Sem-I)**

**B. A., B. Com. and B. Sc. First Year and Second Year**

**English Language and Literature**

**English Compulsory- Paper I (Sem-I)**

■ **Course Outcomes:**

- The students are introduced with short stories, essays on a variety of important topics.
- They are encouraged to understand and appreciate prose writings of well-known writers,
- They are acquainted with ‘prose’, its meaning and importance,
- They learnt grammar items, such as antonyms, synonyms, etc.
- They are able to write grammatically accurate sentences.
- They are able to write short reports, personal and business letters, e-mails.
- They are prepared for competitive exams by encouraging them to learn English.

**Title of the Course: English Compulsory- Paper II (Sem-II)**

**B. A., B. Com. and B. Sc. First Year and Second Year**

■ **Course Outcomes:**

- The students are encouraged to understand and appreciate short lyrical poems,
- They are motivated to enjoy the inherent rhythmic beauty of lyrical poetry,
- They are acquainted with famous world poets such as Shakespeare, Blake, Tagore, etc,
- They are prepared for competitive exams by encouraging them to learn English.
- They have developed communicative competence with the efforts taken by the faculties to encourage them to learn to listen, speak, read and write properly,
- They have developed the language skills of listening, speaking, reading and writing.
- They have understood the importance of non-verbal communication.

### **Title of the Course: Study of Fiction: Short Story Paper-I**

#### **■ Course Outcomes:**

- The students are acquainted with the literary genre of ‘fiction,’ particularly short story,
- They are introduced with the meaning, types, features and functions of “short story,”
- They are encouraged to read, understand, and appreciate short stories,
- They are introduced with the world famous short story tellers from England, USA, and India,
- The habit of reading short stories is inculcated in the students.

### **Title of the Course: Study of Drama: One Act Play Paper- II**

#### **■ Course Outcomes:**

- The students are acquainted with the literary genre of ‘drama,’ mainly One Act Play,
- They are introduced with the meaning, types, features and functions of “One Act Play,”
- They are able to understand the mechanics of stage performance/acting/theatre direction, etc.,
- They are encouraged to understand and appreciate the literary art of play writing,
- They are encouraged to watch and enact one act plays,
- They have developed a liking for watching, enjoying and appreciating the art of drama.

### **Semester: II**

### **Title of the Course: Study of Fiction: Full Length Fiction- Paper-III**

#### **■ Course Outcomes:**

- The students are acquainted with the literary genre of ‘fiction,’ particularly full length fiction/novels,
- They are introduced with the meaning, features, functions and various types of fiction/novel,
- They are encouraged to understand and appreciate themes, motifs, symbolism and characters in the novels selected from diverse cultural milieu,
  - They are introduced with the world famous novelists such as Conrad, Hemingway, and RK Narayan,
- The habit of reading novels for aesthetic pleasure is inculcated in the students.

### **Title of the Course: Study of Drama: Full Length Drama- Paper- IV**

● **Course Outcomes:**

- The students are acquainted with the literary genre of ‘drama,’ mainly Full Length Plays,
- They are introduced with the meaning, types, features and functions of full length drama,
  - They are enabled to understand the mechanics of stage performance /acting /theatre direction, etc.,
  - The students have developed a liking for watching, enjoying and appreciating the art of drama for artistic and aesthetic pleasure,
  - They are encouraged to watch and enact/perform full-length plays during college gatherings/annual days/drama competitions,

## **B. A. Second Year**

### **Title of the Course: English Compulsory- Paper III (Sem-III)**

● **Course Outcomes:**

- The students are introduced with short stories, essays on a variety of important topics,
- They are encouraged to understand and appreciate prose writings of well-known writers,
- They are acquainted with ‘ prose’, its meaning and importance,
- They learnt grammar items, such as Idioms, Phrases, and reported speech etc.
- They are enabled to write grammatically accurate sentences, by identifying correct reported speech in writing English.
- They are prepared for competitive exams by encouraging them to learn English.

### **Title of the Course: English Compulsory-Paper IV (Sem-IV)**

● **Course Outcomes:**

- The learners are encouraged to understand and appreciate short lyrical poems,
- They are motivated to enjoy the inherent rhythmic beauty of lyrical poetry,
- They are acquainted them with famous world poets such as Wordsworth, Blake, Keats, Byran, Browning, Lanston Hughes, Tagore etc,
- They are prepared for competitive exams by encouraging them to learn English,
- They have developed communicative competence.
- They have developed the language skills of listening, speaking, reading and writing so that they could use the English language in day to day, practical situations,
- They are able to understand the importance of non-verbal communication, i.e. body language so as to make communicative situations more meaningful, positive and effective.

## English Optional Second Year

### Semester: III Paper No. V

#### Title of the Course: Title: Study of Poetry- Sonnets & Elegy

##### ❖ Course Outcomes:

- The students are acquainted with the literary genre of ‘poetry,’ particularly sonnet & Elegy,
- They are introduced with the meaning, types, features and functions of “sonnet Elegy.”
- They are encouraged to read, understand, and appreciate sonnet, elegy
- They are introduced with the world famous sonnets and elegy.
- The habit of reading Sonnet & Elegy is inculcated in the students.

#### Title of the Course: Study of Odes and Ballads -Paper- VII

##### ❖ Course Outcomes:

- The students are acquainted with the literary genre of ‘poetry,’ particularly Odes and Ballads.
- They are introduced with the meaning, types, features and functions of “Odes and Ballads”
- They are encouraged to read, understand, and appreciate Odes and Ballads.
- They are introduced with the world famous Odes and Ballads.
- The habit of reading Odes and Ballads is inculcated in the students.

### Semester III Paper No. VI

#### Title: Study of Prose- Essays

##### ❖ Course Outcomes:

- The students are acquainted with the literary genre of ‘prose,’ particularly Essays.
- They are introduced with the meaning, types, features and functions of “Prose -Essays”
- They are encouraged to read, understand, and appreciate Essays.
- The habit of reading Essays is inculcated in the students.

**Title of the Course: Study of Prose- Autobiography****❖ Course Outcomes:**

1. They students are acquainted with the literary genre of 'prose,' particularly Autobiography.
2. They are introduced with the meaning, types, features and functions of "Autobiography."
3. They are encouraged to read, understand, and appreciate Autobiography.
4. The habit of reading Autobiography is inculcated in the students.

**Skill Enhancement Course (SEC) - Second Year- Semester III****Title of the Course: Skills for Employability-I****❖ Course Outcomes:**

1. The students are provided sound knowledge and training of Employability Skills.
2. They are exposed to a variety of self-instructional, learner-friendly modes of communication for improving their employability
3. They are exposed to a variety of sub-skills in order to hone their skills as required in the present job market
4. Work culture is developed among the learners for upcoming job opportunities

**Skill Enhancement Course (SEC) - Second Year - Semester IV****Skills for Employability-II****❖ Course Outcomes:**

1. The students are introduced with Interview, Seminar and Topic Presentation techniques.
2. They developed Conversation skills, Questioning skills while discussing along with Telephone etiquettes.

## **B.A. Third Year**

### **DSE I - Semester V**

**Title of the course: Literary Theory and Criticism**

**(A) Introduction to Literary Criticism**

**Course/Paper code: DSE-ENG- I**

❖ **Course Outcomes:**

- 1) The learners are introduced with the Greek and Roman literary critics.
- 2) They are acquainted with the English literary critics and criticism
- 3) They are able to identify and understand the literary terms, phrases and concepts in English related with the literary theories and criticism.

### **GE I –Semester V**

**Title of the course: Modern English Structure**

**(A) Introduction to English Speech Sounds**

**Course/Paper code: GE-ENG- I**

❖ **Course Outcomes:**

- 1) They are learners are acquainted with the English speech sounds, syllable and its structure
- 2) They have studied the phonemic transcription and consonant clusters
- 3) They are able to understand the word accent and intonation in English speech
- 4) They are able to identify the dialects, idiolects and varieties of British English

### **DSE II Semester VI**

**Title of the course: Literary Theory and Criticism**

**(B) Introduction to Literary Theory**

**Course/Paper code: DSE-ENG- II**

❖ **Course Outcomes:**

- 1) The learners are introduced with the prominent literary theories.
- 2) They are acquainted with the global critical schools
- 3) They are able to understand in depth the major literary theories
- 4) They are enabled for undertaking practical criticism



**GE II –Semester VI**  
**Title of the course: Modern English Structure**  
**(A) Introduction to English Grammar**  
**Course/Paper code: GE-ENG- II**

❖ **Course Outcomes:**

- 1) The learners are acquainted with the English Word Classes.
- 2) They are introduced with word structures and affixes the basic clauses and phrases in English
- 3) They are able to understand the sentence structure and forms and meaning
- 5) They are able to identify the common errors and ambiguities in English sentences
- 6) They are able to comprehend the varieties of English language and its dialects

**Skill Enhancement Course (SEC) - Third Year- Semester V**

**Title of the course: Life Skills –I-**  
**Course/Paper code: SEC-ENG- III**

❖ **Course Outcomes:**

- 1) The learners developed the skills necessary for understanding oneself and the socio-cultural group.
- 2) The learners developed the habit of utilizing their time, efforts and mental energies.
- 3) They are provided training in skills required to find, understand, evaluate, create, and communicate digital information in a wide variety of formats.
- 4) The learners are able to use diverse technologies appropriately and effectively to retrieve information, interpret results, and judge the quality of that information.

**Syllabus For Skill Enhancement Course (SEC) - Third Year - Semester VI**

**Title of the course: Life Skills -II**  
**Course/Paper code: SEC-ENG- IV**

❖ **Course Outcomes:**

1. Learners of B. A. Third Year have developed digital literacy.
2. They are well acquainted with ICT tools.
3. They have developed various Search Skills; and able to make Online Transactions.

**Faculty of Arts**  
**B. A. Degree Programme**

□ **Programme Outcomes:**

**B. A., B. Com. and B. Sc. First and Second Year with English as Compulsory**

The students of B. A., B. Com. and B. Sc. First Year and Second Year acquired basic language skills-- listening, reading, speaking and writing. They are introduced with English language and culture through English literature. They learnt to communicate themselves in a better way. They developed better understanding of life.

□ **Programme Outcomes**

**B. A. with English Optional**

The students are introduced with various genres of literature. They are prepared students as life long learners of literature. They developed better understanding of life through literature. They are introduced with various literary theories. They are introduced with Phonetics and Grammar as a result of it their pronunciations became better and; they developed good sense of grammar. Organization of cocurriculara activities helped in all round development of students and making them responsible citizesns. They became life long learners.

✓ **Program Specific Outcomes:**

**B.A. Third Year (English Optional)**

**a) Classroom Seminars:**

10 students participated in Classroom Seminars. Students were given freedom to choose the topic and asked to prepare their handouts. They learnt to communicate in a effective way. In their feedback they communicated that, they developed good confidence. They developed stage courage.

**b) Group Discussions:**

9 students participated in it. Topic was given before 4 days and students were asked to come with preparation. From their discussion it is observed that they are able to communicate effectively. They developed interest in preparing themselves for group discussion. They learnt to respect the opinions of others and arguing their point politely. They developed good confidence. They became more responsible.

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# **Subject: English**

## Course Outcomes

### *Compulsory English*

Name of the course: (Ability Enhancement Compulsory Course): English Communication  
B.A./B.Sc./B.Com./B.S.W. First Year (Semester I)

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- 1) Through responding to and composing a wide range of texts, the learners will begin to use the English language in the best possible manner.
- 2) Through the close study of texts, students will develop knowledge, understanding and skills in order to communicate effectively in English.
- 3) Learners will value and appreciate the importance of the English language as a key to learning.
- 4) Learners will gain the personal enrichment from study of literary pieces in English.
- 5) Learners will acquire ability to communicate through oral and written texts.

Name of the course: (Ability Enhancement Compulsory Course): English Communication  
B.A./B.Sc./B.Com./B.S.W. First Year (Semester II)

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- 1) Through responding to and composing a wide range of texts, the learners will begin to use the English language in the best possible manner.
- 2) Through the close study of texts, students will develop knowledge, understanding and skills in order to communicate effectively in English.
- 3) Learners will value and appreciate the importance of the English language as a key to learning.
- 4) Learners will gain the personal enrichment from study of literary pieces in English.
- 5) Learners will acquire ability to communicate through oral and written texts.

### **Compulsory English - Second Year**

(Ability Enhancement Compulsory Course)(AEC)(4)

**B.A./B.Sc./B.Com./B.S.W. Second Year Semester III**

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Outcomes

- 1) The learners would develop a critical ability to judge literary texts
- 2) Critical insight into the past theorists would be developed

### **Compulsory English - Second Year**

(Ability Enhancement Compulsory Course)(AEC)(4)

**B.A./B.Sc./B.Com./B.S.W. Second Year Semester IV**

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- 1) The learners would be able to understand the system of speech with English sounds
  - 2) The ability to understand and reproduce standard patterns of speech is facilitated
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# B. A. I

## **Optional English : Name of the course: Understanding Prose Fiction**

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- 1) Learners will be able to appreciate the texts in English Prose Fiction genre.
- 2) Through responding to different texts of Prose Fiction, the learners will acquaint themselves with the wide range of expressions in the English language.
- 3) Learners will carry out the tasks of interpretation of novels and short stories by studying the critical analyses of the prescribed texts.

## **Paper 2- : Understanding Poetry in English**

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- 1) Learners will be able to appreciate English Poetry with an understanding of diverse poetic forms and themes.
- 2) Through responding to different Poetic texts the learners will acquaint themselves with the various nuances of poetic expressions in the English language.
- 3) Learners will carry out the tasks of interpretation of poems by studying the critical analyses of the prescribed texts.

## **Paper 3- : Understanding Non-Fictional Prose in English**

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- 1) Learners will be able to appreciate English Non-fictional prose with an understanding of various prose writings as developed through ages.
- 2) Through responding to different Prose writings learners will be enriched in the use of prose for diverse thematic expressions.
- 3) Learners will attain a certain degree of proficiency in the interpretation of English prose.

## **Paper 4- : Understanding Drama in English**

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- 1) Learners will be able to appreciate English Drama with an understanding of various dramatic texts.
- 2) Through responding to different plays learners will be introduced to various types of dramatic experiences.
- 3) Learners will be able to critically analyze texts from different dramatic genres.

# **BA- II**

## **Optional English - Second Year**

### **Semester III Paper No. V**

#### **Title: Study of Poetry- Sonnets & Elegy**

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1. It will acquaint the students with the literary genre of 'poetry,' particularly sonnet & Elegy,
2. The course will introduce the meaning, types, features and functions of "sonnet Elegy.
3. Students will be encouraged to read, understand, and appreciate sonnet, elegy

### **Semester III Paper No. VI**

#### **Title: Study of Prose- Essays**

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1. It will acquaint the students with the literary genre of 'prose,' particularly Essays.
2. The course will introduce the meaning, types, features and functions of "Prose - Essays"

### **Semester IV Paper No. VII**

#### **Title: Study of Poetry- Odes and Ballads**

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1. It will acquaint the students with the literary genre of 'poetry,' particularly Odes and Ballads.
2. It will introduce the meaning, types, features and functions of "Odes and Ballads"
3. The students will be encouraged to read, understand, and appreciate Odes and Ballads.

### **Semester IV Paper No. VIII**

#### **Title: Study of Prose- Autobiography**

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1. It will acquaint the students with the literary genre of 'prose,' particularly Autobiography.
2. It will introduce the meaning, types, features and functions of "Autobiography."

# **Skill Enhancement Course (SEC) - Second Year**

## **Skills for Employability-I**

### **Semester III**

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1.  Building Vocabulary comprising Spelling and Pronunciation in English
2.  Developing dialogues for Conversation Skills

### **Skill Enhancement Course (SEC) - Second Year**

#### **Skills for Employability-II**

#### **Semester IV**

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1. Developing activities for written communication
2. Developing strategies for professional skills and Soft Skills.

## **B. A. III**

### **DSE I - Semester V**

**Title of the course: Literary Theory and Criticism (A) Introduction to Literary Criticism**

**Course/Paper code: DSE-ENG- I**

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1. The learners would develop a critical ability to judge literary texts
2. Critical insight into the past theorists would be developed

### **GE I –Semester V**

**Title of the course: Modern English Structure (A) Introduction to English Speech Sounds**

**Course/Paper code: GE-ENG- I**

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- 1) The learners would be able to understand the system of speech with English sounds
- 2) The ability to understand and reproduce standard patterns of speech is facilitated

### **DSE II Semester VI**

**Title of the course: Literary Theory and Criticism (B) Introduction to Literary Theory**

**Course/Paper code: DSE-ENG- II**

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- 1) The learners would develop ability to analyse literary texts according to the rules of prosody
- 2) Critical insight into the contemporary theories would be developed



## **GE II –Semester VI**

**Title of the course: Modern English Structure (A) Introduction to English Grammar**

**Course/Paper code: GE-ENG- II**

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- 1) Learners are enabled to understand the logics and practices in the field of English grammar
- 2) The foundational structure of English grammar is explained
- 3) Learners would be able to use the language with grammatical correctness

## **Syllabus For Skill Enhancement Course (SEC) - Third Year**

**Title of the course: Life Skills –I- Semester V**

**Course/Paper code: SEC-ENG- III**

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- 1) Developing personal and social skills in the learners
- 2) Creating gender awareness
- 3) Developing skills for individual and group activities

## **Syllabus For Skill Enhancement Course (SEC) - Third Year**

**Title of the course: Life Skills -II - Semester VI**

**Course/Paper code: SEC-ENG- IV**

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- 1) Developing personal and social skills in the learners
- 2) Creating gender awareness
- 3) Developing skills for individual and group activities

महाराष्ट्र महाविद्यालय, निलंगा  
**Department of Hindi**

Program Outcome, Program specific outcomes and course outcomes

बी.ए. प्रथम वर्ष: ऐच्छिक हिंदी – सत्र- प्रथम व द्वितीय

**प्रश्न पत्र क्र. १- कथा साहित्य**

1. हिंदी साहित्य की कहानी और उपन्यास विधा से छात्रों को परिचित कराना।
2. कथा साहित्य की लेखन शैली से परिचित कराना।
3. कथा साहित्य के माध्यम से छात्रों की चिंतन तथा लेखन कौशल की क्षमता को विकसित करना।
4. विविध पात्रों की मानसिकता एवं क्रिया कलापों से छात्रों में सही और गलत को परखने की क्षमता विकसित करना।
5. कथा साहित्य के माध्यम से छात्रों को विविध समस्याओं से अवगत कर उन समस्याओं के समाधान के लिए उन्हें प्रेरित करना।

**प्रश्न पत्र क्र. २- नाटक तथा एकांकी**

1. नाटक और एकांकी विधा से परिचित करना।
2. नाटक के प्रति छात्रों में रुचि उत्पन्न करना।
3. संवाद लेखन-वाचन कौशल का विकास करना।
4. रंगमंच से संबंधित जानकारी छात्रों को देना।
5. अभिनय के प्रति आकर्षण निर्माण करना।

बी.ए., बी.कॉम., बी.एस्सी. प्रथम वर्ष: द्वितीय भाषा हिंदी – सत्र- प्रथम व द्वितीय

**प्रश्न पत्र क्र. १- साहित्य भारती**

1. द्वितीय भाषा के रूप में छात्रों को हिंदी भाषा और साहित्य का सामान्य परिचय देना।
2. कालानुरूप कहानी और काव्य में आये परिवर्तन को समझना।
3. कहानी और काव्य के माध्यम से छात्रों को परिष्कृत करना।
4. छात्रों को हिंदी के व्यवहारिक ज्ञान से अवगत कराना।
5. हिंदी भाषा के प्रति छात्रों में रुचि उत्पन्न करना।
6. रचनाओं में व्यक्त समस्याओं के समाधान के लिए छात्रों को प्रेरित कर नैतिक मूल्यों को स्थापित करना।

बी.ए. द्वितीय वर्ष: ऐच्छिक हिंदी – सत्र- तृतीय व चतुर्थ

**Outcomes: Paper - V मध्ययुगीन तथा आधुनिक हिन्दी काव्य**

1. हिन्दी काव्य विधा से छात्रों को अवगत कराना।
2. हिन्दी काव्य लेखन की परंपरा को छात्रों से परिचित कराना।
3. काव्य लेखन के कौशल को छात्रों में विकसित करना, तथा सृजन की क्षमता का उन्नयन करना।
4. काव्य में व्यक्त संवेदनशिलता, आस्था, सकारात्मक दृष्टिकोन के माध्यम से छात्रों में सहृदयता को विकसित करना।
5. काव्य विधा के माध्यम से विविध समस्याओं से अवगत कर उन समस्याओं के समाधान के लिए प्रेरित करना।
6. काव्य तथा कवि के विचारों से अवगत कर युवाओं को राष्ट्र निर्माण के लिए तैयार करना।

**Outcomes: Paper - VI निबंध तथा कथेत्तर गद्य**

1. निबंध तथा गद्य की अन्य विधाओं के स्वरूप से छात्रों से परिचित कराना।
2. हिन्दी निबंध की परंपराओं से छात्रों को अवगत कराना।

3. निबंध तथा गद्य की अन्य विधाओं के लेखन कौशल को छात्रों में विकसित करना।
4. निबंध तथा अन्य विधाओं में व्यक्त वैयक्तिकता, वैचारिकता, अनुभवों को छात्रों में विकसित करना।
5. निबंध में व्यक्त राष्ट्रप्रेम, नैतिक मूल्य, राष्ट्र निर्माण की भावना विद्यार्थियों में जागृत करना।
6. छात्रों में लेखन, चिंतन, मनन के कौशल को उन्नत करना।

SEC- छात्रों को हिन्दी कौशल विकास से अवगत कर उन्हें सक्रिय बनाना।

बी.ए., बी.कॉम., बी.एस्सी. द्वितीय वर्ष: द्वितीय भाषा हिंदी – सत्र- तृतीय व चतुर्थ

### प्रश्न पत्र क्र. ३- कथेत्तर गद्य

1. हिन्दी कथेत्तर गद्य विधा से छात्रों को अवगत कराना।
2. हिन्दी कथेत्तर गद्य लेखन की परम्परा को छात्रों से परिचीत कराना।
3. कथेत्तर गद्य लेखन के कौशल को छात्रों में विकसित करना तथा सृजन की क्षमता का विकास करना।
4. कथेत्तर गद्य में व्यक्त संवेदनशिलता, आस्था, सकारात्मकता आदिके माध्यम से छात्रों में सहृदयता को विकसित करना।
5. कथेत्तर गद्य के माध्यमसे विविध समस्याओं से अवगत कर उन समस्याओं के समाधान के लिए छात्रों को प्रेरित करना।
6. गद्य तथा गद्यकारों के विचारों से अवगत कर युवावों में राष्ट्रप्रेम की भावना जगाना।

### प्रश्न पत्र क्र. ४- नाटक तथा प्रयोजनमूलक हिन्दी

1. नाटक तथा प्रयोजनमूलक हिन्दी से छात्रों परिचित करना।
2. नाटक के प्रति छात्रों में रुचि उत्पन्न करना।
3. संवाद लेखन-वाचन कौशल का विकास करना।
4. रंगमंच से संबंधित जानकारी छात्रों को देना।
5. अभिनय के प्रति छात्रों में आकर्षण निर्माण करना।
6. छात्रों को व्यवहारिक हिन्दी के ज्ञान से अवगत करना।

बी.ए. तृतीय वर्ष: ऐच्छिक हिंदी – सत्र- पंचम व षष्ठम

### **Outcome: DSE HIN- I (Elective) हिन्दी साहित्य का इतिहास**

इतिहास का अध्ययन महत्वपूर्ण है, क्योंकि इतिहास की पुनरावृत्ति होती है इसलिए किसी भी साहित्य के इतिहास का अध्ययन भविष्यकालीन निर्माण में अत्यंत आवश्यक होता है। साहित्य की परिस्थितियाँ और प्रवृत्तियाँ हमारे वर्तमान जीवन को बनाने में सहयोग देती हैं। तत्कालीन जीवनमूल्य, जीवन दर्शन, समस्याएँ, संस्कृति का वर्तमान से सह-संबंध समापित होकर जीवन और कलाओं का निर्माण होता है।

### **Outcome: DSE HIN- II (Elective) साहित्यशास्त्र**

शिक्षा ज्ञानवर्धन का साधन है। सांस्कृतिक जीवन का माध्यम है। अपनी क्षमताओं का पूर्ण उपयोग करते हुए जीवन जीने की कला के साथ-साथ व्यक्तित्व के विकास का पथ-प्रदर्शन भी है। इन कलाओं के माध्यम से ही मनुष्य अपने जीवन को आनंदमय बना सकता है। आधुनिक तकनीकी युग में साहित्य की शास्त्रियता मनुष्य जीवन का एव मात्र आधार सिद्ध होती है। अतः साहित्य शास्त्र के अध्ययन का यह परिणाम है।

### **Outcome: DSG HIN- I (Generic) हिन्दी भाषा**

वैदिक संस्कृत, प्राकृत, पाली, अपभ्रंश आदि पडावो से गुजरकर हिन्दी भारतवासियों के दिल की धडकन बनी। यदि भारत की भाषाओं की इतिहास उठाकर देखें तो पता चलता है कि हिन्दी किसी न किसी रूप में अपनी सहोदर भाषाओं को अपना सहयोग प्रदान करती रही है। भाषा मानवीय जीवन का महत्वपूर्ण अंग है। इसलिए भाषा के स्वरूप, प्रयुक्ति क्षेत्र और उसकी उपयोगिता का अध्ययन करना आवश्यक है। हिंदी भाषा आज केवल विचारों के

आदान-प्रदान का साधन न होकर वह नये नये रोजगारों के अवसर भी निर्माण कर रही है। वैश्वीकरण के बदलते परिवेश में हिंदी की उपयोगिता दिन-ब-दिन बढ़ रही है।

### **Outcome: DSG HIN- II (Generic) भाषा शिक्षण**

भाषा मानविय भावनाओं एवं विचारों को अभिव्यक्त करने का सशक्त माध्यम है। भाषा के माध्यम ने ज्ञान प्राप्ति एवं अभिव्यक्ति संभव है। अतः भाषा शिक्षण के माध्यम से भाषाई शुद्धता एवं प्रयोग कुशलता से रोजगार के अवसर प्रदान किए जा सकते हैं। विज्ञान एवं प्राद्योगिकी के उत्तरोत्तर विकास से २० वी शताब्दी में औद्योगिक क्रांति आयी और अब २१ वी शती में सूचना क्रांति हुयी । हिंदी भाषा की उपादेयता इस बात से प्रमाणित होती है कि यह हमारे बहुसंख्य लोंगों की भाषा है साथ ही यह साहित्य की भाषा होते हुये इसमें विज्ञान तथा व्यापार की अद्यतन जानकारियाँ है। इसलिए भाषा शिक्षण का महत्व अक्षुण्ण है।

### **SEC - IV - हिन्दी कौशल विकास III, IV**

बदलते वैश्विक परिदृश्य में आज अर्थ महत्वपूर्ण हो गया है जिसके परिणामस्वरूप बाजारवाद को बढ़ावा मिला है। अतः शिक्षा क्षेत्र में भी पारंपारिक शिक्षा के साथ-साथ कौशल विकास के माध्यम से छात्रों को कार्यकुशल बनाना वर्तमान समय की माँग है। विश्व में भारत की युवाओं का राष्ट्र ऐसी पहचान बन रही है। इस युवाशक्ति की क्षमता को राष्ट्रनिर्माण के लिए उपयोग में लाना आवश्यक है। इसलिए युवाओं में कौशल विकास का होना अनिवार्य है। विज्ञान एवं औद्योगिकी, अभियांत्रिकी, चिकित्सा, विधि तथा प्रबंधन में हिंदी भाषा कौशल अत्याधिक मात्रा में दिखाई देता है।

**Maharashtra Mahavidyalaya Nilanga**

**Department of Marathi**

**BA I Year Course Outcome -2018-19**

**आधुनिक मराठी कविता (पेपर-II)**

**आधुनिक मराठी कवितेतील प्रवाह (पेपर-IV)**

1. विद्यार्थ्यांमध्ये स्पर्धा परीक्षा व निवड चाचण्यांना सामोरे जाण्याची क्षमता विकसित होईल.
2. विद्यार्थ्यांच्या प्रतिभाशक्तीला चालना मिळून नवनिर्मितीला प्रेरणा मिळेल.
3. विद्यार्थ्यांना वाडःमयाच्या विविध प्रकार व प्रवाहांची ओळख होईल.
4. साहित्याबद्दल गोडी निर्माण होऊन वाडःमयाचे आकलन, आस्वाद व मूल्यमापन करण्याची द्रष्टी विद्यार्थ्यांमध्ये येईल.
5. व्यक्तीमत्व विकासाबरोबरच बदलत्या काळाचे भान निर्माण होईल. विद्यार्थ्यांची चिकीत्सक वृत्ती वाढून संशोधक व्रत्तीला नवी दिशा मिळेल.
6. विद्यार्थ्यांना विविध प्रवाहांचे ज्ञान होईल.
7. दलित, ग्रामीण, आदिवासी, स्त्रीवादी, महानगरीय, प्रेम, भाव, सामाजिक, राष्ट्रभक्तीपर व गीत काव्यांचा परीचय विद्यार्थ्यांना होईल.

**आधुनिक मराठी गद्य वाडःमय (पेपर-I&III)**

1. विविध कालखंडातील गद्य वाडःमयाचा विद्यार्थ्यांना परीचय होईल.
2. कथात्मक साहित्याचे वाडःमय प्रकार म्हणून इतर वाडःमय प्रकारापेक्षा वेगळेपण विद्यार्थ्यांना कळेल.
3. आधुनिक गद्य वाडःमयातून अविष्कृत झालेल्या आधुनिक संकल्पना स्पष्ट होतील.
4. विविध कालखंडातील लेखकांच्या लेखनशैली व प्रकारांची ओळख होईल.

**Course Outcome BA II Year 2018-19**

Paper-VI वाडःमय प्रकारः आत्मचरित्र

Paper-VI वाडःमय प्रकारः नाटक

Paper-VII वाड.मय प्रकार: कादंबरी

Paper-VIII मध्ययुगीन गद्यपद्य

**मराठी द्वितीय भाषा :SL -III & IV**

1. मराठी भाषा व वाड:मयासंबधी विद्यार्थ्यांमध्ये संधी निर्माण होईल. आस्वादक क्षमता निर्माण होईल.
2. भाषिक व्यवहाराचे स्वरूप समजून प्रत्यक्ष जीवन व्यवहारात वापर करण्यास मदत होईल.
3. विद्यार्थ्यांना विविध वाड:मय प्रकाराची ओळख होईल.
4. नेमलेल्या कलाकृतीच्या संदर्भात साहित्य परंपराचा स्थूल परीचय होईल.
5. कादंबरी, नाटक, चरित्र, आत्मचरित्र, स्वकथन या वाड:मय प्रकाराची ओळख होईल.
6. कादंबरीची व्याख्या,घटक,प्रकार, रचनाबंध याबद्दलचे ज्ञान होईल.
7. नाटक हे इतर वाड:मय प्रकारापेक्षा वेगळे कसे ते विद्यार्थ्यांना कळेल.
8. नाटकाचे प्रायोगिक मूल्ये व वाड:मयीन मूल्ये यांची ओळख होईल.
9. मध्ययुगीन वाड:मय प्रकारांची ओळख होईल.
10. मध्ययुगीन वाड:मयाच्या प्रेरणा,स्वरूप, प्रवृत्ती समजेल.
11. मध्ययुगीन कालखंडातील भाषेचा परीचय व भाषिक बदलांचा परीचय समजेल.
12. विद्यार्थ्यांमध्ये स्वातंत्र्य, समता, न्याय, बंधुता इ.चा आदर करण्याची मानसिकता वाढीस लागेल.
13. सामाजिक सुसंवाद, सर्वधर्म समभाव, समता, एकात्मता, इ.मुल्ये विद्यार्थ्यांमध्ये वाढीस लागतील.
14. अंधश्रद्धा, भ्रष्टाचार, दहशतवाद, इ.सामाजिक समस्या समजतील व त्या विरोधात विद्यार्थी पुढे येतील.
15. विद्यार्थ्यांमध्ये श्रमप्रतिष्ठा व विविध कला गुणांची जोपासना करण्याची वृत्ती वाढेल.

### **मराठी भाषिक उपयोजन व लेखन कौशल्य (SEC-I)**

1. पत्रलेखनाच्या ज्ञानामुळे कार्यालयीन व व्यावसायिक कामकाज सुरळीतपणे पार पाडता येईल.
2. विविध प्रसार माध्यमांसाठी बातमी लेखन करता येईल.
3. विद्यार्थ्यांना प्रसार माध्यमातील बातमी लेखनामुळे रोजगाराच्या संधी उपलब्ध होतील.
4. जाहिरात लेखनाचे तंत्र अवगत केल्याने विविध व्यावसायिक क्षेत्रात प्रभावी पणे जाहिरात लेखन करता येईल.
5. जाहिरात लेखन कौशल्यामुळे विविध क्षेत्रात रोजगाराच्या संधी मिळतील.

### **मराठी भाषिक नवनिर्मिती व संभाषण कौशल्य(SEC-II)**

1. मुलाखत कौशल्य आत्मसात केल्याने आत्मविश्वासाने मुलाखतीस सामोरे जाऊन यशस्वी होता येईल.
2. विविध क्षेत्रातील व्यक्तीची प्रभावी पणे मुलाखत घेता येईल.
3. सर्जनशील लेखनाच्या कौशल्यामुळे नवनिर्मितीक्षम लेखन करता येईल.
4. भावना व विचारांची अभिव्यक्ती होऊन त्यातून सर्जनशील लेखक ,कलावंत निर्माण होतील.
5. सूत्रसंचालनाच्या अनेक संधी उपलब्ध होतील.

### **Course Outcome BA III (Marathi) 2018-19**

### **मध्ययुगीन मराठी वाड.मयाचा इतिहास(DSE-MAR-I&II)**

1. मध्ययुगीन कालखंडातील महत्वपूर्ण भक्ती संप्रदायाची ओळख विद्यार्थ्यांना होईल.
2. विद्यार्थी मध्ययुगीन कालखंडातील प्रकट झालेल्या मानवी मूल्यांचे आकलन करेल.
3. मध्ययुगातील मराठी वाड.मयाच्या चळवळी व प्रेरणा यांचे आकलन होईल.
4. मध्ययुगीन वाड:मयनिर्मिती आणि स्वरूप यांचे ज्ञान विद्यार्थ्यांना होईल.

5. मध्ययुगीन कालखंडातील वाडःमयीन रचनांच्या प्रकारांचा परीचय होतो.

**साहित्य विचार (GE-MAR-I)**

1. वाडःमयीन द्रष्टीकोणाचे विकसन होईल.
2. भारतीय साहित्यशास्त्राची ओळख होईल.
3. पाश्चिमात्य साहित्य विचारांचा परीचय होईल.
4. विद्यार्थ्यांना रसविचाराचे पायाभूत ज्ञान प्राप्त होईल.
5. शब्दांच्या विविध अर्थांचे ज्ञान होईल.

**भाषाविज्ञान व व्याकरण (GE-MAR-II)**

1. विद्यार्थ्यांच्या भाषिक ज्ञानाची व्रध्दी होईल.
2. मराठी भाषेच्या इतिहासाची ओळख होईल.
3. विद्यार्थ्यांमध्ये लेखनविषयक सजगता निर्माण होईल.
4. मराठीतील व्याकरणिक घटकांचे ज्ञान होईल.

**मराठी भाषिक कौशल्ये विकास (SEC-III)**

1. मराठी भाषिक क्षमतांच्या वाढीस मदत होईल.
2. विद्यार्थ्यांच्या भाषिक कौशल्य विकासाला वाव मिळेल.
3. विद्यार्थ्यांना विविध क्षेत्रात व्यावसायिक संधी उपलब्ध होईल.
4. मराठी भाषेतील ग्रंथ प्रकाशनाचे स्वरूप समजून घेण्यास मदत होईल.

**मराठी भाषिक कौशल्ये विकास (SEC-IV)**

1. विविध प्रकारच्या कार्यक्रमाच्या आयोजनाचे ज्ञान होईल.
2. विविध क्षेत्रातील व्यवसायाच्या संधी उपलब्ध होतील.
3. देहबोलीच्या वापरातून प्रभावी संभाषण साधता येईल.
4. मूद्रितशोधनासाठीचे कौशल्य विकसित होईल.
5. प्रमाण मराठी लेखनाच्या नियमांचा लेखनामध्ये उपयोजन करता येईल.

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Maharashtra Mahavidyalaya, Nilanga

**Social Sciences**

**Economics, History, Public  
Administration, Political  
Science**

# Maharashtra Mahavidyalaya, Nilanga

**B.A. (Economics)**

## **Course Outcomes**

**B.A. F.Y. – I Semester**

### **Paper I: Micro Economics (Compulsary)**

#### **Course Objectives:**

- i) To study the basic definitions and concepts of Economics.
- ii) To study the nature and scope of Economics.
- iii) To study the demand and supply analysis.
- iv) To make the comparative analysis of cardinal and ordinal utility approach.

#### **Course Outcomes:**

- i) Meaning, nature and scope will be studied in this course.
- ii) Student's ability will be utilized to tackle the current economic problems.
- iii) Students will adept more knowledge in the field of modern economics by studying this course.
- iv) This course will increase the utility and application to acquire more satisfaction in life.

### **Paper II: Economy of Maharashtra (Optional)**

#### **Course Objectives:**

- i. To study the main characteristics of economy in Maharashtra.
- ii. To understand the role of Agriculture in economy of Maharashtra.
- iii. To study the concept of Green revolution.
- iv. To consider the role of Industry in economy of Maharashtra.
- v. To study the Industrial policies of Maharashtra.

#### **Course Outcomes:**

- i. Awareness about development in economy of Maharashtra will be created.
- ii. Students will understand the various challenges of Economy in Maharashtra.
- iii. Students will study the Problems of economy in Maharashtra.
- iv. Students will enhance the different concepts of economy in Maharashtra.
- v. This study will suggest remedies for different issues of economy in Maharashtra

**B.A. F.Y. Semester II**

### **Paper III- Micro Economics II (Compulsary)**

#### **Course Objectives:**

- i) To study the Concept and theories of Production.
- ii) To understand the concepts of Cost and Revenue.
- iii) To study the concepts of exchange through market structure.
- iv) To analyze the theory of distribution into various factors of production, such as: Land owner, labor, organizer, and Capital owner.

#### **Course Outcomes:**

- v) Student will get the knowledge about Production, Cost and Revenue.
- vi) Students will be acquainted with the various markets from the point of view of competition.
- vii) This course will be helpful to realize the actual market through competitive point of view.
- viii) The acquisition of knowledge about providing share of different factors of production.

### **Paper IV- Economy of Maharashtra II (Optional)**

#### **Course Objectives:**

- i. To instill the students in terms of Co-operative Movement in Maharashtra.
- ii. To study the Transport and Infrastructure in Maharashtra.
- iii. To distinguish the regional imbalance in Maharashtra.
- iv. To Study the role of Marathwada Development Board (MDB) in the development of Economy in Marathwada.
- v. To Study the role of District Planning and Development Council (DPDC) in the development of Economy in Maharashtra.

#### **Course Outcomes:**

- i) Awareness about development in economy of Maharashtra will be created.
- ii) Students will understand the various challenges of Economy in Maharashtra.
- iii) Students will be study the problems of economy in Maharashtra.
- iv) Students will be enriched with the different concept of economy in Maharashtra.
- v) This study suggests remedies for different Problems in economy of Maharashtra.

### **B.A. S.Y. – III Semester**

### **Paper V: Macro Economics**

**Course Outcomes:** The present paper discusses national income and elaborates its meaning, importance and features. It also introduces the concepts like GNP, NNP, GDP, Personal Income, Disposable Income and Per Capita Income. Further, it numerates the measuring methods of national income and difficulties in it.

It studies theory of money, illustrating its definitions, functions and importance as well as value and measurement. Not only it focuses on quantitative theories of money of Fisher and Cambridge approach but also covers business cycle, its meaning, characters and phases; including Keynesian theory.

The paper includes the classical theories of employment of Say's Law of market and Keynesian theory of income and employment. It is extended to the concept of consumption and other elements.

#### **Paper VI- Statistical Methods-I**

**Course Outcomes:** The present paper is designed to expose the students to the basic statistical methods of economics. The emphasis is on definition, function, importance and limitations. The paper illustrates the role of Data collection and frequency distribution. It will clarify the difference between primary and secondary data. The course also looks at the measures of central tendency.

#### **Skill Enhancement Course: Cashless Transaction (SEC-I)**

##### **Course outcomes:**

After completing the essential reading and activities students should:

- i) Discuss Banking systems in existence and how they are structured
- ii) Explain the relative importance of new modes of payments (cashless) in transactions.
- iii) Discuss the main types of cashless instruments and the main techniques employed by banks.

## **B.A. S.Y. – IV Semester**

### **Banking (Paper-VII)**

#### **Course Outcomes:**

This paper aims to illustrate the concept of Bank in detail emphasising meaning, function and evolution of banking system in India. It throws light on commercial banking and credit creation and their progress after nationalization of banking.

This paper also encompasses the definition, function and development of central bank. Further, the paper explores the pivotal financial institutions such as IDBI, NABARD, ICICI, EXIM etc. and their function and development. The paper also intends to make students aware of the current trends and reformations in banking services, for example E-banking, ATMs, Debit Cards, Educational Loan, Core Banking and other electronic services.

### **Statistical Methods-II (Paper-VIII)**

#### **Course Outcomes:**

This paper is the second part of statistical methods for economics. The paper examines the measures of dispersion in terms of range, quartile deviation and coefficient. It then studies correlation and time series, interpreting meaning, types and importance, applying Karl Pearson's method. This is followed by an introduction of index number illustrating the importance of Laspeyer, Passche and Fisher's methods.

### **Skill Enhancement Course- Data Collection (SEC-II)**

On completion of the course, the student shall be able to -

- i) Demonstrate his/her understanding of sampling methods and the ability to use collection of data
- ii) Identify the appropriate sample techniques for different kinds of research questions
- iii) Identify the appropriate source of data in relation to the collection of research data.
- iv) Able to classify and present the collected data in the form of graph, bar diagram, chart etc.

## **B.A. T.Y. Semester V**

### **INDIAN ECONOMY- GE - ECO –I (Compulsory)**

#### **Course Objectives :**

##### **The specific objectives of the course are -**

- i. To expand student's knowledge about Indian Economy.
- ii. To let students know more about opportunities offered by Indian Economy.
- iii. To let students know more about challenges of Indian Economy.
- iv. To develop assessing capacity of students of economic policies.
- v. To develop economic problem solving capacity of students.

#### **Course Outcomes:**

- i. Student will acquire the knowledge of Indian Economy.
- ii. Student will understand various challenges of Indian Economy.
- iii. Student will be able to suggest various measures to policy makers for solution of economic problem.

### **QUANTITATIVE TECHNIQUES -I (Optional)**

#### **Course Objectives:**

- i. To apply quantitative skill to real economic problems.
- ii. To study the rank correlation coefficient and apply practically.
- iii. To study the various techniques in statistics.
- iv. To study the mathematical techniques in the competitive exams.
- v. To study for the increase of the numerical efficiency among the student.
- vi. To study the use of correlation in the research.

#### **Course Outcomes:**

- a. Student will study the course as a guideline in the general economic affair.
- b. Student will use techniques easily in the research of humanities.
- c. The course will be useful to the student since the course is best on the techniques of statistics.

### **SKILL ENHANCEMENT COURSE**

#### **FINANCIAL INCLUSION AND FINANCIAL LITERACY - SEC-III**

**Course Outcome:** Student will be able to create their own financial plan. Student will be able to create their own budget. Student will propose a personal saving and Investment plan. Student will be examining how their choice of carrier and lifestyles will affect their financial plan. Student will be aware about financial inclusion and financial literacy. Student faces a challenging economical future.

## **SEMESTER – VI- PUBLIC FINANCE -GE – ECO - II (Compulsory)**

### **Course Objectives:**

#### **The specific objectives of the course are -**

- i. To introduce financial aspect of Indian Economy.
- ii. To discuss various concepts of public finance.
- iii. To analyze tax system of Indian Economy.
- iv. To know more about imbalance between public revenue and public expenditure.
- v. To discuss centre and state financial relations in India.

### **Course Outcome:**

Student will able to analyze different concept of public finance.

- i. The student will understand the imbalance between public revenue and public expenditure.
- ii. The students will suggest various measures to decrease deficit.
- iii. The student will be able to evaluate working of recent finance commission.

## **QUANTITATIVE TECHNIQUES -II ( Optional )**

### **Course Objectives:**

- i. To study the index of cost of living.
- ii. To study the Price Index Number.
- iii. To create the awareness about coefficient of skewness among the students.

### **Course Outcomes:**

- i. Students will get knowledge about how the value of money is decided.
- ii. Students will study price differentiation between base year and current year.
- iii. Students will study the change in economic factors in course of times.
- iv. Students will study the economic & social trend with the help of moving average method.

## **SKILL ENHANCEMENT COURSE ENTREPRENEURSHIP DEVELOPMENT- SEC-IV**

### **Course Outcomes:**

Understand the concept of entrepreneurship and its functions. The student will also be able to describe the process of entrepreneurship. Explain the competencies of an entrepreneur. Understand the meaning and ways of generating ideas and able to prepare a business plan. Understand the reasons for success and failure of a business plan. Identify the various support structure available for promoting entrepreneurship

## **Programme Outcome**

The B.A. Economics programme gives students variety of chances in developing their skills and knowledge regarding basic economics, economic structures, economics of the governments, regional, national and international economics, use of statistics and basic mathematics in economics etc. The programme is very useful from the view point of various competitive examinations such as S.S.C., MPSC, UPSC, Banking and other administrative services. The students, after completing their degree in Economics get many chances and job opportunities in different sectors. The knowledge of economics also motivates the students in acquiring the business opportunities at different levels. The programme further provides learning opportunities in different PG programmes like M.A., MBA, M.Phil., and Ph.D. etc.

## **Programme Specific Outcomes**

The department of economics organizes different programmes to inculcate the knowledge economics and market structure amongst the students.

**Classroom Seminars:** Students are encouraged to participate in classroom seminars of different subjects in economics like Indian Economy, Public Finance, Micro Economics and Macro Economics, Statistical Techniques etc. student prepare their notes on their own and give presentations in the classroom. Some students give presentations using ICT tools like Power point. This activity provides stage courage to the students and helps in enriching their knowledge.

**Field Visits and Market Surveys:** the students of B.A. T.Y are specially assigned to collect first hand data by visiting the local markets. The students are encouraged to undertake small projects like understanding the local APMC market, weekly market and cattle market. The students prepare questionnaire and observation sheets in the guidance of the teachers and collect the data from the pre-determined sample. They further analyze the data by using statistical tools taught in the classroom.

**Poster Presentation:** the students of B.A. economics are encouraged to participate in poster presentation competition. Different current topics are given to the students for preparation of posters. The students collect data from different sources like books, journals, newspapers and internet etc. the students submit their poster to the department. These posters judged by the external experts and prizes are given to the winning students. This activity encourages students to show their skills and creativity and learn on self basis.

**Dr. S. S. Devnalkar,**

**Head, Department of Economics.**



**Maharashtra Mahavidyalaya Nilanga**  
**Department of History**  
**Syllabus outcome**

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**B.A. First Year**  
**2018-19**  
**History -Semester – I**

**Paper- I History of Ancient India(up to 647 A.D.)**

As a history student will learn about the age of Paleolithic, Mesolithic, Neolithic, Harappan and Bronze Cultures in ancient India. Interpretation of the historical sources of ancient India as well. They can acquire knowledge about the Vedic Period and the Rise of Jainism and Buddhism culture in ancient times of India. They will gather conception how to Rise of Magadha Empire after complete the abolition of other sixteen Janapadas and after the downfall of the Magadhan empire how to rise of regional powers in Northern part of ancient India.

**Paper -II History of India (648 to 1526 A.D.)**

They can achieve knowledge how to develop Indian feudalism and evolution of the political structures of early-medieval north and south India. They can learn how the conquering of Islam had initiated in India and had transformed of Indian culture, society, religion and agrarian structures under the Islam power of medieval India. They will achieve knowledge about the religious and cultural changing scenarios after the advent of the Islam in India. They will gather knowledge how the Sultanate of Delhi had established in 1206.

## Semester II

**Paper –III, History of Ancient India(upto 647 A.D.)**

They will learn conception will gather among them, how to rise of Magadha Empire from other sixteen Janapadas. They will realize about the religion and messages from Ashoke, the great Mourya Emperor from this paper. about how to rise of Mauryan Empire & politics led by Asoka and the Fall of the Mauryas. They can acquire knowledge about the Post-Mauryan Polities with special reference to the Kushanas and the Satavahanas; Gana-Sanghas, rise of the Guptas, development of the Empire, Art, Architecture and Literature etc. They acquire knowledge towards the changing status of agrarian economy, trade, commerce and urbanization of towns.

**Paper - IV, History of India (648 to 1526 A.D.)**

They can gather knowledge towards the Arabs conquest of Northern part of India from this paper. They can understand how the land of India becomes handed over to the foreign powers gradually from the ancient times to medieval. They will learn how the foundation, expansion and consolidation of the Delhi Sultanate had established and ruled under five dynastic i.e. Ilbari Turkey's, Khaljis, Tughlaqs, Sayyed and Lodhi for a long time.

**B.A. Second Year**  
**2018-19**  
**History -Semester – III**  
**Syllabus outcome**

**Paper – V History of Medieval India (1526-1707 A.D.)**

They will learn how the foundation, expansion and consolidation of the Mughal empire long time. They also learn about the nature of the state, nobility and under the Ulemas during Sultan and Mughal rule in medieval India. After the downfall of the Delhi Sultanate how the Mughal dynasty had come to power in 3 India and had ruled upto 1707.

**OR**

**History of Maratha (1630-1707 A.D.)**

Students will be able to explain the Socio- economic, cultural and Political background of 17th century Maharashtra. Students will be able to demonstrate by analyzing and evaluating historical information from multiple sources of Maratha History. Students will be able to examine the difference between fact and fiction of Maratha History . Students will be able to discuss the religious policies of Chhatrapati Shivaji Maharaj and background of healthy Nationalism in India

**Paper – VI History of British India (1526-1707 A.D.)**

Students of history will learn how to raise regional powers in India after the downfall of the Mughal Empire and in the course of time how to rise of the Company's absolute power in India. They can understand about the colonial nature of state during 200 years rule of the British power in this land. Hey can gather knowledge about how the Indian society, politics, religion and economy had changed during the Company's rule in India. They will aware about in which situation the Indian Nationalism had raised among the Indian people for freedom. They will acquire knowledge about the freedom struggle and partition of India and aftermath.

**OR**

**Socio-Religious Reform Movement in India**

This course is conceived to introduce the students to the social and religious change in India expressed in various social reform movements. Students will explore the significance and impact of prominent social and reform movements. It will help the students to understand how the ideals of rationalism, humanism and universalism were encouraged by the Indian social reformers. The course will attract students from a wide variety of social science disciplines.

## **B.A. Second Year**

### **History -Semester – IV**

#### **Paper – VII History of Medieval India (1526-1707 A.D.)**

They can acquire knowledge towards the polity, economy, Religion, Art, Architecture and Society during Mughal rule in India.

**OR**

#### **History of Maratha (1630-1707 A.D.)**

Students will be able to analyze administrative system of Marathas . Students will be able to explain nature of Maratha Polity. Students will be able to identify strength and weakness of Maratha administrative system. Students will be able to review socio- political power structure of Maratha period.

#### **Paper – VIII History of British India (1526-1707 A.D.)**

They learn how to establish the Company's Rule in India after the battle of Plessey and Legitimized the regulating Act, Pitt's India Act, Charter Acts of 1813, 1833 and 1853, Administrative, Military, Police and Educational Reforms as well. They will learn towards the land revenue systems under the company's rule in India at the same time. The renaissance and socio-religious reforms movement occurred by Rammohan Roy (Brahma Samaj), Young Bengal, Vidyasagar under the rule of the Company's rule in Bengal.

**OR**

#### **Socio-Religious Reform Movement in India**

To acquaint students with Socio-Religious Reform Movements that shaped the modern India. Indian society in the nineteenth century was caught in a vicious web created by religious superstitions and social obscurantism. Hinduism had become steeped in magic and superstition. The priests exercised an overwhelming and, indeed, unhealthy influence on the minds of the people. Idolatry and polytheism helped to reinforce their position, and their monopoly of scriptural knowledge imparted a deceptive character to all religious systems. There was nothing that religious ideology could not persuade people to do.

#### **SEC I & II    Tourism**

Students will learn how to maintain documentary, visual and material remains of the past either in house or Institutions. Students will be encouraged to undertake collection, documentation and exhibition of such materials in their localities and colleges. They can understand towards the important and significance of the Museum and Archives to build the history of India. Thus education tour to the National Archives and National Museum is an integral part of the history students.

**B.A. Third Year**  
**2018-19**  
**History -Semester – V**  
**Syllabus outcome**

**Paper – IX History of Modern India 1857- 1947**

They will learn from this chapter about the local rebellion and movements like the Indigo rebellion, the Deccan Riots, the growth of the new middle class; the age of associations, the Aligarh movement, the Arya and the Prarthana Samaj aftermath of 1857. They will learn the real historiography of Indian Nationalism; Birth of Indian National Congress, The Moderates and the Extremists, Partition of Bengal, the Swadeshi movement in Bengal in 1905.

**OR**

**Paper – IX History of Modern World**

They will learn about the French Revolution and its impact of European countries. Unity and power makes people to strength which has showed in the French revolution in 1789. How the Industrialization had occurred and it's affected on socio economic transformation of Europe. They will know about the politics of super power among the European countries. How the sense regarding the nationalism and unification had developed among the European countries on eve of the 2nd world war.

**Paper – X Social Reformers in Modern Maharashtra**

Learners will acquire a deeper and more inclusive understanding of landmark events, personalities and themes in the history of Modern Maharashtra. To acquaint the students with the socio-economic and cultural transformation of Modern Maharashtra

**SEC (Paper – III) Appreciation of Indian Art**

Students will gather knowledge about the Indian art, from ancient to contemporary times, in order to understand and appreciate its diversity and its aesthetic richness. The course will equip for history students with the abilities to understand art as a medium of cultural expression. Students will acquire knowledge through direct exposure to Indian art through visuals, and visits to sites and museums.

## **B.A.T.Y.-Semester – VI**

### **Paper – XI History of Modern India 1857- 1947**

They can acquire knowledge how to rise of Gandhis power in Indian politics and his activities towards the freedom like, Rowlatt Satyagraha, Khilafat and Non-cooperation movement, The Swarajya party, Poona Pact, Civil Disobedience Movement, Quit India Movement. They also learn how to raise communal politics and opposition politics on the eve of the freedom movement in India and aftermath of partition in India.

**OR**

### **Paper – XI History of Modern World**

Students of history will learn about how the world became dividing after First World War among the super powers of the world. They also learn how the aggressive foreign policy of Italy and Germany influenced to the European countries and compelled to form allied powers of the world. Gradually, the 2nd world war had occurred and the League of Nations was established aftermath of the war which affected to the world politics. Ultimately, the world became divided into two super powers .i.e. USSR and associate countries on the other hand USA and their associate powers.

### **Paper – XII Social Reformers in Modern Maharashtra**

Students of history will learn about Social Reformers in Modern Maharashtra .To enhance the perception ability of the students. To widen the broad view of the students about the society. To make preparation for competitive examinations. To maintain the social harmony. To know the legacy of the great social reformers and thinkers.

### **SEC (Paper – IV) Appreciation of Indian Art**

Students of history will learn Appreciation of Indian Art To get jobs in Archaeology Department and Tourism Industries. To conserve the historical Monuments and places in their local areas. To appreciate the various contexts of Indian art. To give wide exposure to the Indian art through site visits and visual effects. To create awakening to conserve the historical heritage by way of establishing the Museums.

**Dr. S. G. Benjalwar**  
**Head of the Department**  
**Maharashtra Mahavidyalaya Nilanga.**

**Maharashtra Mahavidyalaya, Nilanga**

**Faculty of Arts & Social Sciences**

**Bachelor of Arts (B.A.) Public Administration**

**Course Outcomes**

**B.A. F.Y.- Semester I**

**Course- Principles of Public Administration Paper I**

**Course Outcomes:** Administration is as old as mankind. It has acquired all spheres of human life right from birth to death. It is very close to the daily life of any person in practical. Public Administration is one of the major branches of administration as a whole. Public Administration Studies the systematic implementation of Laws and policies, theories principles and its controlling system.

**Course- Evolution of Indian Administration and Constitution Paper II**

**Course Outcomes:** India is the largest democratic administrative Nation. The subject Pub. Admn. Promotes students to understand Indian Administrative system. Besides, inspiring the students for Indian Administrative service as well as a special point of view. It also introduces with the various commissions and committees in our country. The subject concerns with the democratic values of improving equality, Justice, Security and sustains human rights of a democratic personnel. In addition, the subject is primarily concerned with expanding market share, generating revenue and earning profit. It concerns with different on concepts. Its accountability, governance, decentralization etc. The subject proves as a creator of good leader as well as good administrator.

**B.A. F.Y.- Semester II**

**Course- Administrative Organizations Paper III**

**Course Outcomes:** The subject stands as an integral element of democratic system of the nation. It is intended that the subject is introduced, as a general subject to the students of U.G. level. The subject is introduced to comprehend the importance of Administration theory and practice. as well as Public Administration and private Administration system, departments, public corporation.

**Course- Indian Administration Paper IV**

**Course Outcomes:** The subject goals to inform Indian constitution & administration as well as ancient, medieval and modern administrative system. The subject makes students to aware of the fundamental rights and duties of Indian citizens bestowed by the Indian Constitution. It informs U.G. level students about Indian Parliament and its Administrative System, President, P.M. Council of Ministers, Supreme Court etc.

**B.A. S.Y.- Semester III**

**Course-Personnel Administration Paper V**

**Course Outcomes:** the course aims- To familiarize the students with basic process of Civil Service Recruitment in Indian Personnel Administration. To understand how to Train Civil Servants for their Better Role in Indian Governance and Administration. To know the Systematic process in Personnel Administration (Recruitment to Retirement of the Personnel).

**Course- State Government and Administration Paper VI**

**Course Outcomes:** The Course introduces and provides knowledge of State Government and Administration. To understand process of State Judiciary and to know perceive Constitutional and Statutory Agencies.

**Skill Enhancement Course – I Rural Development and Empowerment Programmes**

**Course Outcomes:** To understand Rural Development and Empowerment. To study various Rural Development Programmes. To understand various issues in rural development programmes

**B.A. S.Y. - Semester IV**

**Course- Office Administration Paper VII**

**Course Outcomes:** To understand the meaning of Office Administration. To introduce the Office Procedure and Method. To identify various problems in Office Administration.

**Course- District Administration Paper VIII**

**Course Outcomes:** To know what is District Administration means. To understand Structure and function of various departments of District Administration. To provide knowledge of the revenue system, Judiciary system and Police administration at district level.

**Skill Enhancement Course – II**

**Application of E-Governance and E-Devices in Administration**

**Course Outcome:** To familiarize the students with concept of E-Governance and digital technology in service delivery. To understand how to use of E-Governance in various administrative departments. To know the application of E-Governance and various issues.

### **B.A. Third Year Semester – V**

#### **Course-Administrative Thinkers (DSE)**

**Course Outcomes:** The students will be channelized to learn and understand various theories put forth by administrative thinkers regarding public administration and management. Through the narratives described in the course students will be made acquainted with ancient theories advocated by administrative thinkers like Kautilya about good governance and his views about eradication of corruption.

#### **Course- Financial Administration (DSE)**

**Course Outcomes:** The present syllabus will help the students to study various phases of Indian budget . The students will be channelized to understand various steps of budget such as preparation, Legislation and Execution. The students will be able to demonstrate the implementation of budget and various financial machineries.

#### **Course- Rural Local Government in Maharashtra (GE)**

**Course Outcome:** The Content of the course will enable the students to prepare themselves for various competitive examinations such as U.P.S.C., M.P.S.C. and other competitive examinations. The students will learn and try to understand the functioning of several democratic institutions such as Zilla Parishad, Panchayat Samiti and Gram Panchayat. Due to the course the students will be motivated to develop interest towards rural development.

### **Skill Enhancement Course Paper No:-SECPA - III**

#### **Course- Disaster Management**

**Course Outcome:** In the recent years the branch of Disaster Management has attained unique importance. The course will teach the students the utility of the disaster management.

### **B.A. Third Year Semester – VI**

#### **Course-Recent Trends in Public Administration (DSE)**

**Course Outcome:** The era of Information Technology has given to many new trends which have all walks of life and administration of several offices is not an exception. The said course will help the students to understand such changes and get to it.

#### **Course- Administrative Thoughts (DSE)**

**Course Outcome:** The students will be channelized to learn and understand various theories put forth by Modern administrative thinkers regarding public administration and management. Through the narratives described in the course students will be made acquainted with theories



advocated by administrative thinkers like Elton Mayo, Abraham Maslow about Human Relations Theory.

### **Course- Urban Local Government in Maharashtra (GE)**

**Course Outcome:** The utility of the course is discuss and analyze the problems created due to urbanization and suggest possible salutations about urban management and other related issues. The students will learn and try to understand the functioning of several democratic urban institutions such as Nagar panchayat, Nagar Parishad and Municipal Corporations. .Due to the course the students will be motivated to develop interest towards urban development of Maharashtra state.

### **Skill Enhancement Course Paper No: - SECPA: - IV**

#### **Administration of Non Government Organizations**

**Course Outcome:** In the country like India, the role of NGO is very significant. The purpose of the course is to make the students to analyze the work of NGOs and to inspire them to undertake such project according to his potential and skills.

### **Programme Outcome**

The B.A. Public Administration programme provides overall knowledge of the administrative system from local to national level. It is aimed at producing capable students to cater in different administrative services. After completing this programme, students can appear for variour competitive exams like MPSC, UPSC and SSC etc. The programme is designed in such a way that the students will be encouraged to gain theory and practical knowledge about the governance and administrative system.

### **Programme Specific Outcomes**

The department of Public Administration organizes various activities related to this programme, such as-

**Poster Presentation:** The department regularly organizes poster presentation competition for all students. Various interesting and latest topics are offered for the competition like, importance of voting, rights and duties of voters, local self governance system etc. Students from all three classes participate in these competitions. The office of Tehsildar, Nilanga also organizes various activities in the college regarding awareness of students. Prizes are sponsored by this office for best and innovative poster presentation.

**Rangoli Competition:** the department of Public Administration organizes Rangoli competition based on national and regional issues. This competition is organized with a view of promoting girl students to participate in such activities. Students from all classes participate in this competition.

**Visit to Local Administrative Offices:** the department organizes visits to different local administrative offices such as local municipal council, office of Tehsil, Deputy Collector Office, and local APMC etc. the students get to interact with administrative officers and ask questions related to administration. The students also prepare questionnaire to collect information regarding various aspects of public administration.

**Classroom Seminars and Presentations:** the department also organizes classroom seminars for SY and TY students. The students prepare their handouts and submit them to the department. Students are judged by external examiners. This activity provides stage courage and indepth analysis ability to the students.

**Maharashtra Mahavidyalaya, Nilanga**  
**Department of Political Science**  
Syllabus Outcome  
B.A. First Year (Semester I & II)

**Paper- I & III Political Theory**

This is an introductory paper to the concepts ideas and theories in political theory. It seeks explain the evaluation and usage of these concepts, ideas and theories with reference to individual thinkers both historically and analytically. The different ideological stand points with regard to various concepts and theories are to be critically explained with the purpose of highlighting the difference in their perspectives and in order to understand their continuity and change. Fort, her more there is need to emphasize the continuing relevance of these concepts today and explain how in idea and theory of yester years gains prominence in contemporary political theory.

**Paper- II & IV Government and Politics of Maharashtra**

This paper gives an in depth insight to the level of state politics in India in this context it offers to study the patterns or stat politics especially in the light of politics of Maharashtra State but focus on the changing nature of political culture thereof and the role of different regional parties in shipping states political system followed by structure and function of state government state legislature and local self-government followed by electoral process which is responsible for stability or instability of Maharashtra political system.

B.A. Second Year (Semester III & IV)

**Paper- V Indian Constitution**

1. To understand the philosophy of Indian constitutions.
2. To know the how to making of Indian constitutions there sources and preamble.
3. To know the salient features of Indian constitutions
4. To know what the constitutional provisions in Indian constitution.
5. To understand power and functions of the union government.

**Paper- VI International Relations**

This course introduces the students to evaluation and importance of theories of international relations theories should be traditional as well as modern. This paper covers also meaning, definition, nature, scope and importance of International relations. In addition this paper contains contemporary changes in International relations.

**Paper- VII Indian Government and Politics**

1. To learn the center state relations of legislative, administrative and financial.
2. Evaluating the electoral process in India with focus on the election commission.
3. To know the Indian party system, its development and looking at the Ideology of dominant national parties.
4. Evaluating the role of various process on Indian politics- corruption, religion casteism, communalism.

**Paper-VIII International Organization & Issues**

Students can expect to learn the following by the end of this paper to define understand and use concepts and terms relevant to the study of international organizations. To understand the impact of international organizations on domestic and international politics. Students also know the basic structure processes and trends of international politics. Role of UN, International Law and Contemporary Critical Issues in world politics.

**SEC**

**SEC- I Election Management**

To understand the election, electoral, voting behavior, political participation, public opinion of the context of democracies with special reference to India. Students also learn debates, principles and practices in election management.

**SEC-II Political Journalism**

To understand the students of political journalism provide voters with the information to formulate their own opinion and participate in community local and global matter that will effect then they can do different mediums in print, broadcast, government status, election updates etc.

## **B.A. Third Year (Semester V & VI)**

### **Paper – DSE I – Indian Political Thought**

This course will encourage students to understand and decipher the diverse and often contesting ways in which the ideas of nationalism, democracy and social transformation were discussed in pre and post-independence India.

### **Paper DSE II Political Ideology**

This paper will acknowledge students with various classical political ideologies and its contemporary relevance.

### **Paper GEC I – Western Political Thinkers**

The course will narrate students the legacy of the thinkers and orient them about continuity and change within the western political tradition. It helps them to study historical aspects western state and society.

### **Paper GEC II– Modern Political Analysis**

This paper content will helpful for student to draw new meaning as per recent time they can understand new concept of political science in the reference of modern age.

### **Paper SEC-III Indian Parliamentary Procedure**

This skill enhancement oriented course attempts to fill the void and presents some basic facts and authentic information about our parliament. It seeks to briefly narrate the structure and functioning of the Indian parliament while it exists in the session. This paper will helpful and encourage students to know the actual working of the houses the sittings, the role of the presiding officers, the question hour.

### **SEC IV Democracy and Good Governance**

This paper provide the conceptual framework of the democracy and good governance it delves deep into meaning origin, forms of democracy and good governance in general. This course will helpful and encourage students to acknowledge democratic process in India.

## **PROGRAMME OUTCOME**

1. Understand the world, their country, their society, as well as themselves and have awareness of ethical problems, social rights, values and responsibility to self and others.
2. Understand different disciplines from natural and social sciences to mathematics and art, and develop interdisciplinary approaches in thinking and practice.
3. Think critically follow innovations and developments in science and technology, demonstrate personal and organizational entrepreneurship and engage in life-long learning in various subjects.
4. Communicate effectively in society.
5. Take individual and team responsibility, function effectively and respectfully as an individual and a member or a leader of a team, and disciplinary teams.

## **PROGRAMME SPECIFIC OUTCOMES**

The department of Political Science organizes various activities related to this programme, such as-

**Poster Presentation:** The department regularly organizes poster presentation competition for all students. Various interesting and latest topics are offered for the competition like, importance of voting, rights and duties of voters, local self governance system etc. Students from all three classes participate in these competitions. The office of Tehsildar, Nilanga also organizes various activities in the college regarding awareness of students. Prizes are sponsored by this office for best and innovative poster presentation.

**Rangoli Competition:** the department of Political Science organizes Rangoli competition based on national and regional issues. This competition is organized with a view of promoting girl students to participate in such activities. Students from all classes participate in this competition.

**Classroom Seminars and Presentations:** the department also organizes classroom seminars for SY and TY students. The students prepare their handouts and submit them to the department. Students are judged by external examiners. This activity provides stage courage and in depth analysis ability to the students.

Maharashtra Mahavidyalaya, Nilanga

**Commerce**



**Faculty of Commerce**  
**Course Outcomes**  
**Class; B. Com. F. Y.**

1) Financial Accounting

To develop conceptual understanding of fundamentals of financial Accounting system and to impart skills in accounting for various kinds of business transactions.

2) Business Communication

To develop communication skills and overall personality development of the students

3) Business Economics

The objective of this course is to acquaint the students with the business economic principles as are applicable in business

4) Business Economics

The objective of this course is to provide fundamental basic Knowledge of statistics techniques as applicable to business.

5) Salesmanship

This Course is designed to help Students to Learn Qualities and Functions of Salesmanship in a Changing Global Scenario

**Faculty of Commerce**  
**Course Outcomes**  
**Class; B. Com. S. Y.**

1) Corporate Accounting

To understand knowledge of new trends in corporate accounting issue of share and redemption shares

2) Corporate Law

To acquire knowledge and develop understanding of the necessary framework of companies with reference to various provisions or company act-2013

3) Principles of Business Management and practice

To know to make planning, decision making, controlling, staffing, organizing etc. to understand new approaches in management

4) Cost Accounting

To understand knowledge of cost accounting, single output costing, material cost, labour cost and overhead

5) Banking and Finance

To study the Indian Banking system, Banking regulation act 1949, Commercial Bank, Development Bank and Digital Bank

6) Income tax

To give knowledge of direct and indirect tax

**Faculty of Commerce**  
**Course Outcomes**  
**Class; B. Com. T. Y.**

1) Advanced Accounting & Auditing

To develop the accounting knowledge and its application in different fields also to develop practical knowledge of auditing.

2) Management Accounting

The objective of the course is to equip the students with the ability to analysis interpret and use accounting information in managerial decision making. The student is expected to have a good working knowledge of the subject. This course provides the students an understanding of the application of accounting techniques for management.

3) Economic Development and Planning in India

To impart the knowledge about Objectives and economic Planning in India, Mixed economy and economic planning, Development Strategy in India, Liberalisation, Privatisation and Globalisation.

4) Business Regulatory Framework

The Objective of this course is to provide a brief idea about the framework of Indian Business Law

5) Human Resource Management

Objective of this Course is to provide a sound understanding of the basic principles of Human Resource Management and their applications in the business & industry.

6) Marketing Management

Objective of this Course is to provide a sound understanding of the basic principles of Human Resource Management and their applications in the business & industry.

7) Training & Project work

To visit different business units and improve the practical business knowledge among the students, prepare for report writing.

**Faculty of Commerce**  
**B. Com. Programme Outcomes**

To impart the various skills like accounting skills managerial skills communication skills and overall personality development of the students, also to make the students competent to face the challenges in present competitive market acquaint the students relating to changes in global scenario besides this the theoretical concepts and its application into the business. To develop among the students the qualities of an entrepreneurship also to give the ideas about the modern business strategies. Apart from this to provide the ideas relating to various fields like banking sector, insurance sector, Income Tax, e-commerce in addition to this give the knowledge about Indian economy Five Year Plan WTO New industrial Policy etc

# Maharashtra Mahavidyalaya Nilanga

## DEPARTMENT OF COMMERCE

### **SEM I III & VI**

1. To develop communications skills of the student
2. To help in personality development
3. To improve speaking writing and interview skills of student
4. To acquire knowledge and develop understanding of the necessary frame work of companies with reference to various provisions of companies act 2013
5. To understand knowledge of new trends in cooperate accounting issue of shares redemption of shares
6. To gain the holistic knowledge of human resource engaged in the business world to understand the nature and applicability of the mature HR practices

### **Semester second fourth and sixth**

1. To acquired knowledge about law related to businesses
2. The object of the course into make the students practically sound in maintaining accounting of cooperate world
3. Enrich the students with thorough knowledge and desire skill to human resource in the field of commerce and industries

Maharashtra Mahavidyalaya, Nilanga

## **Science**

**Chemistry, Zoology, Botany,  
Mathematics, Physics**

**Department of Chemistry**  
**Learning objectives and Outcomes**

**B.Sc.-1st Semester**

**Subject-Inorganic Chemistry**

**Learning Objectives**

1. To understand the shapes of different orbitals.
2. To understand different principles for filling electrons.
3. To understand how to draw energy diagrams.
4. To understand how to calculate bond order.
5. To understand how to calculate lattice energy through Born Haber Cycle.

**Learning Outcomes**

1. Able to write electronic configuration of given atomic number.
2. Able to tell the name of orbitals by recognizing shapes of orbitals.
3. Able to calculate bond order of different molecules.
4. Able to draw MO diagrams of different molecules.
5. Able to draw structures of different ionic solids.
6. Able to calculate effective nuclear charge using Slaters Rule.

**Department of Chemistry**  
**Learning Objective & Outcome**

**B.Sc.- 1st Semester**

**Subject: Physical Chemistry**

**Learning Objective**

1. Students will be able to describe the concept of pressure from a macroscopic and microscopic perspective.
2. Students will describe the relationship between partial pressures and total pressure as described in Dalton's Law of partial pressure.
3. Students will be able to explain the quantitative relationship between T,V,n & P as described by kinetic molecular theory.
4. The students will be able to compare and contrast the chemical behaviour and physical properties of common substances.
5. The students will be able to classify matter by its state and bonding behaviour using the periodic table as a reference.

**Learning Outcomes**

1. Students should be able to describe the characteristic of the three states of matter.
2. Students should be able to describe the different physical properties of each state of matter.
3. Students should be able to determine the difference between solids, liquids and gases.
4. Students will be able to define what matter is and where you can find it.
5. Students will be able to give examples of solids, liquids and gases.

**Department of Chemistry**  
**Learning Objective & Outcomes**

**B.Sc. - 1<sup>st</sup> Semester**

**Subject : Organic Chemistry**

**Learning Objective**

1. To understand the core concepts of organic chemistry i.e. resonance, hyperconjugation, inductive effect etc. and their application.
2. To study about the isomerism and types of isomerism.
3. To understand optical isomerism, geometric isomerism and conformational isomerism.
4. To acquire basic knowledge of reactive intermediates and mechanism of organic reactions.
5. To study about nomenclature, synthesis, isomerism and physical properties of alkanes and cycloalkanes.

**Learning Outcomes**

Upon successful completion of this course, the student will be able to

1. Recognize and draw constitutional isomers, stereoisomers, including enantiomers and diastereomers, racemic mixture and meso compounds .
2. Know the fundamental principles of organic chemistry and predict outcomes and derive mechanism of various types of organic reactions.
3. Understand various types of reactive intermediates and factors affecting their stability .
4. Understand the nomenclature, synthesis, isomerism and physical properties of alkanes and cycloalkanes

## Department of Chemistry

### Learning Objective & Outcomes

B.Sc. - 2<sup>nd</sup> Semester

**Subject : Inorganic Chemistry**

#### Learning Objective

1. The purpose of study semiconductor devices and materials is to familiarize students with P-N junction and transistors.
2. The students will be able to understand general trends in the chemistry behind p-block elements.
3. The students will be able to know the important compounds and important applications of compounds of boron and carbon.
4. The students will understand the biological significance of sodium ,potassium, magnesium and calcium.
5. The students will be able to explain large scale preparation and properties of industrially viz., cement, plaster of paris, sodium hydroxide, sodium carbonate and bicarbonate etc.
6. The students will be able to describe the salient features of alkali and alkaline earth metals.

#### Learning Outcomes

1. The students will be able to design and carry out scientific experiments as well as accurately record and analyse the results of experiments.
2. Students will be able to explain why chemistry is an integral activity for addressing social, economic and environmental problems.
3. Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.
4. The students will be able to describe the periodic table as a list of elements arranged so as to demonstrate trends in their physical and chemical properties.
5. The students will able to state the principle resemblances of elements within each main group in particular alkali metals, alkaline earth metals , halogens and noble gases.



## Department of Chemistry

### Learning Objective & Outcomes

B.Sc. - 2<sup>nd</sup> Semester

#### Subject : Physical Chemistry

1. To describe a reaction rate in terms of a change in concentration divided by a change in time (at constant volume) and a general form of a (differential) rate law.
2. To write a general form of the rate law for any chemical reaction and define the order of a chemical reaction.
3. To determine integrated rate expression for zero order, first order, second and third order reaction and their respective half-life period expressions.
4. To study the various factors which affect the rate of a chemical reaction such as concentration, temperature, solvent, catalyst etc. And theories of chemical kinetics.
5. acquire basic knowledge of electrode conduction.
6. determine the solubility of sparingly soluble salts.
7. explain the various methods for the determination of transport number.

#### Learning Outcomes

Upon successful completion of this course, the student will be able to

1. State the basic principles electrochemistry
2. Mention and explain various methods for the determination of transport number.
3. Explain the concepts of electrolytic conduction and dilution
4. Understand rate of reaction and factors affecting it.
5. Derive integrated rate expressions for zero order, first order, second order and third order reaction.
6. Understand theories of reaction kinetics and differentiate them.

**Department of Chemistry**  
**Learning objectives and Outcomes**

**B.Sc.-2<sup>nd</sup> Semester**

**Subject-Organic Chemistry**

**Learning objectives**

1. To identify addition reactions for alkenes and alkynes.
2. To understand the nature of double and triple bonds for addition reactions.
3. To identify the difference between dienes and alkenes.
4. To understand the mechanism of attack of electrophiles and nucleophiles.
5. To understand the preparation methods for alkenes, alkynes, alkyl halides.

**Learning outcomes**

1. Recognize the basic practical skills for the synthesis of alkenes, alkynes, alkyl halides.
2. Able to predict the reactivity of organic compound from its structure.
3. Able to understand the rules for naming different organic compounds
4. Able to recognize mechanism for given chemical reaction.

**Department of Chemistry**  
**Learning Objective & Outcome**

**B.Sc.- 3<sup>rd</sup> Semester**

**Subject: Inorganic chemistry**

**Learning Objective**

1. In order to study transition metals to understand the trends in properties and reactivity of the d-block elements.
2. To explain the typical physical and chemical properties of the transition metals.
3. To identify simple compound classes for transition metals and describe their chemical properties.
4. To make the students understand that solutions which have water as a solvent are called aqueous solutions and those with solvent other than water are called non-aqueous solutions.
5. The students should know that that equivalent weight of an acid and base can be find out from their molecular weight and the acidity and basicity of that compound.
6. The student should understand that there are different methods of expressing concentration of a solution such as mass percent, ppm, normality, molarity, and molality.

**Learning Outcomes**

1. The students will be able to explain the fundamental concepts in coordination chemistry of transition metals.
2. The Students should be familiar with the basic knowledge of the non-aqueous solutions and applications of non-aqueous solvents in analytical chemistry.
3. The students will develop the ability of effective solving practical problem of analytical chemistry of non-aqueous solutions.
4. Students will be able to describe different quantitative methods of analysis of organic and inorganic substances.
5. Students will be able to demonstrate methods of drugs analysis and pharmaceutical calculations.

**Department of Chemistry**  
**Learning Objective & Outcomes**

**B.Sc. - 3<sup>rd</sup> Semester**

**Subject : Physical chemistry**

**Learning Objective**

1. To understand thermodynamic terms: system, surrounding etc. Types of systems, intensive and extensive properties. State and path functions and their differentials.
2. To understand Heat capacity, heat capacities at constant volume and pressure and their relationship. Joule's law
3. To understand the concept of equilibrium constant, free energy, chemical potential
4. To understand the Nernst distribution law – its thermodynamic derivation, modification of distribution law when solute undergoes dissociation, association and chemical combination. Applications of distribution law
5. To understand the determination of degree of hydrolysis and hydrolysis constant of aniline hydrochloride

**Learning Outcomes**

After the completion of the course, Students will be able to

1. Recognize the basic terms of thermodynamic.
2. Able to predict the energy change in heat capacities at constant volume and pressure and their relationship.
3. Able to derive Joule's law and its application.
4. Able to derive relationship between modification of distribution law when solute undergoes dissociation
5. Able to recognize the degree of hydrolysis and hydrolysis constant of aniline hydrochloride.

**Department of Chemistry**  
**Learning objectives and Outcomes**

**B.Sc.-3rd Semester**

**Subject-Organic Chemistry**

**Learning Objectives**

1. To understand the methods for preparation of alcohols.
2. To understand the different classes of alcohols.
3. To understand the structure of carboxylic acid and their derivatives.
4. To understand the reactivity of different carboxylic acid derivatives.
5. To understand the chemical reactions of phenols.

**Learning Outcomes**

1. Able to recognize structures of acid halides, esters, amides, acid anhydrides.
2. Able to convert given name of alcohol to structure.
3. Able to write the order of reactivity of different carboxylic acid derivatives.
4. Able to describe different classes of alcohols.
5. Able to write down structure of phenol and phenoxide ion.

**Department of Chemistry**  
**Learning Objective & Outcome**

**B.Sc. - 4<sup>th</sup> Semester**

**Subject: Inorganic chemistry**

**Learning Objective**

1. The students will understand the importance of periodic table of the elements, how it came to be and its role in organising chemical information.
2. The students will develop the ability to effectively communicate scientific information and research results in written and oral formats.
3. The students will learn the laboratory skills needed to design, safely conduct and interpret chemical research.
4. The primary aim of a qualitative research is to provide a complete detailed description of the research topic.
5. Quantitative research focuses more in counting and classifying features and constructing statistical models and figures to explain what is observed.

**Learning Outcomes**

1. By quantitative analysis courses, the students will be learn to understand, communicate and interpret quantitative information and mathematical ideas.
2. All should able to develop skills in the recognition of patterns, generalisation, abstraction to a formal system and application of the system to specific situations.
3. The students will be able to understand the various uses of lanthanides elements in flash light powders and in dyeing cotton.
4. The students will be able to understand about recently lanthanides have been used in lasers.
5. The students will be able to know about actinides elements are used as nuclear fuels for various purposes.

**Department of Chemistry**  
**Learning Objective & Outcomes**

**B.Sc. - 4<sup>th</sup> Semester**

**Subject : Physical Chemistry**

**Learning Objective**

1. To understand the concepts of thermodynamics and its laws
2. To understand the entropy change in reversible and irreversible reaction
3. To understand the physical significance of third law of thermodynamics
4. To understand the concepts of electrochemistry
5. To understand the working and reaction of electrochemical cells

**Learning Outcomes**

After the completion of the course, Students will be able to

1. Recognize the basic concepts of thermodynamics
2. Able to predict the reversible and irreversible reaction
3. Able to understand the physical significance of third law of thermodynamics
4. Able to recognize the reaction of electrochemical cells and types

**Department of Chemistry**  
**Learning objectives and Outcomes**

**B.Sc.-4<sup>th</sup> Semester**

**Subject-Organic Chemistry**

**Learning objectives**

1. To understand how to name different aldehydes and ketones.
2. To understand the reactivity of different carbonyl compounds towards nucleophilic reaction.
3. To understand how to write the products of addition reaction to carbonyl compounds.
4. To understand to differentiate between primary, secondary and tertiary amines.
5. To determine the percentage composition of a liquid sample mixture by the application of Beers Law.

**Learning outcomes**

1. Students are able to recognize mechanism of different reactions related to carbonyl compounds.
2. Students are able to differentiate between given different amines.
3. Able to recognize different functional groups by given only graph of peaks.
4. Able to write mechanism of different condensation reaction.
5. Able to recognize the reactivity of substituted aromatic amines.



**Department of Chemistry**  
**Learning Objective & Outcomes**  
**B.Sc. - 5<sup>th</sup> Semester**

**Subject : Inorganic chemistry**

**Learning Objective**

1. To understand the concepts of metal ligand bonding in transition complex compounds.
2. To understand the thermodynamics and kinetic aspects of metal complexes.
3. To understand the nomenclature, classification, properties and preparations of coordination compounds.
4. To understand the chemistry of organometallic compounds, homogenous hydrogenation and carbonyls.
5. To understand the bioinorganic chemistry of haemoglobin, myoglobin etc.

**Learning Outcomes**

After the completion of the course, Students will be able to

1. Recognize the bonding in transition compounds by VBT and CFST theories.
2. Able to predict the geometry of coordination compounds and type of hybridization.
3. Able to determine the properties and preparations of Li, Al, Hg, Sn, Ti etc. metal compounds.
4. Able to recognize the biological reaction alkali and alkaline earth metals, nitrogen fixation, hemoglobin and myoglobin.

**Department of Chemistry**  
**Learning objectives and Outcomes**

**B.Sc.-5<sup>th</sup> Semester**

**Subject- Physical Chemistry**

**Learning Objectives**

1. To understand the concept of black body radiations.
2. To understand the concept of wave functions.
3. To understand different properties of molecular structure.
4. To understand the basic features of spectroscopy.
5. To understand the Harmonic Oscillator.

**Learning Outcomes**

1. Able to recognize different regions for different spectroscopy.
2. Able to explain the concept of Electromagnetic Waves.
3. Able to explain the concept use in Black Body Radiation.
4. Able to calculate dipole moment in given molecules.
5. Able to use concept of polarizability.

**Department of Chemistry**  
**Learning Objective & Outcome**

**B..Sc.-5<sup>th</sup> Semester**

**Subject: Organic chemistry**

**Learning Objective**

1. In order to study the NMR spectroscopy to understand the important role of nuclear magnetic resonance spectroscopy in the study of the structures of organic compounds.
2. To develop an understanding of the significance of the number, positions, intensities and splitting of signals in nuclear magnetic resonance spectra.
3. To be able to assign structures to simple molecules on the basis of nuclear magnetic resonance spectra.
4. In order to study carbohydrates will develop the skills to recognize and draw particular carbohydrate structures.
5. To know general structural elements of cyclic monosaccharide and disaccharides and their implications for structure and function.

**Learning outcomes**

1. After study of course students have firm foundations in the fundamentals and application of current chemical and scientific theories.
2. Students are able to identify and solve chemical problems and explore new areas of research.
3. Students are skilled in problem solving ,critical thinking and analytical reasoning.
4. After completion of course students should have the ability to identify organic compounds by analysis and interpretation of spectral data.
5. Students should have the ability to explain common terms in NMR spectroscopy such as chemical shift ,coupling constant and anisotropy and describe how they are affected by molecular structure.
6. Students are skilled to perform the most commonly used NMR experiments and to interpret and document their results.

**Department of Chemistry**  
**Learning objectives and Outcomes**

**B.Sc.-6th Semester**

**Subject-Inorganic Chemistry**

**Learning objectives**

1. To understand the role of metal ions in biological system.
2. To understand the role of metal ions in oxygen transport.
3. To understand the concept of acid and bases.
4. To understand the uses of inorganic polymers.
5. To understand the nature of bonding of different metals with carbon atom.

**Learning Outcomes**

1. Students are able to describe role of different metal ions in biological system.
2. Students are able to recognize role of porphyrin ring in haemoglobin.
3. Students are able to count total of electrons in organometallic compound.
4. Students come to know about uses of different inorganic polymers in making of tyres, toys, plastics bags.
5. Students are able to name different organometallic compounds.

**Department of Chemistry**  
**Learning Objective & Outcomes**

**B.Sc. - 6<sup>th</sup> Semester**

**Subject : Physical chemistry**

**Learning Objective**

1. To understand the transitions through electronic spectroscopy
2. To understand the term symbols of diatomic molecules
3. To understand the different type of vapour pressure curves
4. To understand the ideal and non-ideal solutions and their behaviour
5. To understand the thermodynamics of one and two component system.

**Learning Outcomes**

After the completion of the course, Students will be able to

1. Recognize the basic rules of electronic spectroscopy.
2. Able to predict the term symbols of diatomic molecules
3. Able to understand the behaviour of ideal and non-ideal solutions
4. Able to recognize the thermodynamics of one and two component system
5. Recognize the basic rules of various component system

**Department of Chemistry**  
**Learning Objective & Outcome**  
**B.Sc-6th Semester**

**Subject: Organic chemistry**

**Learning objective**

1. The main aim of Heterocyclic compounds study is to develop novel, efficient, convenient, selective and environmentally benign synthetic methods in organic chemistry.
2. The objective of the present study of heterocyclic compounds is to develop green methodologies for the synthesis of nitrogen containing heterocyclic.
3. The students will be aware about most of drugs in the present market are the compounds containing various heterocyclic moieties.
4. To enable students to acquire a specialised knowledge and understanding of selected aspects by means of lecture series and a research project.
5. The course aims to provide an advanced understanding of the core principles and topics of biochemistry and their experimental basis.

**Learning outcomes**

1. The students should be able to demonstrate advanced knowledge and understanding in aspect of protein structure.
2. The students will be able to introduce about basic chemistry of the heterocyclic.
3. The students will get familiar with particular properties and reactions for the most important heterocyclic as well as different systems of nomenclature.
4. The students will develop fundamental theoretical understanding of heterocyclic chemistry.
5. The students will be able to fully comprehend the chemistry of many heterocyclic products, carbohydrate, amino acids, peptides, proteins and lipids in use such as drugs and food.

## **DEPARTMENT OF ZOOLOGY**

Program Outcome, Program specific outcomes and course outcomes

### **CBCS Pattern (semester pattern)**

#### **Program Outcomes**

- Ability to understand the fundamentals of zoology and their interaction with other living animals.
- Understand basic structure of cell and organelles and their functions.
- Ability to know body organization of various animal and interaction of among animals of different phyla and their biodiversity.
- Gain the knowledge of physiological process of animals, role of organ, systems in their life.
- Understood concept of genetics and genetic engineering.
- Ability to understand process of evaluation and evidences of evaluation.
- Gain the knowledge of embryonic development of various animals.
- Understanding environment, environmental changes and need of conservation of animals.
- Ability to understand animal behavior and distribution of animal based industry, like aquaculture, pisciculture, apiculture, sericulture etc.

#### **Program specific outcomes-**

- Understand the basic concept of life of animal, compare and different and classify the animals into different groups.
- Gain the knowledge of various disciplines of zoology, cell biology, development biology, genetics, evolution, ecology, Physiology, Ethology, and Taxonomy etc.
- Ability to know the application of biological sciences aquaculture, apiculture etc.
- Understand rDNA technology and their applications in biology.
- Gain the knowledge of subject through theory and practical.
- Ability to use zoological museum, model, charts, equipment's, and computer based demonstration for internal structure of animals.

#### **Course Outcomes**

##### **B.Sc-I (Zoology): Semester- I**

##### **Course No. CCZ-I**

##### **Sec A- Biodiversity of Invertebrates.**

1. The students will be able to identify a given invertebrate up to class level.
2. The ability to understand the contribution of invertebrates in the biodiversity index of any given habitat.
3. Ability to understand and appreciate the ecological and economics importance of invertebrates and vertebrates
4. Ability to identify and describe external morphology and internal anatomical features of representative invertebrate species.

## **Course No. CCZ-I**

### **Sec B. Biodiversity of chordates**

1. The student will be able to identify and understand the biodiversity of chordates.
2. Ability to understand anatomical relation between different vertebrate classes.
3. The learners will be able to understand the economic importance of chordates.
4. To identify the poisonous and non-poisonous snakes.
5. Understand flight adaptation and migration in birds.

## **Course No. CCZ-II**

### **Sec-A comparative anatomy of vertebrates**

1. The student will be able to identify and understand comparative anatomical structure of vertebrate's organ systems.
2. The learner will be able to understand the evolution of various organs and systems in the vertebrate body according to its environment.
3. Understand the plasticity of organ systems to adapt the environment and acquire different novel forms.

## **Course No. CCZ-II**

### **Sec-B Developmental Biology of vertebrates**

1. The student will be able to explain the basic process of vertebrate embryonic development.
2. Ability to describe the various steps in vertebrate development.
3. Identify and explain about the different embryonic structures.
4. Describe the functions of different placental structures.
5. Understanding of the assisted reproductive technologies.
6. Understands the terms Gametogenesis fertilization cleavage. Blastulation gastrulation.

## **B.Sc. II : Semester-III**

### **Course No. CCZ-III**

#### **Sec. A: Genetics**

1. Understanding of basic concepts of genetics laws of inheritance
2. To understanding of Mendelian and Non-Mendelian inheritance
3. Understand the concept behind genetic disorder gene mutation various cause associated with inborn errors of metabolism
4. Ability to know blood group inheritance.
5. To understand the methods of sex determination and sex linked inheritance.
6. Gain the structure and replication of Nuclie acids RNA, DNA

### **Course No. CCZ-III**

#### **Sec. B: Comparative Anatomy and physiology**

1. The student will be able to identify and understand comparative anatomical structure of vertebrate's organ systems.
2. Ability to understand the evolution of various organs and systems in the vertebrate body according to its environment.
3. Imparts knowledge about various metabolic and physiological mechanisms of human body.
4. Understanding about neurophysiology and receptors.
5. Gain Knowledge about hormones and their role in human body.



6. Students gain knowledge about the physiology concepts of nutrition digestion, respiration, exertion etc.
7. Ability to understand theory of muscle contraction.
8. Understanding classification of enzymes, role of enzymes and enzyme kinetics.
9. To understand the composition of blood, immunity, antigen, antibody and their properties.

**B.Sc. II: Semester-IV**

**Course No. CCZ-IV**

**Sec. A: Genetic engineering and Evolution.**

1. Ability to understand various cell / tissue culture techniques.
2. Understanding of in vitro culturing of organisms and production of transgenic animals.
3. understanding of various molecular biology techniques
4. Understand the applications of animal biotechnology and applications of recombinant DNA.
5. Use of rDNA technology genetic manipulation DNA/ RNA isolation technology.
6. Imparts knowledge regarding the various theories of evolution and evolutionary process.
7. Ability to know the course and role of extinction in evolution.
8. Understanding of cloning of animals/ mammals.
9. Ability to understand DNA finger printing.
10. Understanding the evidences of organic evolution by anatomical, embryological, Paleontological, Physiological evidences
11. Understanding evolutionary adaptations of various groups of animals.

**Course No. CCZ-IV**

**Sec. B: Endocrinology, histology and biochemistry**

1. Ability to explain the process of carbohydrate, protein, lipid digestion.
2. Understanding of carbohydrate protein lipid metabolism.
3. Understanding of cellular and tissue organization of various organs.
4. Understanding of endocrine glands hormone secretion mechanism and their role in physiological activities of various organ systems.
5. students gain skill in histological techniques

**B.Sc.-III Zoology: Semester- V**

**Course No. DSEZ I –**

**Sec. A: Ecology and Zoogeography.**

1. Imparts Knowledge to the student regarding environment and conservation.
2. Ability to know types of ecosystems freshwater marine water terrestrial
3. Understanding causes and sources of various types of pollutions its control.
4. Ability to understand impact /effects of air water, soil, noise pollution on various animals including human beings.
5. To understand Biosphere hydrosphere lithosphere atmosphere etc.
6. Gain Knowledge of various resources of non-conventional energy solar, wind, tidal energy.
7. Understanding of wild life and conservation of endangered animal species.
8. Ability to know zoogeographical regions with their climate and faunal peculiarities.

9. Distribution of fauna in different realms interaction.
10. Understanding of interaction of biotic and abiotic.

**Course No. DSEZ I –**

**Sec. B: Pisciculture**

1. Understand concepts of fisheries, fishing tools and site selection.
2. Understanding culture systems, induced breeding techniques, culture methods Post harvesting techniques.
3. Understand preparation and management of fish culture ponds.
4. To understand fresh water prawn culture and pearl, edible oyster culture.
5. Gain knowledge of capture fishery resources of India like sardine, mackerel Bombay duck.
6. To understand method of fishing techniques.
7. FM pasts knowledge of fish preservation Processing and fish by products.

**B.Sc. III: Semester VI**

**Course No. DSEZ II –**

**Sec. A: Ethology, Biometry and Bioinformatics**

1. Understanding animal behavior and response of animals to different instincts.
2. Ability to understand innate and acquired types of behaviors.
3. Understand the types of mimicry and coloration.
4. Biostatics teaches them to use the best data analysis methods
5. Student's gains knowledge about statistical methods like probability learns the problem solving methods.
6. Students gain skills in basic computes, operating systems, web searching, etc.
7. Application of internet and statistical bioinformatics in research.

**Course No. DSEZ II –**

**Sec. B: Aquaculture**

1. Understanding concept of aquaculture culture system extensive and intensive culture.
2. Gives knowledge about of rearing of aquatic animals with different techniques.
3. Understand monoculture and polyculture practices.
4. Gains ability of integrated fish farming paddy cum fish culture, pig cum fish culture, duck cum fish culture, cattle cum fish culture, etc.
5. Understanding characteristics of water, man made hazards and its effects on aquaculture.
6. Gains Knowledge about Government participation in aquaculture.

**Faculty Of Science**

**Sub: Botany**

**Course Outcome**

**Class: B.Sc. I**

- 1) Viruses Bacteria, Algae, Fungi, Lichens and Mycorrhiza  
- To give the basic knowledge to the students of various life forms and biodiversity.
- 2) Plant Ecology  
- To make aware of natural resources and environment and the importance of the same.
- 3) Bryophytes , Pteridophytes, Gymnosperms and Paleobotany  
- To impart knowledge of different plant groups and extinct plants.
- 4) Taxonomy of Angiosperms  
- To expose students to the diversity of Angiosperms and systematics.
- 5) To develop skill in practical work with collection, observation of plants materials and data

**Class: B.Sc. II**

- 1) Taxonomy of Angiosperms  
- To develop ability for the application of the acquired knowledge of angiosperms and their importance to human life.
- 2) Histology, Anatomy and Embryology  
- To give the knowledge of basic branches of plant sciences
- 3) Gymnosperms and Paleobotany  
- To give the knowledge of extinct plants and their importance to trace the phylogeny of todays plants
- 4) Plant Ecology and Environmental Biology  
- To create awareness among the students about environmental issue such as global warming, water and air pollution
- 5) To improve quality of practical work by field work, study tours, excursion, study of the local flora and the ecosystem of the area

**Class: B.Sc. III**

- 1) Plant Physiology  
- To give the knowledge of importance of water to plant life, their transports, solute sugar transport process in plants.
- 2) Plant Metabolism, Biochemistry and Biotechnology  
- To update knowledge thorough the advanced curriculum such as tissue culture, genetic engineering, bioinformatics.
- 3) Critical thinking take informed action after identifying assumptions that our thinking and actions.

**B.Sc.F.Y. Semester-I**  
**(CBCS PATTERN)**  
**CCM-1, Section-A**

**Paper I: Calculus-I (Differential Calculus)**

Outcomes: After successful completion of the course student will be able to

1. Understand concept of Limit, Continuity of Single and two variable Functions.
2. Find the Higher order derivatives of Product of Functions
3. Expand functions in terms of infinite series.
4. Find Equation of Tangent, Normal and Length of Tangent, Normal, Sub-tangent, Sub-normal.
5. Understand Mean Value Theorem concepts.
6. Understand the concept of Partial differentiation.
7. Use the results to solve problems.
8. Differentiate difference between derivative of single variable and two variables.

**B.A/B.Sc.F.Y. Semester-I**  
**(CBCS PATTERN)**  
**CCM-1 (Section B)**

**Paper II: Algebra and Trigonometry**

Outcomes: After successful completion of the course student will be able to

1. Add, Subtract and Multiply two Matrices.
2. Recognize the different types of Matrices.
3. Find the Inverse of invertible Matrices.
4. Determine the Rank of a Matrix.
5. Transform matrix to Row Echelon form
6. Solve the System of Linear Equations.
7. Find the Characteristic Roots and Characteristic Vectors of a Square Matrix.
8. Check that every square matrix satisfies its own Characteristic Polynomial.

**B.Sc.F.Y. Semester-II**  
**(CBCS PATTERN)**  
**CCM-2, Section-A**

**Paper III: Calculus-II (Integral Calculus)**

Outcomes: After successful completion of the course student will be able to

1. Apply method of integration to find the integral of function.
2. Solve examples of definite integrals using Properties definite integrals.
3. Find the area and volume of given shape.
4. Understanding concept of Gamma and Beta Functions.
5. Solve problems on Multiple Integrals

**B.Sc.F.Y. Semester-II**  
**(CBCS PATTERN)**  
**CCM-2, Section-B**

**Paper IV: (Geometry)**

Outcomes: After successful completion of the course student will be able to

1. Understanding concepts on Three Dimensional Geometry.
2. Find equations of Right lines, Planes, Spheres, Cones and Cylinders.
3. Find the Direction cosines of any line under the different given conditions.
4. Understand the intersection of any two or three, three dimensional geometrical figures.

5. Transform the equation of a plane to the normal form.
6. Transform equation of line from the unsymmetrical to the symmetrical form.
7. Find the length of perpendicular from a point to a plane.
8. Find the angle of intersection of two spheres.
9. Understanding concepts of plane of contact.

**B.Sc.S.Y. Semester III**

**(CBCS PATTERN)**

**CCM- 3, Section-A**

**Paper VI: (MT 201) : Real Analysis – I**

Outcomes: After successful completion of the course student will be able to

1. Understand the concept of sets and functions and relations.
2. Find the equivalence relations and least upper bound.
3. Understand the sequences and limit of sequences.
4. Differentiate between convergent and divergent sequences.
5. Find the monotone sequences.
6. Understand the concept of Series.
7. Calculate the Series convergence
8. Check whether a series is convergent or divergent.

**B.Sc.S.Y. Semester III**

**(CBCS PATTERN)**

**CCM- 3, Section-B**

**Paper VII: (MT 202) : Group Theory**

Outcomes: After successful completion of the course student will be able to

1. Understand the concept of functions, relations, group.
2. Understands the different types of mappings.
3. Recognize the different type of groups .
4. Differentiate between homomorphism and Isomorphism.
5. Understand the concept of Normal Subgroups and Quotient groups.
6. Solve the problems with the help of Sylow Theorem.
7. Understand the applications of Cayley's Theorem.
8. Use the results of cyclic groups and permutation group.

**B.Sc.S.Y. Semester III**

**(CBCS PATTERN)**

**CCM- 3, Section-C**

**Paper VIII: (MT 203) : O. D. E.**

Outcomes: After successful completion of the course student will be able to

1. Understand the concept of types of differential equations.
2. Recognize linear equations with constant Coefficients and variable coefficients.
3. Calculate the IVPs for second order homogeneous equations.
4. Differentiate between linear dependence and independence.
5. Use the formula for the Wroskian.
6. Calculate the results of Non-Homogeneous equations of order two.
7. Calculate the IVPs of Homogeneous equations.
8. Find the solutions of homogeneous equations.

**B.Sc.S.Y. Semester IV**  
**(CBCS PATTERN)**  
**CCM- 4, Section-A**

**Paper IX: (MT 204) : Real Analysis II**

Outcomes: After successful completion of the course student will be able to

1. Understand the concept Riemann integral
2. Apply the Darboux's theorem.
3. Understand the concept of Integration and differentiation.
4. Apply the mean value theorems on different functions.
5. Calculate the integration of unbounded functions with finite limits of integration.
6. Calculate the Fourier series of Even and odd Functions
7. Apply results of half range series.

**B.Sc.S.Y. Semester IV**  
**(CBCS PATTERN)**  
**CCM- 4, Section-B**

**Paper X: (MT 205) : Ring Theory**

Outcomes: After successful completion of the course student will be able to

1. Understand the concept Ring, Ideal, Field.
2. Differentiate between homomorphism and isomorphism of rings.
3. Recognize field of quotients of an integral domain.
4. Find degree of polynomial rings.
5. Differentiate between polynomial rings and Euclidean ring.
6. Understand the polynomial rings over commutative rings

**B.Sc.S.Y. Semester IV**  
**(CBCS PATTERN)**  
**CCM- 4, Section-C**

**Paper XI: (MT 206) : Partial Differential Equations**

Outcomes: After successful completion of the course student will be able to

1. Understand the concept partial differential equations.
2. Find the order and degree of a partial differential equation.
3. Recognize the method of forming partial differential equations.
4. Find the solution of equations by direct integration.
5. Understand the method of solving non-linear partial differential equations.
6. Find the complementary function of a p.d.e.
7. Apply D'Alembert's method to solve the wave equation.
8. Find the one dimensional and two dimensional heat flow.

**B.Sc.T.Y. Semester V**

**(CBCS PATTERN)**

**DSEM-5, Section-A**

**Paper XII: Metric Spaces**

Outcomes: After successful completion of the course student will be able to

1. Understand the concept Metric space, open sets, closed sets.
2. Understand the concept of continuity and uniform continuity
3. Understand the concept of completeness, compactness and connectedness
4. Find whether given space is a metric space or not.
5. Apply Banach fixed point theorem.
6. Find  $\epsilon$ -Nets.
7. Apply finite intersection property.
8. Recognize separated sets.

**B.Sc.T.Y. Semester V**

**(CBCS PATTERN)**

**DSEM-5, Section-B**

**Paper XIII: Linear Algebra**

Outcomes: After successful completion of the course student will be able to

1. Understand the concept vector spaces, linear transformations.
2. Find the bases of a vector space.
3. Differentiate between linear dependence and linear independence.
4. Find the inner product spaces.
5. Find Characteristic roots.
6. Recognize fields and extension fields.

**B.Sc.T.Y. Semester V**

**(CBCS PATTERN)**

**DSEM-5, Section-C**

**Paper XIV (B): Mechanics-I (Statics)**

Outcomes: After successful completion of the course student will be able to

1. Understand the concept different types of forces acting on a particle and rigid body.
2. Apply the law of parallelogram, Triangle law of forces.
3. Apply Lami's theorem
4. Find the sum of the vector moments of two like forces.
5. Find conditions of equilibrium of forces, conditions of equilibrium of coplanar forces.
6. Calculate vector moment of the resultant couple of two forces acting upon a rigid body.
7. Find the magnitude and direction of the resultant of any number of forces.

**B.Sc.T.Y. Semester VI**

**(CBCS PATTERN)**

**DSEM-6, Section-A**

**Paper XV: Numerical Analysis**

Outcomes: After successful completion of the course student will be able to

1. Understand the concept numerical interpolation with equal intervals
2. Differentiate between interpolation and extrapolation.
3. Find missing terms of a sequence using various methods.
4. Apply the divided difference formula when the interval is unequal.
5. Apply Various formulae for unequal intervals.

6. Calculate unsymmetrical expressions for third order derivatives.
7. Find the numerical solution of O.D.E.
8. Apply various numerical quadrature formulae.

**B.Sc.T.Y. Semester VI  
(CBCS PATTERN)**

**DSEM-6, Section-B**

**Paper XVI: Integral Transforms**

Outcomes: After successful completion of the course student will be able to

1. Understand the concept Laplace transforms, inverse Laplace transforms, Fourier transforms
2. Find the Laplace transforms of derivatives of order  $n$ .
3. Apply the convolution theorem.
4. Find the inverse Laplace transform.
5. Apply various properties to find Laplace and inverse Laplace transforms.
6. Find the inverse Laplace transform of integrals by partial fraction method.
7. Find the solution of simultaneous differential equations by Laplace transforms.
8. Recognize the Fourier sine and cosine integrals.
9. Find the Fourier sine and cosine transforms.

**B.Sc.T.Y. Semester VI  
(CBCS PATTERN)**

**DSEM-6, Section-C**

**Paper XVII(B): Mechanics-II(Dynamics)**

Outcomes: After successful completion of the course student will be able to

1. Understand the concept kinematics and dynamics of a particle in two dimensions, kinetics of a particle, motion of a projectile and motion of a resisting medium
2. Find the components of velocity and Acceleration
3. Find the angular acceleration, radial and transverse components of velocity and acceleration..
4. Find angular momentum and linear momentum
5. Find field of force and conservation of field of force.
6. Find motion of projectile and derivation of equation of its trajectory.
7. Find the vertex and latus rectum of the parabola.
8. Find the velocity of a particle in terms of its height.



# **B.Sc. COURSE OUTCOMES**

## **Department of Physics**

The learning outcomes-based curriculum framework for the undergraduate programs in Physics like B.Sc(Physics) , in Physics is intended to provide a broad framework within which both the undergraduate programs in Physics help to create an academic base that responds to the need of the students to understand the basics of Physics and its ever evolving nature of applications in explaining all the observed natural phenomenon as well as predicting the future applications to the new phenomenon with a global perspective. The curriculum framework is designed and formulated in order to acquire and maintain standards of achievement in terms of knowledge, understanding and skills in Physics and their applications to the natural phenomenon as well as the development of scientific attitudes and values appropriate for rational reasoning, critical thinking and developing skills for problem solving and initiating research which are competitive globally and are on par in excellence with the standard Higher Education Institutions (HEI) in the advanced countries of America, Asia and Europe. The multicultural fabric of our nation requires that the institutions involved in implementing this curriculum framework also work hard towards providing an environment to create, develop and inculcate rational, ethical and moral attitudes and values to help the creation of knowledge society needed for scientific advancement of our nation.

The learning outcome based curriculum framework in Physics should also allow for the flexibility and innovation in the program design of the UG education, and its syllabi development, teaching learning process and the assessment procedures of the learning outcomes. The process of learning is

defined by the following steps which should form the basis of final assessment of the achievement at the end of the program.

The accumulation of facts of nature and the ability to link the facts to observe and discover the laws of nature i.e. develop an understanding and knowledge of the basic Physics.

The ability to use this knowledge to analyze new situations and learn skills and tools like mathematics, engineering and technology to find the solution, interpret the results and make predictions for the future developments.

The ability to synthesize the acquired knowledge, understanding and experience for a better UGC Document on LOCF Physics and improved comprehension of the physical problems in nature and to create new skills and tools for their possible solutions.

The conceptualization and formulation of the learning outcomes for an undergraduate program in Physics is aimed to achieve (i) and (ii) above while the (iii) could be planned for the PG and research programs in Physics in the Higher Education Institutions in India.

The main objective is to create skilled minds and therefore understanding of theoretical and mathematical knowledge essential for finding solutions of various interacting physical phenomenon, the full paper on mathematical methods in physics is included. It helps in general to improve scientific attitude to solve the research oriented problems, problems of interacting systems. The introduction of Sci Lab is introduced in the practical course work to upgrade the computer knowledge and develop the skill to solve the various mathematical problems.

The professional Education of the students begins while enrolling their names in the B. Sc. Classes. The Board of study thought authentically that some sort of Job oriented syllabi is to be included and accordingly, some principles of

cooling and liquification of gasses, some part of thermodynamics, theoretical physics, AC current, part of industrial electronics, digital electronics, communication system, TV, Lasers, detectors, nuclear energy, solar energy and various aspects of physics related to the industries and research field has been covered.

The lab work also includes theory based practical to develop the skill and create interest of the students in the subject physics. To enhance the students knowledge and create the skill among them some sort of skill courses has been introduce as per the initiatives taken by the UGC.

### **The student graduating with the Degree B.Sc . with PHYSICS**

#### **should be able to :-**

- Acquire : (i) a fundamental/systematic or coherent understanding of the academic field of Physics, its different learning areas and applications in basic Physics like Astrophysics, Material science, Nuclear and Particle Physics, Condensed matter Physics, Atomic and Molecular Physics, Mathematical Physics, Analytical dynamics, Space science, and its linkages with related disciplinary areas / subjects like Chemistry, Mathematics, Life sciences, Environmental UGC Document sciences, Atmospheric Physics, Computer science, Information Technology;
- (ii) procedural knowledge that creates different types of professionals related to the disciplinary/subject area of Physics, including professionals engaged in research and development, teaching and government/public service;
- (iii) skills in areas related to one's specialization area with in the disciplinary/subject area of Physics and current and emerging developments in the field of Physics.

Demonstrate the ability to use skills in Physics and its related areas of technology for formulating and tackling Physics-related problems and identifying and applying appropriate physical principles and methodologies to solve a wide range of problems associated with Physics.

- Recognize the importance of mathematical modeling simulation and computing, and the role of approximation and mathematical approaches to describing the physical world.

- Plan and execute Physics-related experiments or investigations, analyze and interpret data/information collected using appropriate methods, including the use of appropriate software such as programming languages and purpose-written packages, and report accurately the findings of the experiment/investigations while relating the conclusions/findings to relevant theories of Physics.

- Demonstrate relevant generic skills and global competencies such as (i) problem-solving skills that are required to solve different types of Physics-related problems with well-defined solutions, and tackle open-ended problems that belong to the disciplinary-area boundaries; (ii)investigative skills, including skills of independent investigation of Physics-related issues and problems; (iii) communication skills involving the ability to listen carefully, to read texts and research papers analytically and to present complex information in a concise manner to different groups/audiences of technical or popular nature; (iv) analytical skills involving paying attention to detail and ability to construct logical arguments using correct technical language related to Physics and ability to translate them with popular language when needed; (v) ICT skills; (vi) personal skills such as the ability to work both independently and in a group.

- Demonstrate professional behavior such as (i) being objective, unbiased and truthful in all aspects of work and avoiding unethical, irrational behavior such

as fabricating, falsifying or misrepresenting data or committing plagiarism;  
(ii) the ability to identify the potential ethical issues in work-related situations  
; (iii) appreciation of intellectual property, environmental and UGC Document  
on LOCF Physics sustainability issues; and (iv) promoting safe learning and working environment.

# B.Sc . FY COURSE OUTCOMES

## **MATHEMATICAL PHYSICS**

**Course learning outcome:** •Revise the knowledge of calculus, vectors, vector calculus, probability and probability distributions. These basic mathematical structures are essential in solving problems in various branches of Physics as well as in engineering. •Learn the curvilinear coordinates which have applications in problems with spherical and cylindrical symmetries.

•Learn the Dirac delta function its properties, which have applications in various branches of Physics, especially quantum mechanics. •In the laboratory course, learn the fundamentals of the C and C++ programming languages and their applications in solving simple physical problems involving interpolations, differentiations , integrations, differential equations as well as finding the roots of equations. •Learn the Fourier analysis of periodic functions and their applications in physical problems such as vibrating strings etc. • Acquire knowledge of methods to solve partial differential equations with the examples of important partial differential equations in Physics. • In the laboratory course, learn the basics of the Scilab software, their utility, advantages and disadvantages. • Apply the Scilab software in curve fittings, in solving system of linear equations, solving first and second order ordinary and partial differential equations.

**Skills to be learned:** • Training in calculus will prepare the student to solve various mathematical problems. • He / she shall develop an understanding of how to formulate a physics problem and solve given mathematical equation risen out of it.

## **MECHANICS : Course learning outcome:**

After going through the course, the student should be able to

- Understand laws of motion and their application to various dynamical situations, notion of inertial frames and concept of Galilean invariance. He / she will learn the concept of conservation of energy, momentum, angular momentum and apply them to basic problems.
- Understand the analogy between translational and rotational dynamics, and application of both motions simultaneously in analyzing rolling with slipping.
- Write the expression for the moment of inertia about the given axis of symmetry for different uniform mass distributions.
- Understand the phenomena of collisions and idea about center of mass and laboratory frames and their correlation.
- Understand the principles of elasticity through the study of Young Modulus and modulus of rigidity.
- Understand simple principles of fluid flow and the equations governing fluid dynamics.
- Apply Kepler's law to describe the motion of planets and satellite in circular orbit, through the study of law of Gravitation.
- Explain the phenomena of simple harmonic motion and the properties of systems executing such motions.
- Describe how fictitious forces arise in a non-inertial frame, e.g., why a person sitting in a merry-go-round experiences an outward pull.
- Describe special relativistic effects and their effects on the mass and energy of a moving object.
- appreciate the nuances of Special Theory of Relativity (STR)

- **In the laboratory course**, the student shall perform experiments related to mechanics (compound pendulum), rotational dynamics ( Flywheel), elastic properties (Young Modulus and Modulus of Rigidity) and fluid dynamics ( verification of Stokes law,Searle method) etc.

**Skills to be learned:**

- Learn basics of the kinematics and dynamics linear and rotational motion.
- Learn the concepts of elastic in constant of solids and viscosity of fluids.
- Develop skills to understand and solve the equations of

Newtonian Gravity and central force problem. • Acquire basic knowledge of oscillation. • Learn about inertial and non-inertial systems and essentials of special theory of relativity.

### **ELECTRICAL CIRCUITS AND NETWORK**

Course learning outcome: •After the completion of the course the student will acquire necessary skills/ hands on experience /working knowledge on multimeters, voltmeters,ammeters, electric circuit elements, dc power sources, ac/dc generators, inductors, capacitors, transformers, single phase and three phase motors, interfacing dc/ac motors to control and measure, relays and basics of electrical wiring. (ii)Broad contents of the course: •Basic principles of electricity, electrical circuits and electrical drawings. •Physics of generators, transformers, electric motors. •Solid state devices and their uses. •Electrical wiring and measures for electrical protection.(iii)Skills to be learned •Skills to understand various types of DC and AC circuits and making electrical drawings with symbols for various systems. •Skills to understand and operate generators, transformers and electric motors. •Develop knowledge of solid state devices and their uses. •Skills to do electrical wiring with assured electrical protection devices.

### **ELECTRICITY AND MAGNETISM**

**Course learning outcome:** After going through the course, the student should be able to • Demonstrate Gauss law, Coulomb's law for the electric field, and apply it to systems of point charges as well as line , surface, and volume distributions of charges. • Explain and differentiate the vector (electric fields, Coulomb's law) and scalar (electric potential, electric potential energy) formalisms of electrostatics. • Apply Gauss's law of electrostatics to solve a variety of problems. • Articulate knowledge of electric current, resistance and capacitance in terms of electric field and electric potential. • Demonstrate a



working understanding of capacitors. • Describe the magnetic field produced by magnetic dipoles and electric currents. • Explain Faraday-Lenz and Maxwell laws to articulate the relationship between electric and magnetic fields.

• Understand the dielectric properties, magnetic properties of materials and the phenomena of electromagnetic induction. • Describe how magnetism is produced and list examples where its effects are observed. • Apply Kirchhoff's rules to analyze AC circuits consisting of parallel and/or series combinations of voltage sources and resistors and to describe the graphical relationship of resistance, capacitor and inductor. • Apply various network theorems such as Superposition, Thevenin, Norton, Reciprocity, Maximum Power Transfer, etc. and their applications in electronics, electrical circuit analysis, and electrical machines.

• **In the laboratory course** the student will get an opportunity to verify various laws in electricity and magnetism such as Lenz's law, Faraday's law and learn about the construction, working of various measuring instruments. • Should be able to verify of various circuit laws, network theorems elaborated above, using simple electric circuits.

This course will help in understanding basic concepts of electricity and magnetism and their applications. • Basic course in electrostatics will equip the student with required prerequisites to understand electrodynamics phenomena.

## **THERMAL PHYSICS**

**Course learning outcome:** • Comprehend the basic concepts of thermodynamics, the first and the second law of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations. • Learn about Maxwell's thermodynamic relations. • Learn the basic aspects of kinetic theory of gases, Maxwell-Boltzmann

Maxwell distribution law, equipartition of energies, mean free path of molecular collisions, viscosity, thermal conductivity, diffusion and Brownian motion. •

Learn about the real gas equations, Van der Waal equation of state, the Joule-Thompson effect. • In the laboratory course, the students are expected to do some basic experiments in thermal Physics, viz., determinations of Stefan's constant, coefficient of thermal conductivity, temperature coefficient of resistance, variation of thermo-emf of a thermocouple with temperature difference at its two junctions and calibration of a thermocouple.

**Skills to be learned :** • This basic course in thermodynamics will enable the student to understand various thermodynamical concepts, principles.

### **ELECTROMAGNETIC THEORY**

**Course learning outcome:** • Achieve an understanding of the Maxwell's equations, role of displacement current, gauge transformations, scalar and vector potentials, Coulomb and Lorentz gauge, boundary conditions at the interface between different media. • Apply Maxwell's equations to deduce wave equation, electromagnetic field energy, momentum and angular momentum density. • Analyse the phenomena of wave propagation in the unbounded, bounded, vacuum, dielectric, guided and unguided media. • Understand the laws of reflection and refraction and to calculate the reflection and transmission coefficients at plane interface in bounded media. • Understand the linear, circular and elliptical polarisations of em waves. Production as well as detection of waves in laboratory. • Understand propagation of em waves in anisotropic media, uni-axial and biaxial crystals phase retardation plates and their uses. • Understand the concept of optical rotation, theories of optical rotation and their experimental rotation, calculation of angle rotation and specific rotation. • Understand the features of planar optical wave guide and obtain the Electric field components, Eigen value

equations, phase and group velocities in a dielectric wave guide. • Understand the fundamentals of propagation of electromagnetic waves through optical fibres and calculate numerical apertures for step and graded index fibres and transmission losses. • In the laboratory course, the student gets an opportunity to perform experiments Demonstrating principles of • Interference, Refraction and diffraction of light using monochromatic sources of light. Demonstrate interference, Refraction and Diffraction using microwaves. • Determine the refractive index of glass and liquid using total internal reflection of light.

- Verify the laws of Polarisation for plane polarised light. Determine Polarisation of light by Reflection and determine the polarization angle off or air-glass surface • Determine the wavelength and velocity of Ultrasonic waves in liquids using diffraction. • Study specific rotation of sugar using Polarimeter.
- Analyze experimentally the Elliptically Polarised light using Babinet's Compensator • Study Experimentally the angle dependence of radiation for a simple dipole antenna .

**Skills to be learned :** Comprehend the role of Maxwell's equation in unifying electricity and magnetism. • Derive expression for (i)Energy density (ii)Momentum density (iii)Angular momentum density of the electromagnetic field • solve the wave equation in various media like (i)Vacuum (ii)Dielectric medium (iii)Conducting medium

Derive and understand associated with the properties, EM wave passing through the interface between two media like (i)Reflection (ii)Refraction (iii)Transmission (iv)EM waves

- Learn the basic physics associated with the polarization of electromagnetic waves by doing various experiments for: (i)Plane polarized light (ii)Circularly polarized light (iii)Circularly polarized light •Learn the application of EM theory to (i)Wave guides of various types (ii)Optical fibers in theory and experiment.

## **B.Sc . SY COURSE OUTCOMES**

### **WAVES AND OPTICS :**

**Course learning outcome:** This course will enable the student to

- Recognize and use a mathematical oscillator equation and wave equation, and derive these equations for certain systems.
- Apply basic knowledge of principles and theories about the behavior of light and the physical environment to conduct experiments.
- Understand the principle of superposition of waves, so thus describe the formation of standing waves.
- Explain several phenomena we can observe in everyday life that can be explained as wave phenomena.
- Use the principles of wave motion and superposition to explain the Physics of polarisation, interference and diffraction.
- Understand the working of selected optical instruments like biprism, interferometer, diffraction grating, and holograms.
- In the laboratory course, student will gain hands-on experience of using various optical instruments and making finer measurements of wavelength of light using Newton Rings experiment, Fresnel Biprism etc. Resolving power of optical equipment can be learnt first hand.
- The motion of coupled oscillators , study of Lissajous figures and behavior of transverse, longitudinal waves can be learnt in this laboratory course.

(ii) Broad contents of the course:

- Superposition of Two Collinear Harmonic Oscillations
- Superposition of Two Perpendicular Harmonic Oscillations
- Waves Motion – General
- Velocity of Waves

**Skills to be learned :**

- This course in basics of optics will enable the student to understand various optical phenomena, principles, workings and applications optical instruments
- He / she shall develop an understanding of Waves Motion and its properties.

## **APPLIED OPTICS**

**Course learning outcome:** This course will enable the student to get

•Familiar with optical phenomena and technology. • Qualitative understanding of basic lasing mechanism, types of Lasers, characteristics of Laser Light, types of Lasers, and its applications in developing LED, Holography. • The idea of propagation of electromagnetic wave in a nonlinear media – Fibre optics as an example will enable the student to practice thinking in a logical process, which is essential in science. • Experiments in this course will allow the students to discuss in peer groups to develop their cooperative skills and reinforce their understanding of concepts. (ii) Broad contents of the course: • Sources and Detectors •Fourier Optics •Holography •Photonics: Fibre Optics

**Skills to be learned :** This course will help in understanding about the lasers and detectors, Holography, Optical fibre and their applications.

## **THERMAL PHYSICS AND STATISTICAL MECHANICS**

**Course learning outcome:** • Learn the basic concepts of thermodynamics, the first and the second law of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations. They are also expected to learn Maxwell's thermodynamic relations. • Know the fundamentals of the kinetic theory of gases, Maxwell-Boltzmann distribution law, equipartition of energies, mean free path of molecular collisions, viscosity, thermal conductivity, diffusion and Brownian motion. • Have a knowledge of the real gas equations, Van der Waal equation of state, the Joule-Thompson effect. • Learn about the black body radiations, Stefan-Boltzmann's law, Rayleigh-Jean's law and Planck's law and their significances. • Learn the quantum statistical distributions, viz., the Bose-

Einstein statistics and the Fermi-Dirac statistics. • In the laboratory, the students are expected to perform the following experiments:

(i) Measurement of Planck's constant using black body radiation, (ii) To determine Stefan's Constant, (iii) To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method, (iv) To determine the temperature co-efficient of resistance by Platinum resistance thermometer, (v) To study the variation of thermo emf across two junctions of a thermocouple with temperature, (vi) To determine the coefficient of linear expansion by optical lever method. (vii) To determine the pressure coefficient of air by constant volume method, (viii) To determine the coefficient of linear expansion by travelling microscope, To determine the coefficient of thermal conductivity of a bad conductor by Searle's method.

**Skills to be learned :** • In this course the students should skilled in doing calculations in thermodynamics and in statistical mechanics. • They should also be proficient in doing calculations with the kinetic theory of ideal and real gases. • In the laboratory course, the students should acquire the skills of doing basic experiments in thermal physics with the right theoretical explanations of results there from.

## **STATISTICAL MECHANICS**

**Course learning outcome:** • Understand the concepts of microstate, macrostate, ensemble, phase space, thermodynamic probability and partition function. • Understand the combinatoric studies of particles with their distinguishably or indistinguishably nature and conditions which lead to the three different distribution laws e.g. Maxwell-Boltzmann distribution, Bose-Einstein distribution and Fermi-Dirac distribution laws of particles and their derivation. • Comprehend and articulate the connection as well as dichotomy between classical statistical mechanics and quantum statistical mechanics.

• Learn to apply the classical statistical mechanics to derive the law of equipartition of energy and specific heat. • Understand the Gibbs paradox, equipartition of energy and concept of negative temperature in two level system. • Learn to derive classical radiation laws of black body radiation. Wiens law, Rayleigh Jeans law, ultraviolet catastrophe. Saha ionization formula. • Learn to calculate the macroscopic properties of degenerate photon gas using BE distribution law, understand Bose -Einstein condensation law and liquid Helium. Bose derivation of Plank's law • Understand the concept of Fermi energy and Fermi level, calculate the macroscopic properties of completely and strongly degenerate Fermi gas, electronic contribution to specific heat of metals. • Understand the application of F-D statistical distribution law to derive thermodynamic functions of a degenerate Fermi gas, electron gas in metals and their properties. • Calculate electron degeneracy pressure and ability to understand the Chandrasekhar mass limit, stability of white dwarfs against gravitational collapse. • In the laboratory course, the students gets an opportunity to verify Stefan's Law of radiation and determine Stefan's constant.

**Skills to be learned :** • Learn the basic concepts and definition of physical quantities in classical statistics and classical distribution law. • Learn the application of classical statistics to theory of radiation. • Comprehend the failure of classical statistics and need for quantum statistics. • Learn the application of quantum statistics to derive and understand. 1. Bose Einstein statistics and its applications to radiation. 2. Ferm-Dirac statistic and its applications to quantum systems.

### **CLASSICAL DYNAMICS**

**Course learning outcome:** • Revise the knowledge of the Newtonian, the Lagrangian and the Hamiltonian formulations of classical mechanics and their

applications in appropriate physical problems. • Learn about the small oscillation problems. • Recapitulate and learn the special theory of relativity- postulates of the special theory of relativity, Lorentz transformations on space-time and other four vectors, four-vector notations, space-time invariant length, length contraction, time dilation, mass-energy relation, Doppler effect, light  $c$  one and its significance, problems involving energy-momentum conservations. • Learn the basics of fluid dynamics, streamline and turbulent flow, Reynolds's number, coefficient of viscosity and Poiseuille's equation. • Review the retarded potentials, potentials due to a moving charge, Lienard Wiechert potentials, electric and magnetic fields due to a moving charge, power radiated, Larmor's formula and its relativistic generalization.

**Skills to be learned :** • Learn to define generalised coordinates, generalised velocities, generalised force and write Lagrangian for mechanical system in terms of generalised coordinates. Learn to derive Euler-Lagrange equation of motion and solve them for simple mechanical systems. • Learn to write Hamiltonian for mechanical systems and derive and solve Hamilton's equation of motion for simple mechanical systems. • Formulate the problem of small amplitude oscillation and solve them to obtain normal modes of oscillation and their frequencies in simple mechanical systems. • Develop the basic concepts of special theory of relativity and its applications to dynamical systems of particles. • Develop the methods of relativistic kinematics of one and two particle system and its application to two particle decay and scattering. • Develop and understand the basic concepts of fluid dynamics and its applications to simple problems in liquid flow.

## **NUCLEAR & PARTICLE PHYSICS**

**Course learning outcome:** • learn the ground state properties of a nucleus – the constituents and their properties, mass number and atomic number,



relation between the mass number and the radius and the mass number, average density, range of force, saturation property, stability curve, the concepts of packing fraction and binding energy, binding energy per nucleon vs. mass number graph, explanation of fusion and fission from the nature of the binding energy graph. • Know about the nuclear models and their roles in explaining the ground state properties of the nucleus –(i) the liquid drop model, its justification so far as the nuclear properties are concerned, the semi-empirical mass formula, (ii) the shell model, evidence of shell structure, magic numbers, predictions of ground state spin and parity, theoretical deduction of the shell structure, consistency of the shell structure with the Pauli exclusion principles. • Learn about the process of radioactivity, the radioactive decay law, the emission of alpha, beta and gamma rays, the properties of the constituents of these rays and the mechanisms of the emissions of these rays, outlines of Gamow's theory of alpha decay and Pauli's theory of beta decay with the neutrino hypothesis, the electron capture, the fine structure of alpha particle spectrum, the Geiger-Nuttall law, the radioactive series. • Learn the basic aspects of nuclear reactions, the Q-value of such reaction and its derivation from conservation laws, The reaction cross-sections, the types of nuclear reactions, direct and compound nuclear reactions, Rutherford scattering by Coulomb potential. • Learn some basic aspects of interaction of nuclear radiation with matter- interaction of gamma ray by photoelectric effect, Compton scattering and pair production, energy loss due to ionization, Cerenkov radiation. • Learn about the detectors of nuclear radiations- the Geiger-Mueller counter, the scintillation counter, the photo-multiplier tube, the solid state and semiconductor detectors. The students are expected to learn about the principles and basic constructions of particle accelerators such as the Van-de-Graff generator, cyclotron, betatron

and synchrotron. They should know about the accelerator facilities in India.

•Gain knowledge on the basic aspects of particle Physics – the fundamental interactions, elementary and composite particles, the classifications of particles: leptons, hadrons (baryons and mesons), quarks, gauge bosons. The students should know about the quantum numbers of particles: energy, linear momentum, angular momentum, isospin, electric charge, colour charge, strangeness, lepton numbers, baryon number and the conservation laws associated with them.

**Skills to be learned :**

- Skills to describe and explain the properties of nuclei and derive them from various models of nuclear structure.
- To understand, explain and derive the various theoretical formulation of nuclear disintegration like  $\alpha$  decay,  $\beta$  decay and  $\sigma$  decays.
- Develop basic understanding of nuclear reactions and decays with help of theoretical formulate and laboratory experiments.
- Skills to develop basic understanding of the interaction of various nuclear radiation with matter in low and high energy ..... Ability to understand, construct and operate simple detector systems for nuclear radiation and training to work with various types of nuclear accelerators.
- Develop basic knowledge of elementary particles as fundamental constituent of matter, their properties, conservation laws during their interactions with matter.

## **PHYSICS OF DEVICES AND COMMUNICATION**

**Course learning outcome:** Metal oxide semiconductors, UJT, JFET, MOSFET, Charge coupled Devices and Tunnel Diode.

- Power Supply and the role of Capacitance and Inductance filters .
- Active and passive filters and various types of filters.
- Multivibrators using transistors, Phase locked loops, voltage controlled oscillators
- Basics of photolithography for IC fabrication, about

masks and etching. • Concepts of parallel and serial communication and knowledge of USB standards and GPIB.

• Basic idea of communication including different modulation techniques.

**Skills to be learned :** • Acquire knowledge and skills to understand the ..... of the following devices and instruments and practical knowledge to use them by doing experiments in laboratory. (i)UJT (ii)BJT(iii)MOSFET(iv)CCD (v)Tunnel Diodes (vi)Various types of Power Supplies (vii)Various types of Filters (viii)Multivibrators (ix)Oscillators

### **RENEWABLE ENERGY AND ENERGY HARVESTING**

**Course learning outcome:** • The students are expected to learn not only the theories of the renewable sources of energy, but also to have hands-on experiences on them wherever possible. Some of the renewable sources of energy which should be studied here are: (i) off-shore wind energy, (ii) tidal energy, (iii) solar energy, (iv) biogas energy and (v) hydroelectricity. All these energy sources should be studied in detail. • Learn about piezoelectricity, carbon- captured technologies like cells, batteries. • The students should observe practical demonstrations of (i) training modules of solar energy, wind energy etc., (ii) Conversion of vibration into voltage using piezoelectric materials, (iv) conversion of thermal energy into voltage using thermoelectric modules. Broad contents of the course: • Fossil fuels and Alternate Sources of Energy • Solar energy • Wind Energy harvesting • Ocean Energy • Geothermal Energy • Hydro Energy • Piezoelectric Energy Harvesting • Electromagnetic Energy Harvesting

**Skills to be learned :** • In this course student will study non –conventional energy sources and their practical applications.

## **B.Sc . TY COURSE OUTCOMES**

### **QUANTUM MECHANICS AND APPLICATIONS QUANTUM MECHANICS**

**Course learning outcome:** This course will enable the student to get familiar with quantum mechanics formulation.

- After an exposition of inadequacies of classical mechanics in explaining microscopic phenomena, quantum theory formulation is introduced through Schrodinger equation.
- The interpretation of wave function of quantum particle and probabilistic nature of its location and subtler points of quantum phenomena are exposed to the student.
- Through understanding the behavior of quantum particle encountering a i) barrier, ii) potential, the student gets exposed to solving non-relativistic hydrogen atom, for its spectrum and eigenfunctions.
- Study of influence of electric and magnetic fields on atoms will help in understanding Stark effect and Zeeman Effect respectively.
- The experiments using Sci-lab will enable the student to appreciate nuances involved in the theory.
- This basic course will form a firm basis to understand quantum many body problems.
- In the laboratory course, with the exposure in computational programming in the computer lab, the student will be in a position to solve Schrodinger equation for ground state energy and wave functions of various simple quantum mechanical one-dimensional and three dimensional potentials.

**Skills to be learned :**

- This course shall develop an understanding of how to model a given problem such as hydrogen, particle in a box etc. atom etc using wave function, operators and solve them.
- These skills will help in understanding the different Quantum Systems.

## NUCLEAR & PARTICLE PHYSICS

**Course learning outcome:**

- Learn the ground state properties of a nucleus – the constituents and their properties, mass number and atomic number, relation between the mass number and the radius and the mass number, average density, range of force, saturation property, stability curve, the concepts of packing fraction and binding energy, binding energy per nucleon vs. mass number graph, explanation of fusion and fission from the nature of the binding energy graph.
- Know about the nuclear models and their roles in explaining the ground state properties of the nucleus –(i) the liquid drop model, its justification so far as the nuclear properties are concerned, the semi-empirical mass formula, (ii) the shell model, evidence of shell structure, magic numbers, predictions of ground state spin and parity, theoretical deduction of the shell structure, consistency of the shell structure with the Pauli exclusion principles.
- Learn about the process of radio activity, the radioactive decay law, the emission of alpha, beta and gamma rays, the properties of the constituents of these rays and the mechanisms of the emissions of these rays, outlines of Gamow's theory of alpha decay and Pauli's theory of beta decay with the neutrino hypothesis, the electron capture, the fine structure of alpha particle spectrum, the Geiger-Nuttall law, the radioactive series.
- Learn the basic aspects of nuclear reactions, the Q-value of such reaction and its derivation from conservation laws, the reaction cross-sections, the types of nuclear reactions, direct and compound nuclear reactions, Rutherford scattering by Coulomb potential.
- Learn some basic aspects of interaction of nuclear radiation with matter- interaction of gamma ray by photoelectric effect , Compton scattering and pair production, energy loss due to ionization, Cerenkov radiation.

Learn about the detectors of nuclear radiations- the Geiger-Mueller counter, the scintillation counter, the photo-multiplier tube, the solid state and semiconductor detectors. •The students are expected to learn about the principles and basic constructions of particle accelerators such as the Van-de-Graff generator, cyclotron, betatron and synchrotron. They should know about the accelerator facilities in India. •Gain knowledge on the basic aspects of particle Physics – the fundamental interactions, elementary and composite particles, the classifications of particles: leptons, hadrons (baryons and mesons), quarks, gauge bosons. The students should know about the quantum numbers of particles: energy, linear momentum, angular momentum, isospin, electric charge, colour charge, strangeness, lepton numbers, baryon number and the conservation laws associated with them.

**Skills to be learned :** • Skills to describe and explain the properties of nuclei and derive them from various models of nuclear structure. • To understand, explain and derive the various theoretical formulation of nuclear disintegration like  $\alpha$  decay,  $\beta$  decay and  $\sigma$  decays. • Develop basic understanding of nuclear reactions and decays with help of theoretical formulate and laboratory experiments. Skills to develop basic understanding of the interaction of various nuclear radiation with matter in low and high energy ..... • Ability to understand, construct and operate simple detector systems for nuclear radiation and training to work with various types of nuclear accelerators. •Develop basic knowledge of elementary particles as fundamental constituent of matter, their properties, conservation laws during their interactions with matter.

## ELEMENTS OF MODERN PHYSICS

**Course learning outcome:**

- Know main aspects of the inadequacies of classical mechanics and understand historical development of quantum mechanics and ability to discuss and interpret experiments that reveal the dual nature of matter.
- Understand the theory of quantum measurements, wave packets and uncertainty principle.
- Understand the central concepts of quantum mechanics: wave functions, momentum and energy operator, the Schrodinger equation, time dependent and time independent cases, probability density and the normalization techniques, skill development on problem solving e.g. one dimensional rigid box, tunneling through potential barrier, step potential, rectangular barrier.
- Understanding the properties of nuclei like density, size, binding energy, nuclear forces and structure of atomic nucleus, liquid drop model and nuclear shell model and mass formula.
- Ability to calculate the decay rates and lifetime of radioactive decays like alpha, beta, gamma decay. Neutrinos and its properties and role in theory of beta decay.
- Understand fission and fusion well as nuclear processes to produce nuclear energy in nuclear reactor and stellar energy in stars.
- Understand various interactions of electromagnetic radiation with matter. Electron positron pair creation.

• In the laboratory course, the students will get opportunity to perform the following experiments

- Measurement of Planck's constant by more than one method.
- Verification of the photoelectric effect and determination of the work Function of a metal.
- Determination of the charge of electron and  $e/m$  of electron.
- Determination of the ionization potential of atoms.
- Determine the wavelength of the emission lines in the spectrum of Hydrogen atom. Determine the absorption lines in the rotational spectrum of molecules.
- Verification of the law of the Radioactive decay and determine the mean life

time of a Radioactive Source, Study the absorption of the electrons from Beta decay. Study of the electron spectrum in Radioactive Beta decays of nuclei.

**Skills to be learned :** • Comprehend the failure of classical physics and need for quantum physics. • Grasp the basic foundation of various experiments establishing the quantum physics by doing the experiments in laboratory and interpreting them. • Formulate the basic theoretical problems in one, two and three dimensional physics and solve them. • Learning to apply the basic skills developed in quantum physics to various problems in (i) Nuclear Physics (ii) Atomic Physics

### **SOLID STATE PHYSICS**

**Course learning outcome:** At the end of the course the student is expected to learn and assimilate the following. • A brief idea about crystalline and amorphous substances, about lattice, unit cell, miller indices, reciprocal lattice, concept of Brillouin zones and diffraction of X-rays by crystalline materials. • Knowledge of lattice vibrations, phonons and in depth of knowledge of Einstein and Debye theory of specific heat of solids. • At knowledge of different types of magnetism from diamagnetism to ferromagnetism and hysteresis loops and energy loss. • Secured an understanding about the dielectric and ferroelectric properties of materials. • Understanding above the band theory of solids and must be able to differentiate insulators, conductors and semiconductors. • Understand the basic idea about superconductors and their classifications. • To carry out experiments based on the theory that they have learned to measure the magnetic susceptibility, dielectric constant, trace hysteresis loop. They will also employ to four probe methods to measure electrical conductivity and the hall set up to determine the hall coefficient of a semiconductor.



**Skills to be learned :** • Learn basics of crystal structure and physics of lattice dynamics • Learn the physics of different types of material like magnetic materials, dielectric materials, metals and their properties. • Understand the physics of insulators, semiconductor and conductors with special emphasis on the elementary band theory of semiconductors. • Comprehend the basic theory of superconductors. Type I and II superconductors, their properties and physical concept of BCS theory.

### **DIGITAL SYSTEM S AND APPLICATIONS**

**Course learning outcome:** As the successful completion of the course the student is expected to be conversant with the following.

- Basic working of an oscilloscope including its different components and to employ the same to study different wave forms and to measure voltage, current, frequency and phase.
- Secure first-hand idea of different components including both active and passive components to gain a insight into circuits using discrete components and also to learn about integrated circuits.
- About analog systems and digital systems and their differences, fundamental logic gates, combinational as well as sequential and number systems.
- Synthesis of Boolean functions, simplification and construction of digital circuits by employing Boolean algebra.
- Sequential systems by choosing FlipFlop as a building block- construct multivibrators, counters to provide a basic idea about memory including RAM,ROM and also about memory organization.
- Microprocessor and assembly language programming with special reference to Intel $\mu$ P 8085.
- In the laboratory he is expected to construct both combinationa l circuits and sequential circuits by employing NAND as building blocks and demonstrate Adders, Subtractors, Shift Registers, and multivibrators using 555 ICs. He is also expected to use  $\mu$ P 8085 to demonstrate the same simple programme using assembly language and execute the programme using a  $\mu$ P

kit. • Digital storage oscilloscope. • Active and passive filters • Fundamental logic gates, combinational as well as sequential and number systems. • Synthesis of Boolean functions, simplification and construction of digital circuits by employing Boolean algebra. • Sequential systems by choosing Flip Flop as a building block- construct multivibrators, counters to provide a basic idea about memory including RAM,ROM and also about memory organization. • Microprocessor and assembly language programming with special reference to Intel  $\mu$ P 8085.

**Skills to be learned :** • Acquire skills to understanding the functioning and operation of CRO to measure physical quantities in electrical and electronic circuits. • Learn the basics of IC and digital circuits, and difference between analog and digital circuits. Various logic GATES and their realization using diode s and transmitters. • Learn fundamental of Boolean algebra and their role in constructing digital circuits. • Learn about combinatorial and sequential systems by building block circuits to construct multivibrators and counters. • Understand basics of microprocessor and assembly language programming with examples.

## **COMMUNICATION ELECTRONICS**

**Course learning outcome:** At the end of the course the student is expected to have an idea/concept of the following,

• Electromagnetic spectra and different frequency bands. • Modulation, different types of modulation and about super heterodyne receivers. • Concept of sampling, sampling theorem and multiplexing. • Digital transmission, encoding and decoding. • Satellite communication including uplinking and downlinking. • Mobile communication/telephony and concepts of cell telephony. • 2G, 3G, 4G and 5G (Quantitative). • Apply the theory that they have learned in the theory class to gain hands on experience in building

modulation and demodulation circuits; Transmitters and Receivers for AM and FM. Also to construct TDM, PAM, PWM, PPM and ASK, PSK and FSK modulator and verify their results.

**Skills to be learned :**

- Learn the skills to understand the basic concepts of communication.
- Learn the techniques of different types of modulation of electromagnetic signals like (i)Amplitude Modulation(ii)Frequency Modulation (iii)Phase Modulation(iv)Analog Pulse Modulation (v)Digital Pulse Modulation
- Learn basics of satellite communication.
- Learn concepts and application of mobile telephony system.

Maharashtra Mahavidyalaya, Nilanga

**B.C.A. &  
M.Sc. (Computer Science)**

# **Bachelor of Computer Application**

**(3 years)**  
**(Revised CBCS pattern)**

**Introduced from Academic Year 2019-2020**

## **BCAFY First<sup>SEM</sup>**

**Name of Subject-Fundamentals of Computer Science and Information Technology**

### **Outcome**

- 1.To learn Basic Function of Devices like I/O, HDD etc. To Understand the Fundamental of Software and Hardware.
- 2.Understand the Concept of Operating System and Network

## **Name of Subject -Office Automation**

### **Outcomes**

After completion of this course student will be able to understand the computer software,hardware, made available to simplify and automate a variety of office operations such as data processing, data manipulating and data presentation with various application those are presents in Microsoft office tools packages

## **Name of Subject -Programming in C**

### **Outcomes**

1. To study of structure of programming languages, structure of c program.
2. To study different keyword for making program.
3. To develop programs using operators and control statement.
4. To describe an array, structure, union, string and functions.
5. Student are able to develop application software

## **Name of Subject Elective: Element of Statistics**

### **Outcomes:**

1. Explain the use of data collection & statistics.
2. Recognize, examine & interact the basic principles of describing and presenting data.

## **Name of Subject Elective: Mathematical Technique in Computer Science (MTCS)**

### **Outcomes:**

1. Able to use standard mathematical techniques to solve elementary problem.
2. Understand the nature of mathematical proof & be able to write clear & concise proof.

## **Name of Subject -Open Elective: University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR**

### **Name of Subject Open Elective: Applied English Course**

### **Outcome:**

By the end of this course students should be able to:

1. Understand and demonstrate Basic English usages for their different purposes.
2. Clear entrance examination and aptitude tests.
3. Write various letters, reports required for professional life.

## **Name of Subject Open Elective: Business Communication**

### **Course outcome:**

1. By the end of this course students should be able to:
2. Understand and demonstrate Basic English usages for their different purposes.
3. Clear entrance examination and aptitude tests.
4. Write various letters, reports required for professional life.

## **Semester II**

### **Name of Subject -Business Accounting with Tally**

#### **Outcome:**

1. Students will able to do Accounting Using Tally

### **Name of Subject -Organizational Behaviour**

#### **Learning Outcomes:**

1. Students will become more self-aware and will have identifies areas of development for long term effectiveness.
2. Students will understand the role individuals play collectively to perform in the Organization

### **Name of Subject -Web Technology**

#### **Outcome:**

1. Be able to use HTML programming

### **Name of Subject -Elective: E-Commerce**

#### **Outcome:**

At the end of the course, the students is expected to realize the problems involved in designing and building e-commerce systems; understand the need to design EC systems that fully meet the requirements of the intended users; appreciate the need to ensure that the implementation of a design is adequately tested to ensure that the completed EC system meets the specifications

## **Name of Subject Elective: Desktop Publishing (DTP)**

### **Outcomes**

1. Create personal documents such as business cards and resumes.
2. Create business documents such as flyers and advertisements.
3. Create a newsletter with graphics and draw objects.
4. Create a course project illustrating Desktop Publishing techniques

### **Name of Subject**

**Open Elective: University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses**

**OR**

### **Name of Subject Open Elective: Functional English**

#### **Course outcome:**

By the end of this course students should be able to:

1. Understand and demonstrate Basic English usages for their different purposes.
2. Clear entrance examination and aptitude tests.
3. Write various letters, reports required for professional life.

### **Name of Subject Open Elective: Corporate English**

#### **Course outcome:**

By the end of this course students should be able to:

1. Understand and demonstrate Basic English usages for their different purposes.
2. Clear entrance examination and aptitude tests.
3. Write various letters, reports required for professional life.



# BCASY

## III<sup>SEM</sup> AND IV<sup>SEM</sup>

### **NAME OF SUBJECT: OBJECT ORIENTED CONCEPT USING C++**

#### Outcomes:

At the end of this course, the students are able to:

1. Conclude the practical and ideal characteristics of objected oriented programming.
2. Explain and design classes, objects Constructors, Inheritance, polymorphism and operator overloading.
3. Compare the working of class and objects.
4. Explain the process of problem solving using C++.

### **NAME OF SUBJECT: Data Structure**

#### Outcomes:

On successful completion of this course students will be able to

1. Students will be able to choose appropriate data structures as applied to specified problem, definition.
2. Students will be able to handle operations like searching, insertion, deletion, traversing mechanism etc., on various data structures.
3. Students will be able to apply concepts learned in various domains like DBMS, compiler construction etc.
4. Students will be able to use linear and non linear data structures like stacks, queues, linked list etc.

### **NAME OF SUBJECT: DATA COMMUNICATION**

**Outcomes:**

1. Understand the basic principles of network design;
2. Understand the concept data communication within the network environment;
3. Understand the conflicting issues and resolution techniques in data transmission;
4. Understand the setting up of a network environment with all the necessary data;
5. Communication components, procedure and techniques that make it functional

**NAME OF SUBJECT: JAVA PROGRAMMING**

**Outcomes:**

On successful completion of this course students will be able to

1. Have the ability to Write java application programs using oop to solve specific problems
2. Create, debug and test software application written in java programming
3. To implement various concepts related to language
4. Design and implement simple GUI application

**NAME OF SUBJECT-:RELATIONAL DATABSE MANAGEMENT SYSTEM**

**Outcomes:**

On successful completion of this course students will be able to

1. Define program-data independence, data models for database system, database schema and database instance.
2. Recall Relational Algebra concepts, and use it to translate queries to Relational Algebra.

## **NAME OF SUBJECT--:OPERATING SYSTEM**

### **Outcomes:**

The students should be able to: -

1. Demonstrate the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system.
2. Learn the various resource management techniques for distributed systems.
3. Identify the different features of real time and mobile operating systems.
4. Modify existing open source kernels in terms of functionality or features used.

## **NAME OF SUBJECT--: COMPUTER ARCHITECTURE & MICROPROCESSOR**

### **Outcomes:**

On successful completion of this course students will be able to

1. Familiar with digital circuits and its functions and microprogramming.
2. Understand the methods to solve the data and to transfer the data
3. Study basic computer organization, design and micro-operations.
4. Understanding of CPU functioning and computer arithmetic.
5. Learning various methods and techniques of memory organization

## **NAME OF SUBJECT-: logical Reasoning**

Outcomes:

Successful students will be able to:

1. Distinguish the basic elements of arguments and recognize the different types of arguments.
2. Symbolize natural language statements in the language of propositional and predicate logic.
3. Identify logical relations among statements; and analyze logically complex statements into their truth- functional or quantificational components.
4. Distinguish valid deductive arguments from invalid ones.
5. Use truth tables and formal proofs to analyze the logic of arguments and to assess their adequacy.

## BCA THIRD YEAR

V<sup>SEM</sup>

### **Name of Subject Windows Programming with C#.NET**

#### OUTCOMES

1. To develop background knowledge as well as core expertise in C#.
2. To understand the windows form creation and provide knowledge for creating windows applications.
3. To learn the object oriented concepts.

### **Name of Subject Advance Java Programming**

#### OUTCOMES

1. To develop background knowledge as well as core expertise AWT, Frames, Applet etc.
2. To understand the dynamic web page creation and provide knowledge for creating Dynamic Websites.
3. To learn the Servlet and JSP.

### **Name of Subject Linux and Shell Programming**

#### OUTCOMES

1. This course shall build a platform for students to start their own enterprise
2. For Making Student Job Ready
3. To become familiar with open source software and user interface.
4. To securely handle OS without any viruses and malwares.
5. For easily use free software available on internet.
6. To understand the basic operating system command.

7. To understand the basic concept of shell programming

### **Name of Subject Cloud Computing**

#### **OUTCOMES**

1. To Study basics of cloud computing, and comprehend the terminology, tools and technologies associated with today's top cloud platforms.
2. To provide the programmer's perspective of working of Cloud Computing.
3. Implement Simple Cloud programs to solve simple problems.

### **Name of Subject Distributed Computing**

#### **OUTCOMES**

1. Distinguish between distributed computing and parallel computing.
2. Understand concepts of architectural Styles, Communication, and Synchronization.
3. Demonstrate different naming & synchronization technologies
4. Explore various distributed concepts

### **Name of Subject Digital Image Processing**

#### **OUTCOMES**

1. Review the fundamental concepts of a digital image processing system.
2. Analyze images in the frequency domain using various transforms.
3. Evaluate the techniques for image enhancement and image restoration.
4. Categorize various compression techniques.

5. Interpret Image compression standards.
6. Interpret image segmentation and representation techniques.

### **Name of Subject JavaScript**

#### **OUTCOMES**

1. Use operators, variables, arrays, control structures, functions and objects in JavaScript.
2. Identify popular JavaScript Libraries.
3. Use regular expressions for form validation.
4. Use Array, Math and String methods to access proper data.
5. To build dynamic web pages and web applications.

### **Name of Subject MySQL**

#### **OUTCOMES**

1. Detailed understanding of MySQL database.
2. Knowledge of writing SQL queries.
3. Knowledge of maintaining relation between table and database normalization.
4. Understanding different numerical, string handling and date handling function.

## **Name of Subject Accounting with Tally**

### **OUTCOMES**

1. Detailed understanding of Tally software.
2. Knowledge of creating company and inventory.
3. Knowledge of maintaining ledger, vouchers etc.
4. Understanding different function of tally.

## **Name of Subject Advance Java Programming(PR)**

### **OUTCOMES**

1. To develop background knowledge as well as core expertise AWT, Frames, Applet etc.
2. To understand the dynamic web page creation and provide knowledge for creating Dynamic Websites.
3. To learn the Servlet and JSP.

## **Name of Subject Linux and Shell Programming(PR)**

### **OUTCOMES**

This course shall build a platform for students to start their own enterprise

1. For Making Student Job Ready
2. To become familiar with open source software and user interface.
3. To securely handle OS without any viruses and malwares.



4. For easily use free software available on internet.
5. To understand the basic operating system command.
6. To understand the basic concept of shell programming

### **Name of Subject Windows Programming with C#.NET(PR)**

#### **OUTCOMES**

1. To develop background knowledge as well as core expertise in C#.
2. To understand the windows form creation and provide knowledge for creating windows applications.
3. To learn the object oriented concepts.

V I<sup>SEM</sup>

### **Name of Subject Advance Networking Concepts**

#### **Outcomes:**

1. Evaluate the usability of mobile devices such as smart phones.
2. Select appropriate network technologies in commercial and enterprise applications.
3. Assess the capabilities of next generation networks and role of network technologies.

### **Name of Subject Software Engineering**

#### **Outcomes:**

1. Ability to learn various methods of software development.
2. Ability to apply various software testing techniques

## **Name of Subject Linux Administration**

### Outcomes:

1. Awareness of existing demanding trends in IT industry in order to get placement & research in open source market.
2. Understand the Linux OS architecture.
3. Install and use different types of distributions available in market.
4. Understand the different Linux administration commands.

## **Name of Subject Software Testing**

### Outcomes:

1. Ability to learn various methods of software development.
2. Ability to apply various software testing techniques

## **Name of Subject Elective- Mobile Communication**

### Outcomes:

1. Evaluate the usability of mobile devices such as smart phones.
2. Select appropriate wireless technologies in commercial and enterprise applications.
3. Assess the capabilities of next generation networks and role of mobile technologies

## **Name of Subject Data Mining & Data Warehousing**

### **Outcomes:**

Students who complete this course should be able to

1. Process raw data to make it suitable for various data mining algorithms.
2. Discover and measure interesting patterns from different kinds of databases.
3. Apply the techniques of clustering, classification, association finding, feature selection and visualization to real world data.

## **Name of Subject Enterprise Resource Planning**

### **Outcomes:**

Students who complete this course should be able to

1. Understand how to process raw data to make it suitable for various decision Support Systems.
2. Discover and measure ERP modules for manufacturing (CAD/ CAM).

## **Name of Subject SQL Server**

### **Outcomes:**

1. Detailed understanding of MS SQL Server database. o Knowledge of writing SQL queries.
2. Knowledge of DDL, DML, DCL commands
3. Knowledge of maintaining relation between table and database normalization.

4. Understanding different numerical, string handling and date handling function.

### **Name of Subject Macromedia Flash**

#### **Outcomes:**

1. Detailed understanding creating graphics and animations.
2. Knowledge of writing Action Scripts.
3. Knowledge of Creating animation movies
4. Knowledge of Working with sounds and Videos

### **Name of Subject Android Programming**

#### **Outcomes:**

1. Awareness of existing demanding trends in IT industry in order to get placement & research
2. Understand the Android OS architecture
3. Install and use appropriate tools for Android development, including IDE, device emulator, and profiling tools.
4. Understand the Android application architecture, including the roles of the task stack, activities, & services.
5. Build user interfaces with fragments, views, form widgets, text input, lists, tables, and more

## **Name of Subject Linux Administration(PR)**

### Outcomes:

1. Awareness of existing demanding trends in IT industry in order to get placement & research in open source market.
2. Understand the Linux OS architecture.
3. Install and use different types of distributions available in market.
4. Understand the different Linux administration commands.

## **Name of Subject Software Testing**

### Outcomes:

1. Ability to learn various methods of software development.
2. Ability to apply various software testing techniques

## **Name of Subject Seminar**

### Outcomes:

1. Students have to prepare and present seminar on recent technologies with the help of guide.
2. Students have to submit the seminar reports.



# M.Sc. (Computer Science)

## First Year

### Course Outcomes :Computer Architecture and Microprocessor

Course Objectives :

1. To develop Understanding of Internal Architecture of Computer
2. To aware students about Basics of Microprocessor & Assembly Language Programming

Course Outcome :

1. Students will acquire skill of Assembly Language programming using 8086 Microprocessor
2. Student will be familiar with Internal Processing of Computers

### OOP Concepts using C++

**Objectives :** 1. To aware the students with the concept of Object oriented concepts 2. To master students in advanced programming languages faster which is useful for foundation of software development.

**Course Outcome :** 1. Students will have the conceptual knowledge of Object Oriented programming.  
2. This course will create foundation for student to learn other Object Oriented Programming Languages such as JAVA

### Mathematical Foundations for Computer Science

**Course Objectives:** Cultivate clear thinking and creative problem solving. Thoroughly train in the construction and understanding of mathematical proofs. Exercise common mathematical arguments and proof strategies.

**Course Outcome: At** the end of the course student will be able to Understand the notion of mathematical thinking, mathematical proofs and to apply them in problem solving. Ability to understand use of functions, graphs and their use in programming applications. Apply discrete structures into computing problems, formal specification, artificial intelligence, cryptography, Data Analysis

# Relational Database Management System

**Course Objectives:** 1. To understand the features of Relational database. 2. To describe data models and schemas in DBMS. 3. To use SQL- the standard language of relational databases for database operations. 4. To understand the functional dependencies and design of the databases.

**Course Outcome:** 1. To study the basic concepts of relational databases

2. Learn and practice data modeling using the entity-relationship and developing database designs.
3. Understand the use of Structured Query Language (SQL) and learn SQL syntax for writing queries.
4. Apply normalization techniques to normalize the databases.

## Computer Network

**Course Objectives:** To understand the basic concepts of computer network and firm foundation for understanding how data communication occurring using computer network. It is based around the OSI Reference Model which deals with the major issues and related protocol studies in the various layers (Physical, Data Link, Network, Transport, Session, Presentation and Application) of the model.

**Course Outcome:** 1.analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies; 2.specify and identify deficiencies in existing protocols, and then go onto formulate new and better protocols; 3.analyze,specify and design the topological and routing strategies for an IP based networking infrastructure 4.Have a working knowledge of datagram and internet socket programming

### Lab-1 : C++ Programming

**Course Objectives :** 1. Get hands on experience with C++ Programming. 2. Write and execute program logic in C++

**Course Outcome :** 1. Confidence in C++. 2. Students will be skilled to learn fundamentals of advanced internet programming languages



## Lab-2 : ALP using 8086 Microprocessor

**Course Objectives** : 1. Get hands on experience with Assembly Language Programming. 2. Write and debug programs in TASM/MASM/hardware kits

**Course Outcome** : 1. Lab work will skill to apply the fundamentals of assembly level programming of microprocessors. 2. Students will be skilled to learn fundamentals of designing embedded systems

## Second Semester

### Design and Analysis of Algorithms

**Course Objectives** : 1. To understand the concept of designing an algorithm. 2. To learn advance algorithm techniques that are related to real life problem.

**Course Outcome** : 1. This course will aware the implementation of various advance algorithms to solve real world problem 2. Students will be skilled to select appropriate design techniques to solve various problems problems.

### Software Engineering

**Course Objectives** : 1. To develop software engineering skills and testing plans. 2. To understand system concepts and its application in Software development

**Course Outcome** : After completion of this course students will be able to 1. Learn various methods of software development. 2. Apply various software testing techniques.

### Programming with VB .NET

**Course Objectives** : 1. To provide the knowledge of .Net framework along with VB.Net language 2. To skill the students for developing windows base applications.

**Course Outcome** : 1. Students will able to develop simple as well as complex applications using .Net framework 2. Students will learn to use web applications for creating GUI based programs.

### Advanced Operating System

**Course Objectives** : 1. To learn the mechanisms of OS to handle processes and threads and their communication 2. To learn the advanced mechanisms involved in process , file and memory management in contemporary OS

**Course Outcome** : 1. Students will be able to Analyze the structure of OS and basic architectural components involved in OS design 2. Students will be able to Conceptualize the components involved in designing a contemporary OS

## Compiler Designing

**Course Objectives :** 1. Describe the design of a compiler including its phases and components. 2. To explore the students step by step conversion of Source program into Object code

**Course Outcome :** 1. To realize the students basics of compiler design and apply for real time applications. 2. Students will get knowledge about compiler generation tools and techniques

## Information Technology

**Course Objectives:** 1. Introduce students to foundation of Information technology

**Course outcome:** After completion of this course student will be able to: 1. Understand basic concepts in IT and their use in actual working

## M.Sc Second Year

### Advance Database Administration

1. Design, model and install any database management systems by using Oracle database as sample.
2. Plan, design, construct, control and manage database instances, database network environment, storage structures, user security, database backup and recovery, database maintenance
3. Define and devise transaction management, concurrency control, crash recovery components
4. Examine and perform data base administration roles and operations by using Oracle database system as a sample

### Java Server Pages, Servlets & Struts

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Ability to create dynamic and interactive web sites and interaction with client and server

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Gain knowledge of client side scripting using java script and DHTML.

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Demonstrate understanding of what XML is and how to parse and use XML data

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Able to do server side programming with Java Servlets, JSP and PHP

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Able to design rich client presentation using AJAX

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## Data Mining & Data Warehousing

1. To identify the scope and essentiality of Data Warehousing and Mining.
2. To analyze data, choose relevant models and algorithms for respective applications.
3. To study spatial and web data mining.
4. To develop research interest towards advances in data mining

## **Advanced Operating System**

1. To introduce basic concepts and functions of operating systems.
2. To understand the concept of process, thread and resource management.
3. To understand the concepts of process synchronization and deadlock.
4. To understand various Memory, I/O and File management techniques.

## **Mobile Programming**

### **Outcomes:**

1. Evaluate the usability of mobile devices such as smart phones.
2. Select appropriate wireless technologies in commercial and enterprise applications.
3. Assess the capabilities of next generation networks and role of mobile technologies

## **Fuzzy System and Artificial Neural Network**

1. To Conceptualize the working of human brain using ANN.
2. To become familiar with neural networks that can learn from available examples and generalize to form appropriate rules for inference systems.
3. To introduce the ideas of fuzzy sets, fuzzy logic and use of heuristics based on human experience.
4. To provide the mathematical background for carrying out the optimization and familiarizing genetic algorithm for seeking global optimum in self-learning situation.

## **Linux Administration**

## OUTCOMES

1. This course shall build a platform for students to start their own enterprise
2. For Making Student Job Ready
3. To become familiar with open source software and user interface.
4. To securely handle OS without any viruses and malwares.
5. For easily use free software available on internet.
6. To understand the basic operating system command.

Artificial Intelligence

## Bioinformatics

To provide an overview of an exciting growing field of big data analytics. 2. To introduce the tools required to manage and analyze big data like Hadoop, NoSql MapReduce. 3. To teach the fundamental techniques and principles in achieving big data analytics with scalability and streaming capability. 4. To enable students to have skills that will help them to solve complex real-world problems in for decision support.

## Cloud Computing

### OUTCOMES

1. To Study basics of cloud computing, and comprehend the terminology, tools and technologies associated with today's top cloud platforms.
2. To provide the programmer's perspective of working of Cloud Computing.
3. Implement Simple Cloud programs to solve simple problems.

## Artificial Intelligence

To conceptualize the basic ideas and techniques underlying the design of intelligent systems. 2. To make students understand and Explore the mechanism of mind that enable intelligent thought

and action. 3. To make students understand advanced representation formalism and search techniques. 4. To make students understand how to deal with uncertain and incomplete information.

Maharashtra Mahavidyalaya, Nilanga

## **B.Voc. (Bachelor of Vocational)**

- 1. Food Processing, Preservation and Storage**
- 2. Web Printing Technology**

Maharashtra Shikshan Samiti's  
**Maharashtra Mahavidyalaya Nilanga**  
**Department of B.Voc.**  
**COURSE OUTCOME\**  
**Of**  
**(Food processing, Preservation and Storage)**  
**F.Y. Ist sem.**  
**Semester I**  
**General Education**

**BVGE-1 INTRODUCTION TO COMPUTER HARDWARE**

**Outcome:**

- To make aware the students with the knowledge and use of computer hardware
- To introduce the basic principle of hardware and operational aspects of computers

**BVGE-2 INTRODUCTION TO COMPUTER APPLICATION**

**Outcome:**

- To acquaint the students with the knowledge and use of computers and to introduce the basic principles, organization and operational aspects of computers.

**Skill Education**

**FPPS-111 PRINCIPLES OF FOOD PROCESSING**

**Outcome:**

- Student will be able to understand different food preservation techniques, process.
- Student will be able to extend shelf life of different food product by using the various methods of food preservation.

**FPPS- 112 FOOD CHEMISTRY**

**Outcome:**

- To learn and understand the chemistry of various Food micronutrient used in foods along with their role and properties

## **FPPS-113 FUNDAMENTALS OF MICROBIOLOGY**

### **Outcome:**

- Student will enable to know the basics and importance of microbiology in food science

## **II Semester** **General Education**

### **BVGE-5 COMPUTER OPERATING SKILLS**

#### **Outcome :-**

- Student will learn about
- the exchange of information through email
- Modes of transmission
- Different operating systems
- E-commerce

### **BVGE-6 COMMUNICATION AND DOCUMENTATION SKILLS**

#### **Outcome :-**

- To enrich the students with skills to write to communicate and articulate in English (verbal as well as writing) and to acquaint the students with the knowledge and use of computers and to introduce the basic principles, organization and operational aspects of computers.

## **Skill Education**

### **FPPS-121 CEREAL PROCESSING**

#### **Outcome :-**

- Student will get acquainted with knowledge and processing, preservation and storage of various cereal grains and their products.

### **FPPS-122 CONFECTIONARY TECHNOLOGY**

#### **Outcome :-**

- Students will be able to perform different confectionery products like, candies, fruit toffee, chakki, petha, toffee etc.
- Students will get knowledge of sugar and allied industries.

### **FPPS -123 INTRODUCTION TO FOOD MICROBIOLOGY**

#### **Outcomes :-**



- Student will get acquainted with different groups of micro-organisms associated with food and their activities in food and food products during processing, preservation and storage.

**II<sup>nd</sup> Year**  
**Semester III**  
**General Education**

**BVGE-9 ENVIRONMENTAL SCIENCE**

**Outcomes:**

- Student will possess the intellectual flexibility necessary to view environmental question from multiple perspectives, prepared to alter their understanding as they learn new ways of understanding.

**BVGE-10 SOFT SKILLS AND PERSONALITY DEVELOPMENT**

**Outcome:-**

- This course helps students to select their professional career as per their inborn qualities and potential, and also this course develops many soft skills in students which are essential in all types of career.

**Skill Education**

**FPPS-231 LEGUMES AND OILSEEDS TECHNOLOGY**

**Outcome:**

- Know about different legumes processing aspects and preparation of products with legumes and oil seeds.
- Learn about different oil seeds, oil milling by expellers, solvent extraction of oils, refining of oils and utilization of oil seed meals for different food uses

**FPPS-232 PROCESSING OF MILK AND MILK PRODUCTS**

**Outcome:**

- Maintain hygiene and cleanliness of floor dairy equipments.

- Operate machineries used in dairy plant and understand the basic milk product market and raw materials.
- Perform various tests conducted on milk in dairy industries.

### **FPPS-233 PROCESSING OF SPICES AND PLANTATION CROPS**

#### **Outcome:**

- Student will enable to understand different processing techniques of spices.
- To learn and understand the various spice components used in foods along with their role and properties

## **IV Semester** **General Education**

### **BVGE-13 INTRODUCTION TO INTREPRENEURSHIP**

#### **Outcome:-**

- To understand the concept and need of entrepreneurship
- To create awareness amongst students about entrepreneurship
- To motivate students towards rising opportunities in entrepreneurship
- To provide updated knowledge about skill development and entrepreneurial development initiatives

### **BVGE-14 PRINCIPLES OF MARKETING MANAGEMENT**

#### **Outcome:-**

- An introduction to the concepts and principles of marketing. The paper is designed to develop basic understanding of consumers, market analysis, marketing planning, and marketing management

## **Skill Education**

### **FPPS- 241 WHEAT MILLING AND BAKING TECHNOLOGY**

#### **Outcomes:**

- Students will learn to appreciate the complex nature of flour and the intricacies of modern baking technology.
- Students will develop competency to critically evaluate quality of finished baked products in terms of underlying properties of flour, dough/batter, ingredient function, product formulation and processing, and molecular mechanisms.

## **FPPS-242 MEAT, POULTRY AND FISH TECHNOLOGY**

### **Outcomes:**

- Understand the technology for raw material characteristics, handling, processing, and preservation of meat and meat products.
- Perceive the knowledge regarding transportation and storage practices.
- Prepare various value added products.

## **FPPS 243 FRUITS AND VEGETABLES PROCESSING**

### **Outcomes:-**

- To develop proficiency skill in producing different types of processed fruits & vegetables products.
- Operating & maintenance the modern processing equipments & machineries
- To make different processed fruit & vegetable based products with quality assurance and safety.
- Process of packaging, storing & marketing

Maharashtra ShikshanSamiti's  
**Maharashtra Mahavidyalaya Nilanga**  
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**COURSE OUTCOME\**  
**Of**  
**(Web Printing Technology)**  
**F.Y. Ist sem.**  
**Semester I**  
**General Education**

**BVGE-1 INTRODUCTION TO COMPUTER HARDWARE**

**Outcome:**

- To make aware the students with the knowledge and use of computer hardware
- To introduce the basic principle of hardware and operational aspects of computers

**BVGE-2 INTRODUCTION TO COMPUTER APPLICATION**

**Outcome:**

- To acquaint the students with the knowledge and use of computers and to introduce the basic principles, organization and operational aspects of computers.

**Skill Education**

**BVWPT-111 INTRODUCTION TO PRINTING TECHNOLOGY**

**Outcome:**

- The student will be able to:
- Understand flow of printing.
- Understand raw material required for printing.
- Scope of Printing

**BVWPT-112 INTRODUCTION TO GRAPHIC DESIGN**

**Outcome:**

- This course covers basics elements as well as principle used in creating a design.
- This course gives inputs on the process of creating a design.
- This course will impart to knowledge on the basic color theory.
- This course covers the technology used today in making the design.

**BVWPT-113 BASIC SCIENCE OF PRINTING**

**Outcome:**

This course covers basics elements of Color.

- To understand the working of graphic reproduction camera/Process camera and its types etc.

- To understand the terminology like film, contact lens, Halftone, dot percentage, Ink Trapping

## **II Semester**

### **General Education**

#### **BVGE-5 COMPUTER OPERATING SKILLS**

**Outcome :-**

- Student will learn about
- the exchange of information through email
- Modes of transmission
- Different operating systems
- E-commerce

#### **BVGE-6 COMMUNICATION AND DOCUMENTATION SKILLS**

**Outcome :-**

- To enrich the students with skills to write to communicate and articulate in English (verbal as well as writing) and to acquaint the students with the knowledge and use of computers and to introduce the basic principles, organization and operational aspects of computers.

### **Skill Education**

#### **BVWPT-121 BASIC MECHANICAL ENGINEERING**

**Outcome :-**

- This course covers basic Mechanical elements of Machine.
- To understand the working of Mechanical Parts.
- To understand the power transmission devices, and Different Mechanism.

#### **BVWPT-122 IMAGE CARRIER PREPARATION**

**Outcome :-**

- To make learner aware about different image carriers used in different printing processes
- To explain the learner about the process and methods used to prepare image carriers for various printing processes.
- This course gives the information about various ancillary materials and equipment's required for preparation of image carrier.

#### **BVWPT-123 OFFSET PRINTING TECHNOLOGY**

**Outcomes :-**

- Understand working of sheet fed and web-fed offset printing machine.
- Identify the troubles and Understanding of the possible Remedies.
- Understanding of the different units of the offset Printing Machines.

**II<sup>nd</sup> Year**  
**Semester III**  
**General Education**

**BVGE-9 ENVIRONMENTAL SCIENCE**

**Outcomes:**

- Student will possess the intellectual flexibility necessary to view environmental question from multiple perspectives, prepared to alter their understanding as they learn new ways of understanding.

**BVGE-10 SOFT SKILLS AND PERSONALITY DEVELOPMENT**

**Outcome:-**

- This course helps students to select their professional career as per their inborn qualities and potential, and also this course develops many soft skills in students which are essential in all types of career.

**Skill Education**

**BVWPT-231BASICS OF PACKAGING**

**Outcome:**

- Understand Packaging
- Understand material required for Packaging

**BVWPT-232 WEB OFFSET PRINTING**

**Outcome:**

- Understand working of web offset printing machine.
- Identify the trouble.
- Perform the registration on the machine.
- Operate machineries used in dairy plant and understand the basic milk product market and raw materials.
- Perform various tests conducted on milk in dairy industries.

**BVWPT233 PAPER, INK AND COATING TECHNOLOGY**

**Outcome:**

- Develop knowledge of Paper and ink properties.
- Use effectively different instruments to carry out property tests.
- Analyse various tests to offer the best or required quality material.

## **IV Semester**

### **General Education**

#### **BVGE-13 INTRODUCTION TO INTREPRENEURSHIP**

**Outcome:-**

- To understand the concept and need of entrepreneurship
- To create awareness amongst students about entrepreneurship
- To motivate students towards rising opportunities in entrepreneurship
- To provide updated knowledge about skill development and entrepreneurial development initiatives

#### **BVGE-14 PRINCIPLES OF MARKETING MANAGEMENT**

**Outcome:-**

- An introduction to the concepts and principles of marketing. The paper is designed to develop basic understanding of consumers, market analysis, marketing planning, and marketing management

### **Skill Education**

#### **BVWPT-241 ADVANCE PACKAGING**

**Outcomes:**

- Learn and understand the types of food, their modes of deterioration and the fundamentals of package barriers.
- Learn shelf life studies and sensory evaluation based on type of product.
- Study the various food preservation techniques with real-life packaging examples.
- Study the fundamental characteristics of pharmaceutical drugs & their dosage forms.
- Understand the various existing pharma package forms

#### **BVPT-242 BINDING & PRINT FINISHING**

**Outcomes:**

- Understand relevance of print finishing techniques in various segments of industry.
- Understand material, machinery and equipments used in various print finishing process.

#### **BVPT-243 DIGITAL PRINTING & PROOFING**

**Outcomes:-**

- Understand the various principles used in digital printing system.
- Use different illuminant and outputting devices required in digital printing techniques.
- Understand the Security printing inks, substrate and process