Khandala Vibhag Shikshan Samiti's
SUSHILA SHANKARRAO GADHAVE MAHAVIDYALAYA, KHANDALA
(Arts, Commerce & Science) (Permanently NonGranted)
Tal. Khandala, Dist. Satara, Pin - 412802
(AFFILIATED TO SHIVAJI UNIVERSITY, KOLHAPUR)
महाराष्ट्र शासन उच्च व तंत्र शिक्षण विभाग यांचे आदेश क्र. एनजीसी २००७/(१८९/०७)/माशि-३
मंत्रालय विस्तार भवन, मुंबई - ३२ दिनांक २ जुलै २००७ नुसार मान्यता
Email : rmkhandala@yahoo.in Ph : (02169) 252112,
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जा. क्रमांक :

दिनांक :

# CRITERION - II

# TEACHING - LEARNING AND EVALUATION

## 2.6 STUDENT PERFORMANCE AND LEARNING OUTCOMES

KHANDALA VIBHAG SHIKSHAN SAMITI'S

SUSHILA SHANKARRAO GADHAVE MAHAVIDYALAYA
KHANDALA

# Criterion II

# Teaching –Learning and Evaluation

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## Key Indicator : 2.6

## Student Performance and Learning Outcome

**2.6.1. Programme Outcomes (POs) and Course Outcomes (Cos) for all Programmes offered by the institution are stated and displayed on website**

## INDEX



Principal
Sushila Shankarrao Gadhave Mahavidyalay
Khandala,Tal.Khandala,Dist.Satara

KHANDALA VIBHAG SHIKSHAN SAMITI'S

SUSHILA SHANKARRAO GADHVE MAHAVIDYALAYA
KHANDALA

# Criterion II

# Teaching –Learning and Evaluation

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## PROGRAMME OUTCOMES (POs) AND COURSE OUTCOMES (Cos)

**Political Science**

**Name of Programme: B. A. 1 - Political Science**

**Name of Course :- Semester 1 Introduction to Political Science**

**Course Outcomes**

**Course Outcomes**:
The student will able to
CO – 1 Acquire domain Knowledge
CO – 2 Understand importance of Political Science
CO – 3 Understand sub disciplines of Political Science
CO – 4 Understand Concept of State and Democracy
CO – 5 Understand Key Concepts of Political Science

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**Semester 2 Introduction to Political Science**

**Course Outcomes**

**Course Outcomes:**
CO1- The students will get knowledge about making and philosophy of Indian Constitution
CO2- The students will become aware about Fundamental Rights
CO3 - The students will become aware about Directive Principles and Fundamental Duties
CO4- The students will understand about working of Legislature, Executive and Judiciary
CO5- The students will understand about working and role of Judiciary

**Name of Programme :- BA Part 2 Political Science**

**Semester 3 :- Paper 3 Political Process in India (D-07)**

**Course Outcomes**

CO 1 :- Students will aware about Indian Federalism
CO 2 :- Students Will aware about Electoral Process in India and Electoral Reforms - Corruption and Criminalization
CO 3:- Students will aware about Rise and Role of Regional Parties
CO 4:- Students will aware about Regionalism & Challenges before Democracy

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**Semester 3**
**Paper-4 Indian Political Thought Part –I**

Co 1 :- Students will aware about Nature of State - Saptang Theory
Co 2:- Students will aware about Mahatma Phule Satyashodhak Samaj & it's Revolutionary Thought
Co 3:- Studenrts will aware about Rsnde's Thoughts on Social Reforms
Co 4 :- Students will Aware about Cultural Nationalism and Swaraj

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**Semester 3 :- CGE –I Public Administration**

**Course Outcomes**

Co 1 :- Students Will aware about Scope and Importance Public Administration

Co 2 :-Students Will Aware about Hierarchy, Coordination, Span of Control, Centralization and Decentralization

Co 3:- Students will aware about Public Corporations Meaning and Characteristics and Control over Public Corporations

Co 4 :- Students Will aware asbout Development Administration and

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**Semester 4 :- Local Self Government in Maharashtra (P V)**

**Course Outcomes**

Co 1 :- Students will aware about Historical Background of Local Self Government and Community Development Program :

Co 2 Students will aware about Rural Local Self Government Gram Panchayat Panchayat Samiti Zilla Parishad

Co 3 :- Students will aware about 73 rd Constitutional Amendment

Co 4 :- Students will aware about 74 th

## Paper-VI Indian Political Thought Part -II

Co 1 Students will aware about M K Gandhi's Satya, Ahimsa, Satyagraha and Concept of Swaraj

Co 2 Stuidents Will aware Jawaharlal Nehru's Panchsheel

Co 3 : Students Will aware about - Dr. B. R. Ambedkar Critique of Caste System

Co 4 :- Students will aware M N Roy's New Humanism

---

CGE Paper-II Public Administration

Co 1 Students will aware about Recruitment, Training and Promotion

Co 2 Students will aware Political Neutrality of Civil Servants Financial committees

Co 3 Students will aware Merits and Demerits Safeguards against Delegated Legislation

Co 4 :- Students will aware about New Trends in Public Administration a) E-Governance b) Right to Information c) Peoples participation

**Disiplin Specific Core DSC-C26**

**Marathi Coure-6 Semester IV**

**साहित्यकृती—कादंबरी जुगाड**

**मराठी भाषिक कोश**

**Course Outcom COS**

CO42 **समकालीन कादंबरीचा व समाजजीवन शोध घेणे**

CO43 **मानवी मुल्ये समजून घेणे**

Co44 **कादंबरी लेखनाचे विशेष जाणणे**

CO45 **सद्द्कालीन सस्कृतीवर विचार करतील**

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**Disiplin Specific Core DSC-C25**

**Marathi Course -5 Semester-IV**

**आत्मचरित्र माती पंख आणि आकाश**

**Course Outcome COs**

**मराठी भाषिक कौशल्य**

Co **आत्मचरित्र वाड्मय प्रकारची ओळख होईल**

Co **लेखकाची जडणघडण व समाजजीवन याची ओळख होईल**

CO **भारत व परदेशातील संस्कृतीचे दर्शन होईल**

CO **आत्मवृत्तपर लेखन विकसित होईल**

साहित्यकृती- काव्यगंध

मराठीभाषिक कोशल्य

CO - मराठी काव्यप्रकाराची ओळख होईल

CO - काव्यातून प्रकट होणारे मानवी जीवन अभ्यासणे

CO - श्रमिकाची कविता अभयासता येईल

CO - काव्यलेखन कौशल्य रुजेल

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Specific Core Disciplion DSC-C1
Marathi Course -3 Semerster - III
Course Outcom COS

साहित्यकृती नाटक काय डेंजर वारा सुटलाय

CO - नाटक वाग्मय प्रकाराची ओळख होईल

CO - महानगरीय जीवनाची ओळख होईल

CO - संवाद कौशल्य विकसित Disiplin Specific Core DSC-C26

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**Specific Core Disciplion DSC-C1**

**Marathi Course -2 Semerster - II**

**अक्षरबध**

**Course Outcome COS**

**Specific Core Disciplion**

CO - मातृभाषा राष्ट्रीय एकात्मता जाणीव होईल

CO - नाटक चित्रपट परीक्षन करतील

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**Compalsory Generic Elective CGE-2**

**Marathi Course -B Semerster - II**

**शब्दसंहिता**

**Course Outcome Cos**

COS - मराठी भाषा व साहित्य ओळख होईल

COS -मराठी काव्य परंपरा समजून घेतील

निबंध लेखन करतील

**Specific Core Disciplion DSC-C1**

**Marathi Course -2 Semerster - I**

**अक्षरबध**

**Course Outcome COS**

**Specific Core Disciplion**

**CO मातृभाषा राष्ट्रीय एकात्मता जाणीव होईल**

**CO नाटक चित्रपट परीक्षन करतील**

**CO कवी लोकनाथ यशवंत यांची माहिती देतील**

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**Compalsory Generic Elective CGE-1**

**Marathi Course -A Semerster - I शब्दसंहिता**

**Course Outcome Cos**

**COS मराठी भाषा व साहित्य ओळख होईल**

**COS मराठी काव्य परंपरा समजून घेतील**

**COS निबंध लेखन करतील**

**COS व्यतीमत्व घटक समजून घेतील**

# Department History (B.A)

**Program specific outcomes:-**

**On completion of the B.A with History special, students will be able to...**

1) Jobs in government: - policy analysts, government historians, intelligence analyst, museum curators, administrative and programs specialists

2) Travel and Tourism expert: - work as a tourist guide at historical and religious places

3) School teacher: - work as a teacher in school & high school

4) Competitive examinations: - for history graduates, the option of poblic services

5) Social work: - NGOs & social welfare organization also employ B.A history graduates

6) Exhibit Designer/content creator

**Course Outcomes:-**

**After successfully completing this course, students will be able to**

**B.A I**

**Sem I Paper number I**

**Rise Of The Maratha Power**

**(1600-1707)**

1) know about the administrative need and the importance of grand coronation of Chhatrapati Shivaji.

2) Asses the Chhatrapati Shivaji invasion on Karnataka.

3) Understand the inspection behind the establishment of swarajya.

**Sem II Paper number II**

**Polity, Society and Economy Under The Marathas**

**(1600-1707)**

1) Understand the administrative aspect of the swarajya.

2) Understand the conflict for throne after the death of Chhatrapati Shivaji.

3) Understand the policy & contribution of Chhatrapati Shivaji Maharaj.

## B.A II

### Sem III Paper number III

### History Of Modern Maharashtra

### (1900-1960)

1) Explain the contribution of maharashtra to the national monument.

2) know the background and events which led to the formation of separate state of maharashtra.

### Sem III Paper number IV

### History Of Indian

### (1757-1857)

1) Acquaint him self with significant events leading to establishment of the rule of east India company.

2) Understand the structural changes initiated by colonial rule in India economic.

3) Explain the various reuolts againt rule of the east india company.

### Sem IV Paper number V

### History Of Modern Maharashtra

### (1960-2000)

1) know about the economic transformation of maharashtra.

2) Explain the groulth of education

**Sem IV Paper number VI**

**History Of Freedom Struggle**

**(1858-1947)**

1) Explain the contribution of revolutionaries, left movement and india national army.

2) know the concept of communalism and the causes and effects of the partition of India.

3) Acquaint him self with major events of the freedom struggle under the leadership of Mahatma Gandhi.

## B.A III

### Sem V Paper number VII

### Early India (from beginning to 4th c. Bc)

1) Explain the transition from early to later Vedic period.

2) Clarify the causes for the first and second urbanization.

3) Describe the rise and growth of the Mauryan empire.

### Sem V Paper number VIII

### History Of Medieval India

### (1206-1526)

1) Describe the different types of historical sources available for writing the history of medieval India.

2) Explain the contributions of medieval rulers like allaudin Khilji, Muhammad-bin-tuqhlaq, krishnadedevraya, and Mahmud Gavan.

3) Elucidate the significant developments which took place in religion, society and culture.

### Sem V Paper number IX

### Age of Revolutions

1) Explain the causes and consequences of the reformation.

2) Give an account of the role played by Martin Luther.

3) Explain the role of major leaders of the French revolution.

**Sem V Paper number X**

**Political History Of The Marathas**

1) Describe the political conditions of the Marathas upto the year 1740.

2) Explain the role of Balaji Bajirao.

3) Critically analyze the causes for the decline of Maratha Power.

**Sem V Paper number XI**

**History: It's Theory**

1) Understand the definition and scope of the subj of history.

2) Know the process of acquiring historical data.

3) Understand the methods of writing history.

**Sem VI Paper number XII**

**Ancient India (from 4th c. BC to 7 th c.)**

1) Give an account of the developments in the Post-gupta period.

2) Have an informed opinion about the society and culture of ancient India.

3) Explain the role played by major Satavahana, kush

**Khadala Vibhag Shikshan Samitis**

**Sushila Shankarrao Gadhave Mahavidyalaya, Khandala**

**Department Of Hindi**

**Progrrame Outcomes BA Hindi**

| S.N. | Dept Of Hindi | After Succesful Complention Of Three Year Degree Programe In Hindi Student Should Be Able To |
|---|---|---|
| 1. | B.A. I (CGE-3)<br><br>B.A. I (CGE-4) | • छात्रो को हिंदी भाषा तथा व्याकरन का परिचय प्राप्त हुआ ।<br>• सुजनात्मक लेखन की विविध विधाओ का परिचय प्राप्त हुआ<br>• छात्रो को सुजनात्मक लेखन के विविध आयाम ज्ञात हुए ।<br>• हिंदी के विविध रुपों से छात्र परिचित हुए ।<br>• कर्यालयीन हिंदी से छात्र अवगत हुए । |
| 2. | B.A. I DSC-A2<br><br>B.A. I DSC-A14 | • छात्रो की हिंदी सहित्य के प्रति रुचि बढ गई ।<br>• छात्रों में राष्ट्रप्रेम, राष्ट्रीय एकता, सामाजिक प्रतिबद्धता जागृत हुई<br>• छात्र हिंदी कथा साहित्य और कथेतर साहित्य की विधाओं से अवगत हुये<br>• छात्रों को हिंदी कहानी की विशेषताओं का परिचय प्राप्त हुआ |
| 3. | B.A.II DSC-C3<br><br>B.A.II DSC-C27 | • छात्रों को कथा साहित्य का स्वरूप तत्व एवं प्रकारों का ज्ञान प्राप्त हुआ<br>• छात्र समीक्षा के मानदंडों से अवगत हुए<br>• छात्र रोजगार परक हिंदी के अवसरों से अवगत हुये.<br>• छात्रों को रोजगार के विविध क्षेत्रों का सामान्य परिचय प्राप्त हुआ. |
| 4. | B.A.II DSC-C4 | • छात्र संतों के विचारों से अवगत हुये. |

| | | |
|---|---|---|
| | B.A.II DSC-C28 | • मध्यकालीन संत कवियों के कार्य से छात्रों का परिचय अच्छी तरह से हुआ.<br>• छात्र जीवन की परिस्थितियों से परिचित हुये.<br>• उन्हें जीवन की अनुभूति हुई.<br>• छात्रों में स्त्री पुरुष समानता के मूल्य प्रतिश्ठापित हुये. |
| 5. | B.A.II (IDS) SEM III<br><br>B.A.II (IDS) SEM IV | • छात्र हिंदी के व्यवहारिक से परिचित हुए<br>• छात्रों में राष्ट्रभाषा के प्रति रुचि उत्पन्न हुई<br>• छात्र हिंदी का प्रयोग करने लगे.<br>• छात्रों ने व्यवसाय के क्षेत्र में हिंदी का कौशल प्राप्त किया. |
| 6. | B.A.III<br>Hindi Sahitya ka itihas<br><br>Vidha Vishesh Adhyayan<br><br>Bhasha Vidnyan | • छात्र हिंदी साहित्य के इतिहास से परिचित हुए.<br>• छात्रों में सामाजिक एकता की मौलिकता प्रतिश्ठापित हुई.<br>• छात्र उपन्यास और आत्मकथा के तत्व रूप से परिचित हुये.<br>• छात्रों में सामाजिक एकता क्षमता बंधुभाव आदि मूल्यों की स्थापना हुई.<br>• हिंदी भाषा एवं लिपि के विकास से परिचित हुए<br>• छात्र भाषा की शुद्धता के प्रति जागरूक हुए |
| 7. | B.A.III<br>Sahityashastra<br><br>Prayojanmulak Hindi | • छात्रों में साहित्य की मंगनी क्षमता का विकास हुआ.<br>• छात्रों में समीक्षा की दृष्टि पल्लवित हुई.<br>• छात्र बैंकिंग क्षेत्र से संबंधित पारिभाषिक शब्दावली से परिचित हुए.<br>• छात्र जनसंचार माध्यमों से परिचित हुए. |

**Sushila Shankarrao Gadhave Mahavidyalaya, Khandala**

**Department Of Hindi**

**Progrrame Outcomes Ba Hindi**

| S.N. | Dept Of Hindi | After Succesful Complention Of Three Year Degree Programe In Hindi Student Should Be Able To |
|---|---|---|
| 1. | B.A. I (CGE-3)<br><br>B.A. I (CGE-4) | • Students got introduction of Hindi language and Vyakaran.<br>• Introduced various genres of creative writing<br>• Students came to know various dimensions of creative writing.<br>• Students became familiar with various forms of Hindi.<br>• Students became aware of Hindi in office. |
| 2. | B.A. I DSC-A2<br><br>B.A. I DSC-A14 | • Students' interest in Hindi literature increased.<br>• Aroused national love, national unity, social commitment among students<br>• Students became aware of the genres of Hindi fiction and non-fiction literature<br>• Students got an introduction to the characteristics of the Hindi story |
| 3. | B.A.II DSC-C3<br><br>B.A.II DSC-C27 | • Students got knowledge of the nature, elements and types of fiction.<br>• Students became aware of the review criteria<br>• Students became aware of employment opportunities in Hindi.<br>• Students got a general introduction to diverse fields of employment. |
| 4. | B.A.II DSC-C4<br><br>B.A.II DSC-C28 | • Students became aware of the thoughts of saints.<br>• Students were well introduced to the work of medieval saint poets.<br>• Students became familiar with the circumstances of life.<br>• He felt life.<br>• The values of female-male equality were replaced in the students. |
| 5. | B.A.II (IDS) SEM III | • Students became familiar with the practicals of Hindi<br>• Interest in national language arose in |

| | | |
|---|---|---|
| | B.A.II (IDS)<br>SEM IV | students<br>• Students started using Hindi.<br>• Students gained Hindi skills in the field of business. |
| 6. | B.A.III<br>Hindi Sahitya ka itihas<br><br>Vidha Vishesh Adhyayan<br><br>Bhasha Vidnyan | • Students became acquainted with the history of Hindi literature.<br>• Originality of social unity was established among the students.<br>• Students became familiar with the elements of novel and autobiography.<br>• The values of social unity, ability, brotherhood etc. were established among the students.<br>• Familiar with the development of Hindi language and script<br>• Students became aware of the correctness of the language |
| 7. | B.A.III<br>Sahityashastra<br><br>Prayojanmulak Hindi | • Matchmaking ability of literature developed in students.<br>• The vision of the review flourished among the students.<br>• Students became familiar with the terminology related to banking sector.<br>• Students became familiar with the medium of mass media. |

**Department of Economics**

**Course outcomes**

**Sub – Indian Economy – I**

**B.A – I sem – I**

1. Acquaint the students with structure of the Indian economy and changes taking place therein.
2. Understanding population problem of Indian economy.
3. Awareness regarding challenges before the Indian economy.
4. Able to formulate the strategy for economic development.

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**Indian Economy – II**

**Sem – II**

1. Acquaint with the policies and performance of major sectors in Indian Economy.
2. Understanding the nature, scope, challenges and opportunities of economic reforms.
3. Awareness regarding causes of agrarian distress and remedies.
4. Understanding policy reforms regarding the industry and service sector.

**Course outcomes**

**Sub – Economics**

**B.A-III**

**Principle of Micro Economics – I**

**Sem – V ( CBCS ) Paper No - 7**

1. Explain what Economics is and explain why it is important.
2. Understand consumer decision making and consumer behavior.
3. Define the concept of utility and satisfaction.
4. Derive revenue and cost figures as well as curve.
5. Understand producer decision making and producer behavior.

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**Principle of Micro Economics – II**

**Sem – VI ( CBCS ) Paper No – 13**

1. Identify the market structure.
2. Analyze the economic behavior of individual firms and markets.
3. Analyze a firm profit maximizing strategies under different market conditions.
4. Understand the factor pricing.

## Economics of Development

### Sem- V (CBCS) Paper No - 8

1. Identify the dimensions of development.
2. Distinguish the fundamental and contemporary development debate.
3. Know the theories of economic development.
4. Realise the role of state in economic development.

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## Economics of Planning

### Sem-VI. (CBCS) Paper No - 13

1. Get acquainted with economic planning and its importance in development.
2. Get acquainted with development of planning and planning machinery in India.
3. Evaluate sectoral performance of the Indian economy.
4. Compare and analysis Indian models of economic development

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## International Economics – I

### Sem- V (CBCS) Paper No - 9

1. Explain international trade.
2. Understand the measurement of gains from international trade.
3. Distinguish different rates of exchange.
4. Measures the terms of trade.

## International Economics - II

### Sem – IV (CBCS) Paper No - 14

1. Distinguish between balance of trade and balance of payment.
2. Analyse the Balance of payments.
3. Understand the various type of foreign capital.
4. Analyse the impact of international institutions on Indian Economy.

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## Research methodology in Economics-I

### Sem – V ( CBCS ) Paper No – 1

1. Get acquainted with the basic concept of research and its methodologies.
2. Select and define appropriate research problem and parameters.

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## Research methodology in Economics-II

### Sem – VI ( CBCS ) Paper No – 15

1. Understand the sampling techniques as a method of data collection.
2. Use techniques of data analysis in research.
3. Write a research report and thesis.
4. Write research proposal .( grants )

## History of Economics Thoughts – I

## Sem – V ( CBCS ) Paper No - 11

1. Understand the basic economic ideas of various economic thinkers of the world.
2. Understand the development of economic thoughts.

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## History of Economics Thoughts – II

## Sem – VI ( CBCS ) Paper No - 16

1. Understand the economic concept and theories of Neo - Classical and Indian thinkers.
2. Understand the development of economic thoughts.

## B.A-II (IDS)

## Principal of Co-operation

## Sem – III

## OUTCOMES-

1. Recognize the nature of cooperative movement in India.
2. Equip the long history of cooperative movement.
3. Identify the role of registrar and auditor in cooperative movement.
4. Analyze the importance of state aid in cooperation.

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## Co-operation in India

## Sem - IV

1. Understand the Nature of cooperative movement.
2. Analyze the Co-Operative Marketing in India.
3. Highlight the progress of cooperative Processing Societies in India.
4. Identify the role of National Institutions in Co-Operation.

**B.A-II**

**Micro Economics –I Paper No-3**

**Sem – III**

1. Equip with the macro economics.
2. Analyze the concepts, measurement and difficulties in measurement of national income.
3. Examine the relationship between supply of money and value of money.
4. Assess the theory of employment, consumption and investment function.

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**Micro Economics –II Paper No-5**

**Sem – IV**

1. Understand the concept, types and causes of Inflation.
2. Examine the theory of Trade cycles.
3. Learn Concept and scope of public finance.
4. Get acquainted with the taxation , public expenditure and public debt.

## B.A-II

### Money and Banking

### Paper No-4 Sem – III

1. Understand the working of banks.
2. Examine the role of RBI as a central bank.
3. Analyze the banking practices.
4. Elaborate the Credit (Loan) Appraisal and NPA.

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### Bank and Financial Market

### Paper No-6 Sem – IV

1. Understand the Indian Financial System.
2. Examine the performance Indian Financial Institution.
3. Analyze the banking reform in India.
4. Equip with banking services Know the cyber- crimes in e-banking.

## Department of Geography

## Outcome Programme

## Geography

### Programme Outcomes

After Sucessfully completing B.A. Geography Programmes Students will be able to:

1. Apply qualitative and quantitative research techniques to gather and analyze data on Social, Cultural and economical problems.
2. Serve as a Geographer.
3. Apply Clear written and oral communicate results of research.
4. Work as a teacher in Schools and High Schools.
5. Serve as Conservator in Forest, Soil, Agri Department.
6. Serve in cartographer in Map making divisions of Government.
7. Work in NGOs and Govt. institute
8. Can prepare for Competitive exams.
9. Apply Remote Sensing concepts, techniques and their application.
10. Demonstrate acquisition of Weather chart /map, map aerial photograph and Image reading skill.

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### Course -Physical Geography B.A.I Sem -I

### Course Code -DSE -1

After successfully completing this course, students will be able to:

1. Student will be able to understand the basic concepts in Physical Geography.
2. Students understand basic terms used to describe physical processes and landscape forms.
3. Student understand the atmosphere.
4. Student understand the concept of maps and globe.

**Sub -Human Geography B.A.I Sem -II**

**Course Code -DSE -2**

**After successfully completing this course, students will be able to:**

1. Students will be able to understand the basic concepts in Human Geography.

2. Students understands basic terms used to describe population, settlements and agriculture .

3. Students understand the concept of Google Earth and Google Map.

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**Sub -Human Geography B.A.I Sem -II**

**Course Code -DSE -2**

**After successfully completing this course, students will be able to:**

4. Students will be able to understand the basic concepts in Human Geography.

5. Students understands basic terms used to describe population, settlements and agriculture .

6. Students understand the concept of Google Earth and Google Map.

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**Course Code -DSE -2**

**After successfully completing this course, students will be able to:**

1.Explain principal terms, definitions, nature and scope of Agriculture Geography.

2.Understand the fundamental Concept, land use, crops, agriculture production and development.

3.Understand the Green Revolution, meaning and merit and demerit of green revolution.

4.Explain different types of agriculture.

5.Discuss problems and prospects of agriculture with Indiain examples.

**Course - Resource Geography B.A.II Sem -III**

**Course Code -DSE -1**

**After successfully completing this course, students will be able to:**

1.Understand to the student basic concepts & classification of resource and importance to society.

2.To study the sustainable resource development.

3.To examine the major natural resource type like forest, water and energy resources.

4. To understand the distribution, utilization and problems of resources.

5.to get knowledge the theory work of choropleth, isopleths, dot maps etc.

6.The students studying this syllabus will becomes good planner and environmental Conservator.

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**Sub -Oceanography B.A. II Sem -IV**

**Course Code -DSE -IV**

**After successfully completing this course, students will be able to:**

1.Understand the Nature, Scope, and importance of Geography and its fundamental branch of geography.

2.Get Knowledge of bottom ocean feature its key resource of the development countries.

3. To get Knowledge physical and chemical properties of ocean.

4.To Describe the physical phenomena oceanic temperature, salinity, oceanic currents in pacific, atlantic and Indian ocean.

5.student understand wind rose, hypsographic curve, iso-salinity lines and isotherms lines.

**Sub -Geography of India B.A.III Sem -V**

**Course Code -DSE - E107**

**After successfully completing this course, students will be able to:**

1. In depth understanding the dimensions and physiography of India
2. The students are fully aware about the climatic seasons in India.
3. Detailed knowledge about soils ,vegetation ,drainage systems in India
4. Understanding an importance agriculture and industry in India .
5. Detailed knowledge about the economic setup of the India.

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**Sub -Population Geography B.A.III Sem -V**

**Course Code -DSE - E108**

**After successfully completing this course, students will be able to:**

1. This paper would bring an understanding of population geography along with relevance of demographic data.
2. The students would get an understanding of distribution and trends of population.
3. The students would get an understanding of the dynamics of population.
4. An understanding of the implications of population composition in different regions of the world.
5. An appreciation of the contemporary issues in the field of population studies.

**Sub -Evolution of Geographical Thought B.A.III Sem -V**

**Course Code -DSE - E10**

1. student should be able to understand in depth about the Evolution of Geographical Thougth.

2. student should be able to analyse the recent trends in geography .

3. student should be able to make use of various models of paradigms and debates in the geographical studies

**4.** Understanding of recent trends in geography.

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**Sub - Economic Geography B.A.III Sem -VI**

**Course Code -DSE -**

**After successfully completing this course students will be able to:**

1. In depth understanding about the economic geography .

2. Detailed knowledge about locationl factors of economic activies with special reference to agriculture and industry.

3. Detailed understanding of the basics concepts related to manufacturing and major manufacturing industries the world.

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**Sub - Political Geography B.A.III Sem VI Paper No -XI**

**Course Code –**

**After successfully completing this course, students will be able to:**

1.The students are fully aware about the Political geography as a fundamental branch of human Geography.

2.The students are familiarized with the basics and fundamental concepts and theories of Political Geography .

3.The students are aware about resource conflicts and politics of displacement

**Sub - Urban Geography B.A.III Sem VI Paper No -XI**
**Course Code –**
**After successfully completing this course, students will be able to:**

1.The students were known the importance of urban settlements through urban geography.

2.The students understood the types of types of Urban Settlements ,Site ,and Situations

3.The students were familiar with an idea of relationship between human activities and urban development

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**Sub - Fundamentals of Map Work &MAP Interpretation**
**B.A.III Sem- VI** **Paper No -XIII**

**Course Code –**

**After Successfully completing this course, student will be able to:**

1. In depth understanding the map ,concept of scale and projection

2. Detailed knowledge about the analysis of landforms and its identification.

3. The students are deeply awre about besic information to the students about. S.O.I topomaps and I,M,D weather maps and obtained the skills about map interpretation.

4. The students are deeply familiar with different cartographic technique and methods used for representation of demographic and physio -socio-economic database.

**B.A.III Sem VI Paper No -XIV**

**Sub - Advanced Tools, Techniques &Field Work**

**Course Code –**

**After Sucessfully completing this course, student will be able to:**

1. In depth understanding the importance of field work and advanced Techniques in Geography.

2. The students are trained to implement modern tool and techniques in Geography.

3. Detailed knowledge about the use of computer for analysis of Geographical data.

4. The students are deeply aware about the basics and trained in instrumental survey.

5. The students are deeply familiar with coputer,GIS,GPS ,and Remote Sensing

# Bachelor of Arts (B.A.)

## Department of English

## Programme Outcomes (POs)

After B. A. degree programme, students will be able to:

PO 1: Realize and follow eternal human values.

PO 2: Become a responsible and dutiful citizen.

PO 3: Acquire scientific temperament and ability to think logically.

PO 4: Nurture creativity in arts as well as in day-to-day life.

PO 5: Get well acquainted with the social, economic, political, historical and geographical facts and trends in India as well as in the world.

PO 6: Get acquainted with and respect the common cultural heritage of pluralism and mutual respect.

PO 7: Prepare for and qualify all types of competitive examinations after graduation.

PO 8: Take keen interest in language and literature, both regional and global.

## Programme Specific Outcomes (PSOs)

PSO1: Students should be familiar with representative literary and cultural texts within a significant number of historical, geographical, and cultural Contexts

PSO2: Students should be able to apply critical and theoretical approaches to the reading and analysis of literary and cultural texts in multiple genres.

PSO3: Students should be able to identify, analyse, interpret and describe the critical ideas, values, and themes that appear in literary and cultural texts and understand the way these ideas, values, and themes inform and impact culture and society, both now and in the past.

PSO4: Students should be able to write analytically in a variety of formats, including essays, research papers, reflective writing, and critical reviews of secondary sources.

## Subject Outcomes

**B. A. I : English Optional Paper I: Modern Indian Writings in English Translation**

After the Completion of the Course, the students will be able to:

CO1: Students get familiar with Indian literature in regional languages.

CO2: Students take keen interest in English drama and poetry.

CO3: Students get acquainted with dark Comedy.

CO4: Students read and understand poetry of major Indian English poets.

**B. A. I English Optional Paper II: Modern Indian Writings in English Translation**

CO5: Students know short story as a minor form of literature.

CO6: Students read and enjoy short stories in regional and English languages.

CO7: Students know the techniques of translation.

CO8: Students take interest in Indian languages.

**B. A. II English Optional Paper III - Literature & Cinema:**

CO9: Introduce film and its relationship to literature.
CO10: Acquire film literacy through a working knowledge of basic film terminology.
CO11: Develop critical approaches to engage with film adaptations.
CO12: Establish a clear understanding of literature through film adaptations of literary texts.

**B. A. II English Optional Paper IV: Partition Literature**

CO13: Create an awareness of the partition scenario.
CO14: Explain the hidden human dimensions of the partition.
CO15: Elaborate on the impact of partition on society.
CO16: Analyze the situation of women before & after the partition

**B. A. II English Optional Paper V: Literature & Cinema**

CO17: Handle the issues and practices of cinematic adaptations.
CO18: Take keen interest in films.
CO19: Know the relation between film and literature.
CO20: Develop love for film studies.

**B. A. II English Optional Paper VI - Partition Literature**

CO21: Students are acquainted with partition literature in Indian languages
CO22: Develop interest for history book related to partition
CO23: Students watch films based on partition
CO24: Students know the reasons and chronology of partition

**B. A. III English Paper VII : Introduction to Literary Criticism**

CO25: Develop critical thinking ability
CO26: Enable students to read a piece of literature from critical point of view
CO27: Get acquainted with literary term and trends
CO28: Enable students to take critical and creative pleasure in reading different genres

**Paper- VIII Understanding Poetry**

CO29: Enable students to understand poetry
CO30: Introduce poetry from traditional to the modern
CO31: Introduce various forms of the poetry
CO32: Enable student to think critically

**Paper – IX Understanding Drama**

CO33: Enable students to understand drama as a genre of literature
CO34: Enable students to critically appreciate a play
CO35: Introduce different forms of drama
CO36: Improve literary taste

**Paper - X English Novel**

CO37: Study of the emergence and development of the novel
CO38: Know the background about the popularity of the novel
CO39: Know the factors responsible for rise and development of the novel
CO40: Introduce students to the major aspects of the novel form.

**Paper - XI Language and Linguistics**

CO41: Know the Concept of Communication.
CO42: Familiar with varieties of the English language.
CO43: Know different levels of study of the English language.
CO44: Know basic units of grammar.

**Paper -XII Introduction to Literary Criticism**
CO45: Students can write critical essay on given piece of literature
CO46: Students develop taste for extra reading and analysis
CO47: Students write film as well as book review
CO48: Develop critical thinking ability

**Paper- XIII Understanding Poetry**
CO49: Enable students to improve creative thinking
CO50: Students write poems in English
CO51: Students love reading poetry
CO52: Students write critical appreciation of poems in English

**Paper – XIV Understanding Drama**
CO53: Enable students to understand drama as a genre of literature
CO54: Enable students to critically appreciate a play
CO55: Introduce different forms of drama
CO56: Improve a literary taste

**Paper - XV English Novel**
CO57: Study novel as genre of literature.
CO58: Understand literary Contribution of R.K. Narayan in Indian English Literature.
CO59: Comprehend the specific aspects of human nature.
CO60: Develop taste for fiction in regional languages

**Paper XVI - Introduction to Modern Linguistics**

CO61: Know words and phrases.
CO62: Know and identify elements and types of clauses.
CO63: Know types of sentences.
CO64: Know the different ways of structuring clauses

**B. A. I: English for Communication: Paper A**

CO65: Know the Concept of Communication
CO66: Familiar with the Communication skills.
CO67: Students will know how to develop vocabulary.

**B. A. I: English for Communication: Paper B**

CO68: Acquire human values and developed cultured outlook
CO69: Learn to use English in oral and written Communication.
CO70: Learn to appreciate prose and poetry.

**B. A. II - English for Communication Paper –C**

CO71: Develop oral Communication skills in English.
CO72: Develop written Communication skills in English.
CO73: Equip with the language skills for use in their personal academic and professional life.

**B. A. II: English for Communication: Paper D**

CO74: Acquire essential employability skills
CO75: Practice both language and soft skills.
CO76: Cultivate broad, human and cultured outlook.

**B A III English (c): English for Communication: Paper D**

CO77: Communicate in English, in their day-to-day lives as well as at workplaces
CO78: Face job interviews and Confidently efficiently
CO79: Acquire soft skills required at workplaces and in real life
CO80: Learn group behaviour and team work
CO81: Learn to value and respect others' views and develop democratic attitude.

**B.A. III English (c): English for Communication: Paper F**

CO82: Face Competitive examinations confidently and efficiently with adequate linguistic competence
CO83: Acquire professional skills required in media writing
CO84: Learn to appreciate and enjoy reading poetry and prose passages
CO85: Acquire human values and develop cultured outlook

**B.Com. I -English for Business Communication**

CO86: Know the concept of Business communication.
CO87: Familiar with the business communication skills.
CO88: Acquire human values and developed cultured outlook.
CO89: Learn to use English in oral and written communication
CO90: Appreciate prose and poetry.

**B.Com. II - English for Business Communication: Paper C**

CO91: Use English for sales and services
CO92: Develop writing skills
CO93: Draft an individual and committee business report

**B. Com. II - English for Business Communication: Paper D**
**CO94: Skill of summarizing**

CO95: Use of English for banking Correspondence
CO96: Use of English for Commercial letter writing.

**B. Sc. I English for Communication: Paper A**

CO97: Narrate incidents Correctly.
CO98: Describe a person, object or place in English
CO99: Enrich vocabulary and grammar of English
CO100: Understand and appreciate poems.

**B. Sc. I English for Communication: Paper B**

CO101: Make formal reports
CO102: Summarize the given paragraph.
CO103: Write formal essays
CO104: Communicate using E- mail

**B Sc III English for Communication: Paper – C**

CO105: Communicate in English, in oral and written modes, in their day-to-day lives as well as at workplaces
CO106: Face job interviews Confidently and efficiently
CO107: Acquire soft skills required at workplaces and in real life
CO108: Learn group behavior and team work
CO109: Learn to value and respect others' views and develop democratic Attitude

**B Sc. III English for Communication: Paper- D**
CO110: Face Competitive examinations Confidently and efficiently with adequate linguistic Competence
CO111: Acquire professional skills required in media writing
CO112: Learn to appreciate and enjoy reading poetry and prose passages
CO113: Acquire human values and develop cultured outlook

## Subject Outcomes

## Academic year – 2022-2023

## Subject – Financial Accounting

## B. Com – I (Sem – I) (NEP)

-- financial concept and conversion accounting processor IFRS concepts

-- amalgamation of partnership firm

--Consignment account books of consignor and consignee

-- accounts of professional receipt and expenditure account and income and expenditure account

## Subject Outcomes

## Academic year (2022-2023)

## Subject – Financial Accounting

## B. Com I (Sem – II) (NEP)

-- single entry system conversation mythology

-- conversion of partnership into limited company

-- branch account depends branch branch, account Trading profit and loss, stock Debtors method

-- computerized accounting software Tally, voucher, Feeding, data basis.

**Subject outcomes**

**Academic years (2022-2023)**

**Subject - Advance Accountancy paper -I**

**B. COM (III) SEM (V) (NEP)**

-- Bank final account, Form 'A', Form 'B', Schedule no. 1 to 16

-- A) Farm Accounting - dairy, poultry farming problem and solution

B) hire purchase systems terms of system problem given HPP system

-- Insurance claim method under Stock policy

-- concept of GST practical

**Subject outcomes**

**Academic year – (2022-2023)**

**Subject- Advanced Accountancy paper – III**

**B. COM – III (SEM – VI) (NEP)**

-- Elements of cost and cost sheet

-- financial statement and ratio and Analysis problem given

-- cash flow analysis given in the problem with solution

--- Concept GST using Tally part – II

**Subject outcomes**

**Academic year – (2022-2023)**

**Subject – Auditing**

**B. COM – III (SEM – V) (NEP)**

-- introduction, nature, scope, objectives vouching of Audit

--Audit of specific item in financial statement

-- company audit (company act 013)

-- special Audit and Audit reports

**Subject Outcomes**

**Subject – Income Tax**

**B. Com – III ( SEM -VI) ( NEP)**

-- Basic concept of income tax

-- Exemption and deduction from total income, income from salary and house property

-- Head of income from professional and other sources

-- Deduction from total income practical using GST, VAT, ETC.

## B.com

## Course Outcomes

## Course: Corporate Accounting

CO 1: Students will be able to explain the accounting entries of issue and forfeiture of shares and re-issue of forfeited shares, discuss accounting treatment for redemption of preference shares and buyback of shares.

CO 2: Students will be able to demonstrate accounting for issue of debentures and redemption of debentures.

CO 3: Students will be able to simulate practice of preparing financial statements as per the provisions of Indian Companies Act 2013.

CO 4: Students will be able to Practice the fundamental accounting process on Tally ERP.

CO 5: Students will be able to explain the accounting entries of profit or loss prior to incorporation.

CO 6: Students will be able to Compute the value of shares as per distinct methods and differentiate between them.

CO 7: Students will be able to simulate practice of accounting for liquidation of companies.

CO 8: Students will be able to Practice the store accounting through Tally ERP.

**Course: Fundamentals of Entrepreneurship**

CO 1: Students will be able to impact theoretical knowledge of Entrepreneurship.

CO 2: Students will be able to develop Entrepreneurship qualities and skills.

CO 3: To acquaint students with Steps involved i the formation of small Enterprises.

CO 3: To enlighten students with Recent Trends and Concepts in Entrepreneurship.

CO 4: To acquaint students with family business in India.

CO 5: To impart conceptual knowledge of Service and Agro Entrepreneurship.

CO 6: To aware students about Business Plan and Project Report.

CO 7: To inspire the students through successful stories of entrepreneurs.

CO 8: Learners will able to explain functions of money and measurement of money supply.

CO 9: Learners will understand the banking system and its functioning in India.

CO 10: Learners will understand the nature of banking business and business practices.

CO 11: Learners will understand the important recent trends in banking system.

**Course: Money and Financial System**

CO 1: Learners will able to explain functions of Money and Measurement of money supply.

CO 2: Learners will understand the banking system and its functioning in India.

CO 3: Learners will understand the nature of Banking Business and business and business practices.

CO 4: Learners will understand the important recent trends in banking system.

CO 5: Students will be able to use e-banking services.

CO 6: Students will be able explain working of RBI in India.

CO 7: Students will be able to provide consultancy and guidance for investment in financial market.

CO 8: Students will be able to explain the business practices of NBFCs and AIFI.

## Course: Statistics

CO 1: Students will be able to Explain the scope of Statistics in business perform classification and tabulation and represent the data by means of simple diagram and graphs.

CO 2: Students will be able to Explain and apply sampling techniques in real life.

CO 3: Students will be able to summarize data by means of measures of central tendency and dispersion.

CO 4: Students will be able to explain the merits and demerits of various measures of central tendency and dispersion.

CO 5: Students will be able to perform analysis of bivariate data using simple correlation and simple linear regression.

CO 6: Students will be able to Compute unconditional and conditional probabilities and apply laws probability.

CO 7: Students will be able to identify the applications binominal and normal distributions.

CO 8: Students will be able to measure trend and seasonal variations in time series data.

CO 9: Students will be able to compute and interpret simple and weighted index numbers.

CO 10: Students will be able to construct and apply variable attribute control charts.

**Course: English for Business Communication**

CO 1: Learner will able to communicate in English both oral and written.

CO 2: Learner will equip the language skills for use in their personal academic and professional lives.

CO 3: Learner should develop with essential employability skills.

CO 4: Learner will confident to enter the job market and able to work effectively.

CO 5: Leaner will able to handle soft skill practices.

CO 6: Leaner will able to cultivate a broad, human and cultured outlook.

**Course: Micro Economics**

CO 1: Students will be able to the trade cyclical phenomenon in the economy and they will able to take practical decision at their business level in future.

CO 2: Students will be able to Public finance system of state and its impact on economy and citizens of the nations.

CO 3: Students will be able to the trade and business practices through international trade theories and other relevant concept.

CO 4: Students will be able to the international monetary exchange system and determination of rate exchange.

CO 5: Students will be able to explain the Macro variables and components of macro economics.

CO 6: Students will be able to explain the relevance of national income concepts and its application in economic policy making.

**Course: Micro Economics**

CO 1: The learner should be able to apply tools of consumer behaviour.

CO 2: The learner should be able to apply firm theory to business situation.

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**Course: Management Principles and Applications**

CO 1: Leaner will understand basic management concepts, principles and practices.

CO 2: Leaner will understand basic management functions.

CO 3: Students will be able to explain the different theories of motivation.

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**Course: Principles of Marketing**

CO 1: Students will be able to define concept of market and marketing.

CO 2: Students will be able to understand Principles, tools and techniques of marketing.

CO 3: Students will be able to discuss buyer behaviour and factors affecting on buyer behaviour and buying process.

CO 4: Students will be able to discuss concept of Rural Market its Nature differentiate rural and urban market.

CO 5: Students will be able to explain 4 P's of marketing.

CO 6: Student will understand Retailing.

**Course: Insurance**

CO 1: Students will be able to understand basic knowledge of Principles and practice of insurance.

CO 2: Students will be able to understand basic knowledge of Principles and practice of life insurance.

CO 3: Students will be able to define insurance risks and its nature, scope and type.

CO 4: Students will be able to discuss life insurance risks and its nature, scope and type and LIC as career option.

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**Course: Financial Accounting**

CO 1: Students will be able to explain the basic accounting concepts, conventions, accounting process and accounting standards applicable in India.

CO 2: Students will be able to discuss process of amalgamation.

CO 4: Students will be able to understand consignment accounts.

CO 5: Students will be able to understand accounts of professionals.

CO 6: Students will be able to convert single entry into double entry.

CO 7: Students will be able to understand Accounts of Branch.

CO 8: Students will be able to handle computer for accounting treatment.

**Course: English for Business Communication**

CO 1: Learner will able to communicate in English both oral and written.CO 2: Learner will confident to enter the job market and able to work effectively.

# Statistics

**Program Outcomes**

After completion of program students will able to

1. Understand the fundamental and basic concepts in statistics for data analysis in software industries
2. Use appropriate statistical techniques to solve real life problems
3. Apply statistical techniques and concepts to perform computation and regression analysis
4. Drawing conclusions about the whole population on the basis of a sample.

**Course Outcomes**

After completion of this courses students will get knowledge about,

1. Knowledge of this course is useful in Data Science Industry Jobs.
2. Knowledge of this course is useful for being Bio Statistician, Data Analyst Jobs.
3. For getting jobs of Business analytics, Data Science, Statistician knowledge of this course is must.

## Subject-Phycsics

## COURSE OUTCOME

| Semester-I | | |
|---|---|---|
| **Course Code** | **Part** | **Course Outcome** |
| DSC A1 | Mechanics-I | • Students are able to understand and identify scalar and vector physical quantities in mechanics<br>• Students are able to understand and apply vector algebraic methods to elementary exercises in mechanics<br>• Students are able to understand and identify degree and order of given differential equations<br>• Students are able to solve second order, homogenous ordinary differential equations in mechanics<br>• Students are able to understand the conceptual evolution of conservation laws of momentum and energy for both single and system of particles<br>• Students are able to understand and apply basic concepts of rotational motion<br>• In general, students are capable of correlating above concepts and methods in mechanics to both theoretical and experimental domains revealing analytical as well as numerical skills |
| DSC A2 | Mechanics-II | • Students are able to understand and apply Newtons Law of Gravitation to celestial objects<br>• Students are able to understand geometry of planetary orbits under the action of central force<br>• Students are able to solve numerical problems based on Kepler's Laws of planetary motion<br>• Students are able to understand simple concepts like weightlessness, Geosynchronous satellite and GPS |

| | | |
|---|---|---|
| | | • Students are able to setup differential equation for simple harmonic motion and its allied cases<br>• Students are able to calculate time averages of KE, PE and TE<br>• Students are able to revise basic concepts such as stress, strain and elastic constants of elasticity<br>• Students are able to derive elastic constants for beam supported at both ends and at one end<br>• Students are able to derive elastic constant (eta) of a wire under torsional oscillations (Searle's Method)<br>• Students are able to explain the phenomenon of surface tension on the basis of molecular forces<br>• Students are able to derive the relation between surface tension and excess pressure<br>• Students are able to perform and experiments to determine ST by Jaeger's method<br>• Students are able to discuss and state the factors affecting the ST<br>• In general, students are capable of correlating above concepts and methods to both theoretical and experimental domains revealing analytical as well as numerical skills |

| Semester-II | | |
|---|---|---|
| Couse Code | Part | Course Outcome |
| DSC B1 | Electricity and Magnetism-I | • Students are able to understand the physical significance of gradient, divergence and curl<br>• Students are able to apply concepts in vector calculus such as gradient, divergence and curl related to vector and scalar fields using Gauss, Stokes and green's theorem<br>• Students are able to understand and apply concepts of electrostatic field, potential to point charges, electric dipole and geometrically regular charged bodies<br>• Students are able to understand and apply concept of capacitor to isolated conductor, parallel plates, cylindrical and spherical capacitors and allied modifications in it<br>• Students are able to understand and apply concept of energy density in electric field<br>• Students are capable of applying above concepts to solve numerical exercise in electrostatics |
| DSC B2 | Electricity and Magnetism-II | • Student are able to understand importance of complex numbers in analysis of Ac Circuits contacting Inductance (L) Capacitor (C) and Resistance (R) and their various configurations<br>• Students are able to define and apply the concepts in AC circuits such as Impedance (Z), reactance ($X_C$ and $X_L$ ), Admittance, Susceptance and Quality Factor (Q)<br>• Students are able to understand and design AC bridge: Owen's Bridge<br>• Students reveal mastery in basic terminology in network analysis for further studies<br>• Students are able to state and apply |

| | | |
|---|---|---|
| | | Network theorems to simple circuits<br>• Students are able to understand basic working principle of Ballistic galvanometer<br>• Students are able to define constants of ballistic galvanometer<br>• In general, students are capable of applying above concepts in network analysis to both theoretical and experimental domains<br>• Students are able to understand simple elementary concepts such as magnetization and intensity of magnetization<br>• Students are able to state Biot-Savart's law and are capable to apply it to straight, circular wires and solenoid<br>• Students are able to understand concept of magnetic vector potential along with Ampere's circuital law<br>• Students are able to understand the explain the phenomenon of hysteresis in magnetism<br>• Students are able to discriminate different magnetic materials based on their characteristic properties |

# Zoology

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PO1 -Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms.

PO2 -Analyse complex interactions among the various animals of different phyla, their distribution and their relationship with the environment.

PO3 –Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.

PO4 –Understands the complex evolutionary processes and behaviour of animals.

PO5 –Correlates the physiological processes of animals and relationship of organ systems.

PO6 –Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species.

PO7 –

Gain knowledge of small scale industries like sericulture, fish farming, bee keeping, aquaculture, animal husbandry, poultry farm.

PO8 –Understands about various concepts of genetics and its importance in human health.

PO9 -Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties.

PO10 –Apply the knowledge and understanding of Zoology to one's own life and work.

PO11 –Develops empathy and love towards the animals

## Program Specific Outcomes:

PSO1. Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, biochemistry, ecology, evolutionary biology, developmental biologyand applied and economic zoology.

PSO2. Analyse the relationships among animals, plants and microbes

PSO3. Perform procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell biology, Genetics, Applied Zoology, Clinical science, tools and techniques of Zoology, Toxicology, Entomology, Nematology,Sericulture, Biochemistry, Fish biology, Animal biotechnology

PSO4. Understand the applications of biological sciences in Apiculture, Aquaculture, Sericulture, Animal Husbandry, Poultry Farm.

PSO5. Gains knowledge about effective communication and skills of problem solving methods

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## Course Outcomes:

**Animal Diversity –Invertebrates& Vertebrates**

CO1.Describe general taxonomic rules on animal classification

CO2.Classify Phylum Protozoa to Echinodermata with taxonomic keys

.CO3.Imparts conceptual knowledge of vertebrates, their adaptations and associations in relation to their environment.

CO4 .Classify phylum Protochordates to Mammalia.

CO5.ComplexVertebrateinteractions.Comparative Anatomyand

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**Developmental Biology of Vertebrates**

CO1.Comparative knowledge of Integumentary, Digestive, Circulatory, Urinogenital, Nervous and Skeletal system of various classes of vertebrates.

CO2. Basic concepts of developmental biology

.CO3. Concept of hormonal regulation of reproduction.Physiology

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**Biochemistry:**

CO1. Students gain fundamental knowledge of animal physiology

CO2.Seeks to understand the mechanisms that work to keep the animal body alive and functioning.

CO3.Interactions and interdependence of physiological and biochemical processes

.CO4. Students are taught the detailed concepts of digestion, respiration, excretion, the

functioning of nerves and muscles, cardiovascular system, endocrine system and reproductive

system.

CO5. Physiological and biochemical understanding through scientific enquiry into the nature of mechanical, physical, and biochemical functions of animals, their organs, and the cells of which they are composed.

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**Genetics and Evolutionary Biology**

CO1.Division aspects of basic unit of life i.e. cell

.CO2.Mendelian and non mandilioninheritance

.CO3. Understanding of basic concepts of geneticsandlaws of inheritance.

CO3.Concept behind genetic disorder, gene mutationsvarious causes associated with inborn errors of metabolism

.CO4.Theories of evolutionand knowledge of evolution of specie

## Physics

## Course Code - DSC A1

## Mechanics-I Semester-I

- Students are able to understand and identify scalar and vector physical quantities in mechanics
- Students are able to understand and apply vector algebraic methods to elementary exercises in mechanics
- Students are able to understand and identify degree and order of given differential equations
- Students are able to solve second order, homogenous ordinary differential equations in mechanics
- Students are able to understand the conceptual evolution of conservation laws of momentum and energy for both single and system of particles
- Students are able to understand and apply basic concepts of rotational motion
- In general, students are capable of correlating above concepts and methods in mechanics to both theoretical and experimental domains revealing analytical as well as numerical skills

**Mechanics-II**

- Students are able to understand and apply Newtons Law of Gravitation to celestial objects
- Students are able to understand geometry of planetary orbits under the action of central force
- Students are able to solve numerical problems based on Kepler's Laws of planetary motion
- Students are able to understand simple concepts like weightlessness, Geosynchronous satellite and GPS
- Students are able to setup differential equation for simple harmonic motion and its allied cases
- Students are able to calculate time averages of KE, PE and TE
- Students are able to revise basic concepts such as stress, strain and elastic constants of elasticity
- Students are able to derive elastic constants for beam supported at both ends and at one end
- Students are able to derive elastic constant (eta) of a wire under torsional oscillations (Searle's Method)
- Students are able to explain the phenomenon of surface tension on the basis of molecular forces

## Semester-II

## Electricity and Magnetism I

- Students are able to understand the physical significance of gradient, divergence and curl
- Students are able to apply concepts in vector calculus such as gradient, divergence and curl related to vector and scalar fields using Gauss, Stokes and green's theorem
- Students are able to understand and apply concepts of electrostatic field, potential to point charges, electric dipole and geometrically regular charged bodies
- Students are able to understand and apply concept of capacitor to isolated conductor, parallel plates, cylindrical and spherical capacitors and allied modifications in it
- Students are able to understand and apply concept of energy density in electric field
- Students are capable of applying above concepts to solve numerical exercise in electrostatics
- Student are able to understand importance of complex numbers in analysis of Ac Circuits contacting Inductance (L) Capacitor (C) and Resistance (R) and their various configurations
- Students are able to define and apply the concepts in AC circuits such as Impedance (Z), reactance ($X_C$ and $X_L$), Admittance, Susceptance and Quality Factor (Q)
- Students are able to understand and design AC bridge: Owen's Bridge
- Students reveal mastery in basic terminology in network analysis for further studies
- Students are able to state and apply Network theorems to simple circuits
- Students are able to understand basic working principle of Ballistic galvanometer
- Students are able to define constants of ballistic galvanometer
- In general, students are capable of applying above concepts in network analysis to both theoretical and experimental domains
- Students are able to understand simple elementary concepts such as magnetization and intensity of magnetization
- Students are able to state Biot-Savart's law and are capable to apply it to straight, circular wires and solenoid

## Botany Programme Outcomes (POs)

After completing

degree programme, the students will be able to:

PO1: Offer theoretical as well as practical knowledge about different special subject areas.

PO2: Understand the academic field to pursue multi and interdisciplinary science careers in future that include Chemistry, Physics, Botany, Zoology, Mathematics, Microbiology and Computer Science.

PO3: Plan and execute experiments or investigations, analyze and interpret data information collected using appropriate methods.

PO4: Develop scientific temper and attitude which is more beneficial for the society as the scientific developments and make a nation or society to grow at a rapid pace through research.

PO5: Think critically, follow innovations and developments in science and technology.

PO6: Understand the issues of environmental contexts and sustainable development.

PO7: Acquire the skills and ability to engage in independent and life-long learning in the broadest context socio technological changes.

PO8: Demonstrate professional and ethical attitude with enormous responsibility to serve the society.

## Programme Specific Outcomes (PSOs)

PSO1: A student completing the course is able to understand different branches of Botany such as systematics, evolution, ecology, developmental biology, physiology, biochemistry, plant interactions with microbes and insects, morphology, anatomy, reproduction, genetics and molecular biology of various life-forms.

PSO2: The student completing the course is capable to perform short research projects using various tools and techniques in plant sciences and develop scientific temperament and research attitude.

PSO3: They become competent enough in various analytical and technical skills related to plant sciences.

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Course Outcomes (COs)

B.Sc. I

Paper I: Biodiversity of Microbes, Algae and Fungi

CO1: Describe the diversity among Bacteria, Viruses and Algae.

CO2: Know the systematic, morphology and structure of Bacteria, Viruses Algae and Fungi.

CO3: Compare the life cycle pattern of Bacteria, Viruses, Algae and Fungi.

CO4: Explain the useful and harmful roles of Bacteria, Viruses, Algae and Fungi.

CO5: Classify algae and fungi according to their systems of classification.

CO6: Interpret uses and economics importance of algae and fungi.

Paper II: Biodiversity of Archegoniate- Bryophytes, Pteridophytes, Gymnosperms.

CO7: Know the evolution of Bryophytes, Pteridophytes and Gymnosperms.

CO8: Analyze the morphological diversity of Bryophytes, Pteridophytes and Gymnosperms.

CO9: Summarize the economic importance of Bryophytes and Pteridophytes.

CO10: Recognize Gymnosperms with respect to distinguishing characters, comparison with Angiosperms, economic importance and classification

CO11: Justify life cycle of various forms of Bryophytes, Pteridophytes and Gymnosperms.

CO12: Illustrate the life cycle of Gnetum.

**Practical Course I:**

CO13: The students should learn various forms of Bacteria.

CO14: To study the morphology and life cycle of Nostoc.

CO15: To study the morphology and life cycle of Spirogyra.

CO16: To study the morphology and life cycle of Mucor.

CO17: To study the morphology and life cycle of Funaria.

**Paper III: Plant Ecology**

CO19: To study the plant communities and ecological adaptations in plants.

CO20: Classify different ecosystems and their importance.

CO21: Describe the impact of climatic condition for the growth and development of the plant

CO22: Illustrate social approach to biodiversity conservation.

CO23: Discover the Botanical regions of India and vegetation types of Maharashtra. CO24: Know about Bioremediation, Global Warming and Climate Change.

**Paper IV: Plant Taxonomy**

CO25: Define plant taxonomy and taxonomic related terminologies.

CO26: Explain classification systems of angiosperms.

CO27: Determine Botanical Nomenclature of angiospermic plant.

CO28: Recognize ecological plant groups with examples.

CO29: Explain plant families with example.

CO30: Execute computer knowledge in plant taxonomy and digital herbarium.

CO31: Know modern trends in Taxonomy.

CO32: Know the conceptual development of taxonomy and systematic.

CO33: Develop knowledge about plant nomenclature.

Practical Course II:

CO34: To study of morphological and anatomical adaptations in hydrophyts.

CO35: To study of morphological and anatomical adaptations in Xerophytes.

CO36: To study of morphological and anatomical adaptations in Epiphytes.

CO37: To study of flowering twig morphology – Vegetative characters.

CO38: To study of flowering twig morphology - Floral - /reproductive characters.

CO39: To study of Vegetative and Floral characters of plant families.

**B.Sc. II**

**Paper V: Embryology of Angiosperms**

CO40: Recognize the scope and importance of Embryology.

CO41: Discuss the structure and development in microsporangium and megasporangium.

CO42: Summarize the process of microsporogenesis and megasporogenesis.

CO43: Identify the process of pollination and fertilization.

CO44: Enlightened about the basic structure of the embryo.

CO45: Illustrate the types of microscope, ovules, embryo, seed and endosperm.

**Paper VI: Plant Physiology**

CO46: Illustration of plant structures in the context of physiological functions of plants.

CO47: They will learn about the growth and development of plants and its regulations.

CO48: They will able to learn the physiological details of photosynthesis.

CO49: They will able to summarize red-ox systems of plants.

CO50: Explain the mechanism and application of photoperiodism.

CO51: Describe the plant growth regulators and their types.

**Practical Course III:**

CO52: To study of typical flower and its parts

CO53: To study of germination of pollen grains.

CO54: Detection of pollen fertility by staining technique.

CO55: To Study dicotyledon and monocotyledon embryo.

CO56: To study the structure of stomata and determination of stomatal density.

CO57: To study of evolution of oxygen during photosynthesis. Paper VII: Plant Anatomy

CO58: Identify the scope and importance of Anatomy.

CO59: To perform the techniques in Anatomy.

CO60: Compare and contrast the connections between plant anatomy and the other disciplines of biology

CO61: Outline and compare structural differences among different taxa of vascular plants.

CO62: Interpret the principles involved in distribution of mechanical tissues.

CO63: Analyze the various components of stem and wood during its secondary growth. Paper VIII: Plant Metabolism

CO64: Educate about the various metabolic pathways leading to the formation of significant molecules and their catabolism.
CO65: Aware about the vital role of each of the molecules in plants.
CO66: Enrich themselves with the phenomenon of metabolism of primary and secondary metabolites and their role in plants.
CO67: Upgraded in analytical skills and instrumentation.
CO68: Determine factors affecting enzyme activity.
CO69: Demonstrate various physiological and metabolic pathways in plants. **Practical Course IV:**
CO70: To study of simple tissues.
CO71: To study of complex tissues.
CO72: Double stained permanent micro preparation of any suitable material.
CO73: To study of anomalous/abnormal secondary growth in Bignonia (Dicot stem).
CO74: Study of anomalous/abnormal secondary growth in Dracaena (Monocot stem).
CO75: Determination of rate of respiration during seed germination by Ganong's respirometer.
CO76: Demonstration of fermentation.
CO77: Separation of Amino acids by Thin Layer chromatography.

Khandala Vibhag Shikshan Samiti's

# SUSHILA SHANKARRAO GADHAVE MAHAVIDHYALAYA KHANDALA

Tal-Khandala, Dist-Satara

## DEPARTMENT OF MATHEMATICS

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After successful completion of three years degree program in B.Sc. students will be able to:

### PROGRAMME OUTCOMES (POs)

**PO-1:** Find higher order derivatives and partial order derivatives of various functions.

**PO-2:** Evaluate the limits of various functions and use indeterminate forms to find them.

**PO-3:** Identify whether the given function is continuous or discontinuous. If discontinuous, tell the type of discontinuity.

**PO-4:** Solve all ordinary differential equations types by choosing the proper method.

**PO-5:** Determine the solution of partial differential equations by choosing the proper method.

**PO-6:** Develop an understanding of the underlying unifying structures of mathematics (sets, relations, functions, logical structure) and the relationships among them.

**PO-7:** Explain all the properties of real numbers.

**PO-8:** Describe the structure of the group, rings, vector spaces, and inner product spaces. Also,discuss theorems and their applications of it.

**PO-9:** Apply various results to discuss the convergence of sequences and series.

**PO-10:** Define notions of logic and discuss graphs and trees.

**PO-11:** Assess the Riemann Integrability of a given function.

**PO-12:** Analyze the convergence of improper integrals.

**PO-13:** Memorize all about the metric space.

**PO-14:** Identify the analyticity of a function of a complex variable.

**PO-15:** Evaluate complex integration.

**PO-16:** Acquire knowledge of SCILAB and Python programming.

Khandala Vibhag Shikshan Samiti's

# SUSHILA SHANKARRAO GADHAVE MAHAVIDHYALAYA KHANDALA

Tal-Khandala, Dist-Satara

## DEPARTMENT OF MATHEMATICS

### PROGRAMME SPECIFIC OUTCOMES (PSOs) OF MATHEMATICS

**PSO-1:** Think in a critical manner.

**PSO-2:** Analyze a problem, and identify and define the computing requirements, which may beappropriate to its solution.

**PSO-3:** Enhancing students' overall development and equipping them with mathematical modeling abilities, problem-solving skills, creative talent, and power of communication necessaryfor various kinds of employment.

**PSO-4:** Formulate and develop mathematical arguments in a logical manner.

**PSO-5:** Recall basic facts about mathematics and display knowledge of conventions such asnotations, and terminology.

**PSO-6:** Develop a positive attitude towards mathematics as an interesting and valuable subjectof study.

Khandala Vibhag Shikshan Samiti's

# SUSHILA SHANKARRAO GADHAVE MAHAVIDHYALAYA KHANDALA

Tal-Khandala, Dist-Satara

## DEPARTMENT OF MATHEMATICS

### COURSE OUTCOMES (COs) OF MATHEMATICS

#### B.Sc. –I (Sem –I)

#### DSC-5A-Differential Calculus

CO-1: Define complex numbers and find the conjugate of a complex number also find a polar form ofa complex number in various quadrants.

CO-2: Use De-Moivre's theorem for calculating powers of complex numbers in the form of $cos\theta$ *and* $sin\theta$.

CO-3: Tell the definition of Hyperbolic functions and the relation between Hyperbolic and circular functions.

CO-4: Explain how to write expansion of $sinn\theta$ & $cosn\theta$ in terms of powers of $sin\theta$ & $cos\theta$.

CO-5: Evaluate $n^{th}$ order derivative of standard functions.

CO-6: Apply Leibnitz's theorem for finding $n^{th}$ order derivative of a product of two functions.

CO-7: Find partial derivatives of the first order and higher order.

CO-8: Use Lagrange's method of undetermined multipliers for evaluating maxima and minimafor functions of two variables.

CO-9: Explain verification of Euler's theorem on homogeneous function.

#### DSC-6A-Calculus

CO-10: Restate Rolle's Theorem, Lagrange's mean value theorem, and Cauchy's.

CO-11: Justify verification of mean value theorems for various functions.

CO-12: Find Taylor's and Maclaurin's series expansion of various functions.

CO-13: Use various indeterminate forms for evaluating the limit of a given function.

CO-14: Tell $\in -\delta$ definition of a limit of a function of one variable and Restate theorems on limits.

CO-15: Find limits of various functions.

CO-16: Explain continuous functions and their properties.

CO-17: Examine the continuity or discontinuity of various functions.

CO-18: Inspect the differentiability of various functions.

CO-39: Use the self-orthogonal method to find an orthogonal trajectory for a curve of family.

B.Sc.-II (Sem-III)

DSC-5C- Real Analysis-I

CO-40: Tell basic definitions in sets and functions.

CO-41: Describe properties of functions.

CO-42: Apply mathematical induction to establish the validity of statements, $p(n)$ for every natural number $n$.

CO-43: Justify the countability of sets.

CO-44: Define real numbers, least upper bounds, and greatest lower bounds.

CO-45: Explain order properties of real numbers, completeness property, and Archimedean property.

CO-47: Illustrate Arithmetic-Geometric mean inequality, Triangle inequality, and Bernoulli's inequality.

DSC-6C-Algebra-I

CO-48: Tell definitions of Hermitian and skew-Hermitian matrices and restate properties of matrices.

CO-49: Define the Rank of the matrix, row echelon form, and normal form of a matrix.

CO-50: Use row echelon form and normal (canonical) form to find the rank of a matrix and solve the system of linear homogeneous equations and linear non-homogeneous equations by findingrank of a matrix.

CO-51: Solve the system of simultaneous linear homogeneous and non-homogeneous equations byusing the proper method.

CO-52: Find Eigen values and Eigen vectors by using the Cayley Hamilton theorem.

CO-53: Develop relations and illustrates Equivalence class theorem, Warshall's Algorithm.

CO-54: Memorize definitions of group, subgroup, abelian group, and order of the group and discusstheorems on it.

CO-55: Restate necessary and sufficient conditions for a group to be a subgroup of G.

CO-56: Explain the cyclic group and its properties.

CO-57: Give examples of the group, subgroup, abelian group, and cyclic group.

B.Sc.-II (Sem-IV)

DSC-5D-Real Analysis-II

CO-58: Define sequence, subsequence, the limit of a sequence, and convergent sequence.

CO-59: Discuss properties of convergent sequences.

CO-60: Explain the monotone sequence and its properties.

CO-61: Evaluate the limit superior and limit inferior of different sequences.

CO-62: Tell definitions of infinite series, convergent and divergent series, and sequence partialsum of series.

CO-63: Use comparison test for positive term series, D'Alembert's ratio test, Cauchy's root test,andRabbi's test for convergent and absolute convergent of an infinite series of real numbers.

CO-64: Apply Leibnitz's test for convergence of an infinite series.

CO-65: Describe Cauchy sequences and justify their properties.

DSC-6D-Algebra-II

CO-66: Discuss Lagrange's theorem and its consequences.

CO-67: Define the normal subgroup and explain its properties.

CO-68: Justify the results related to the normal subgroup.

CO-69: Explain the factor group and its properties.

CO-70: Identify the Homomorphism, Isomorphism, Automorphism, and endomorphism of the group and discuss results related to homomorphism.

CO-71: Define the Kernel of Homomorphism and discuss theorems on it.

CO-72: Discuss the fundamental theorem of homomorphism and its consequences.

CO-73: Tell definitions of permutation and give examples of it.

CO-74: Explain Cayley's theorem.

CCPM-II

CO-75: Find Eigen values and Eigen vectors of a given matrix.

CO-76: Verify the Cayley Hamilton theorem and apply it to finding the inverse of a matrix.

CO-77: Use the underlying unifying structures of mathematics. (i.e., sets, relations an functions,logical structure) and the relationship among them.

CO-78: Identify convergence of series by using the proper test.

CO-79: Explain Homomorphism and Kernel

CO-80: Solve examples on the group and find the order of an element.

CCPM-III

CO-81: Tell features and SCILAB environment workspaces.

CO-82: Create a matrix of real values in SCILAB and find the addition, subtraction, and product of the matrix and also find the size and length of a matrix.

CO-83: Plot a graph of simple functions using SCILAB.

CO-84: Describe the procedure for creating a polynomial using roots and using coefficients.

CO-85: Explain the method for creating the SCILAB function and its execution.

CO-86: Write the program of numerical methods and predict the output.

## B.Sc.-III (Sem-V)

### DSE-E9-Mathematical Analysis

CO-87: Find the upper and lower Darboux's sums, Riemann integration, and find the integrationof a bounded function on closed and bounded intervals.

CO-88: Discuss the idea about Riemann's integrability and Riemann integration.

CO-89: Restate the necessary and sufficient condition for Riemann Integrability and explain it.

CO-90: Illustrates theorems on algebra and properties of Riemann integrable functions.

CO-91: Identify the Improper integral of the first kind and improper integral of the second kind.

CO-92: Select the proper convergence test to check the convergence of given improper integrals.

CO-93: Examine the convergence of an improper integral by choosing the proper test.

CO-94: Find Fourier series of periodic functions.

### DSE-E10-Abstract Algebra

CO-95: Tell definitions of the basic concept of a ring and identify examples of a ring.

CO-96: Define an integral domain, and field and illustrates the theorems on it.

CO-97: Restate the necessary and sufficient condition of a ring to be a subring.

CO-98: Develop a Quotient ring and discuss theorems on it.

CO-99: Illustrate theorems on the Homomorphism of ring and Isomorphism theorems.

CO-100: Explain the ideals of a ring, prime ideals, and maximal ideals and related results.

CO-101: Discuss the embedding of rings.

CO-102: Describe polynomial rings, Euclidean domain, PID, and UFD.

CO-103: Construct permutation group $S_3$ and dihedral group $D_4$.

### DSE-E11-Optimization Techniques

CO-104: Construct real word problems as linear programming models and describe the theoretical working of graphical methods.

CO-105: Define optimal solution and feasible solution.

CO-106: Analyze whether the given problem has an optimal solution or feasible solution.

CO-107: Use suitable methods to solve optimization problems.

CO-108: Discuss solution methods including graphs and linear programming to analyze and

solve the two-person, zero-sum game.

CO-109: Identify and select procedures for solving various sequencing, assignment, transportation problems.

DSE-E12-Integral Transforms

CO-110: Define Laplace transform and inverse Laplace transforms.

CO-111: Find the Laplace and inverse Laplace transform of standard functions.

CO-112: Illustrates standard results for finding Laplace and inverse Laplace transforms.

CO-113: Discuss various methods to find Laplace and inverse Laplace transforms.

CO-114: Evaluate the Laplace transforms and inverse Laplace transforms of various functions byusing the proper method.

CO-115: Tell definitions of finite Fourier transform and infinite Fourier transform.

CO-116: Recall the relation between the Laplace transform and Fourier transform.

CO-117: Explain various theorems and solve examples on it.

CO-118: Find finite Fourier transform and infinite Fourier transform of various functions.

B.Sc.-III (Sem-VI)

DSE-F9-Metric Space

CO-119: Acquire the knowledge of the notion of metric spaces and use the definition of metricspace to show given function is exactly metric for the given set.

CO-120: Define the Cauchy sequence and discuss the convergence of the Cauchy sequence.

CO-121: Explain Limits in Metric space.

CO-122: Describe the continuity of a function in metric space and the Algebra of continuous functions.

CO-123: Tell definitions of the open ball, open sets, and closed sets and identify open sets and closed sets.

CO-124: Discuss proof of the theorems on open sets, and closed sets.

CO-125: Illustrate theorems on connectedness and compactness by using the basic concept of closedand bounded sets.

CO-126: Apply the basic concepts of metric space to a continuous function on compact metric space.

DSE-F10-Linear Algebra

CO-127: Define concepts as Vector Spaces, subspace, span, kernel, linearly dependent, etc.

CO-128: Tell definitions of Quotient space, Homomorphism, Kernel and Range of homomorphism, and Linear span and illustrates theorems on it.

CO-129: Evaluate the basis and dimension of a vector space and subspace.

CO-130: Explain linear transformation and find the Rank and Nullity of linear transformation.

CO-131: Solve examples to find the inverse of a linear transformation and check whether the lineartransformation is bijective or not.

CO-132: Discuss theorems on spanning of vector space, the inner product of vectors, linear transformation for the set of vectors

CO-133: Illustrate Cauchy-Schwarz inequality, Generalized Pythagoras theorem, and Bessel'sinequality.

CO-134: Apply the Gram-Schmidt orthogonalization process to find an orthogonal basis.

CO-135: Find characteristic polynomial, Eigen values, and Eigen vectors of a given matrix.

**DSE-F11-Complex Analysis**

CO-136: Define the basic concept of the function of complex variables.

CO-137: Explain Analytic function and Cauchy Riemann equations.

CO-138: Discuss necessary and sufficient conditions for a function to be analytic.

CO-139: Use Cauchy integral formula to evaluate complex integration.

CO-140: Illustrate Liouville's theorem and the fundamental theorem of Algebra.

CO-141: Describe the convergence of sequence and series of complex variables.

CO-142: Apply the concept of residue to evaluate certain real integrals.

CO-143: Find Taylor and Laurent series expansion for various functions.

**DSE-F12-Discrete Mathematics**

CO-144: Use classical notation of logic: implications, equivalence, negation, proof by contradiction, proof by induction, and quantifiers.

CO-145: Examine valid and invalid arguments.

CO-146: Explain the addition and subtraction of binary, decimal, quintal, octal, and hexadecimalnumber system and their conversions.

CO-147: Define Graphs, and types of Graphs and identify them.

CO-148: Compute the degree of the vertex of a given graph.

CO-149: Explain Trails, Paths, and Circuits.

CO-150: Find the matrix representation of the graph.

CO-151: Analyze the isomorphism of the graph.

**CCPM-IV**

CO-152: Solve LPP by graphical, simplex, and Big M methods.

CO-153: Solve transportation problems by NWCR, VAM, and MODI methods.

CO-154: Determine the solution to assignment problems by using the Hungarian method.

CO-155: Use game theory and Simulation for Solving Business Problems.

CO-156: Choose an appropriate method for solving examples of Sequencing Problems by usingJohnson's algorithm.

CCPM-V

CO-157: Find the Laplace transform of various functions by choosing the proper method.

CO-158: Determine the Inverse Laplace transform of various functions by choosing the proper method.

CO-159: Use the proper method to find the infinite Fourier sine, infinite Fourier cosine transform, and its inverse.

CO-160: Explain the methods to find Fourier sine, Fourier cosine transform, and its inverse.

CCPM-VI

CO-161: Discuss Python, Anaconda, Spyder IDE, Python Identifiers and keywords, data types,First Python program.

CO-162: Use conditional statements, Looping statements, and control statements in Python programming.

CO-163: Tell modules and packages in Python.

CO-164: Write the programs of Numerical methods using Python and predict the output.

CO-165: Explain Collatz conjecture, Monte Hall Problem, and data visualization in Python.

B.Sc.-I (Sem-II)

## DSC-5B-Differential Equations

CO-19: Define exact differential equation, Linear differential equations, and Bernoulli's equation.

CO-20: Restate necessary and sufficient conditions for exactness.

CO-21: Discuss the method of solutions of an exact differential equation, Linear differential equations, and Bernoulli's equation.

CO-22: Solve the differential equation by choosing the proper method of solution.

CO-23: Tell the definition of Linear differential equations with constant coefficients, complementary functions, and particular integrals.

CO-24: Find the complementary functions of various differential equations of second order.

CO-25: Explain various methods to find a particular integral.

CO-26: Apply the proper method to find the solution of the homogeneous linear differential equation.

## DSC-6B-Higher order ordinary differential equations and partial differential equations

CO-27: Define second-order linear differential equations, total differential equations, and partial differential equations.

CO-28: Solve the second-order linear differential equations by choosing the proper method.

CO-29: Discuss the method of variation of parameters and solve examples by using it.

CO-30: Restate necessary conditions for the Integrability of total differential equations and solve total differential equations by choosing the proper method.

CO-31: Explain the method of formation of partial differential equations by the elimination ofarbitrary constants and elimination of arbitrary functions.

CO-32: Apply the proper method to find the solution of first-order partial differential equations.

CO-33: Use Charpit's methods to solve first-order partial differential equations.

## CCPM-I

CO-34: Use De-Moivre's theorem for finding roots of complex numbers and Leibnitz's theorem for finding $n^{th}$-order derivatives.

CO-35: Identify the problem and use the proper technique to find the radius of curvature.

CO-36: Use Lagrange's method of undetermined multipliers for evaluating maxima and minimafor functions of two variables.

CO-37: Evaluate the limit of various functions using indeterminate forms.

CO-38: Solve differential equations by choosing the proper method.

# Program Outcomes

## B.Sc.

PO-1: Well equipped with an understanding of the analytical methods involved, they are in a position to interpret and analyze results so obtained from experiments and draw suitable conclusions against their supported data acquired.

PO-2: With the pursuit of knowledge for either personal or professional reasons, learners are also encouraged to volunteer and be selfmotivated that not only enhances society values, active participation and personality development, but also enhances self-sustainability, competiveness and employability.

PO-3: Empowered the graduates to appear for various competitive examinations and/or choose the post graduate programme of their choice.

PO-4:. Analyzed the given scientific data critically and systematically and the ability to draw the objective conclusions.

PO-5:Observation, precision, analytical mind, logical thinking, clarity of thought and expression, systematic approach, qualitative and quantitative decision making, are enlarged. PO3

PO-6: The B. Sc. Programme helped to develop scientific temperament and attitude among the science graduates.

PO-7: This programme enabled the learners to perform the jobs in diverse fields such as science, engineering, industries, survey, education, banking, development-planning, business, public service, self business etc. efficiently.

# Course Outcome (COs)

## B.Sc.

## CHEMISTRY

### Inorganic Chemistry

After studying this course, students:

CO1. Know the meaning of various terms involved in co-ordination Chemistry
CO2. Understand Werner's formulation of complexes.

CO3. Know the limitations of VBT.

CO4. Know the shapes of d-orbital and degeneracy of d-orbital.

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### Organic Chemistry

After studying this course, students:

CO1. Study the basics of Organic Chemistry.

CO2. Define organic acids and bases.

CO3. Distinguish between geometrical and optical isomerism. 40

CO4. Understand evidences, reactivity and mechanism of elimination and substitution reactions

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## Physical Chemistry

After studying this course, students:

CO1. Study the basics of Physical Chemistry.

CO1. Write an expression for rate constant K for third order reaction.

CO2. Solve the numerical problems based on Rate constant.

CO3. Know the meaning of phase, component and degree of freedom.

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## Analytical Chemistry

After studying this course, students:

CO1. Know the principles of common ion effect and solubility product.

CO2. Study the methods of thermo-gravimetric analysis.

CO3. Understand principles of Spector - photometric analysis and properties of electromagnetic radiations.

CO4. Study the Voltammetry and Polarography as an analytical tool.

## BCA Program Outcomes

**Program Educational Outcomes(PEO)**: After Completion of this program, the graduate/students would:

1. Implement fundamental domain knowledge of core course for developing effective computing solutions by incorporating creativity and logical reasoning.
2. Deliver Professional Services with updated technologies in Computer Application based career.
3. Develop leadership skills and incorporate ethics, team work with effective communication and time management in the profession. Undergo higher studies, certifications and technology research as per market needs.

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**Program Outcomes(PO)**: After Completion of program Students/graduates will be able to:

1. Apply Knowledge of ICT in solving business problems.
2. Learn various programming languages and custom software.
3. Design component, or processes to meet the needs within realistic constraints.
4. Identify, formulate and solve problems using computational temperaments.
5. Comprehend professional and ethical responsibility in computing profession.
6. Express effective Communication Skills.
7. Recognize the need for Interdisciplinary and an ability to engage in lifelong learning.
8. Knowledge of contemporary issue and emerging developments in computing profession.
9. Utilize techniques,skills and modern tool, for actual development process

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## FYBCA Course Outcomes:

**Course Name: Fundamental of Computers**: After completion of this course students will be able to :

1. Understand basic concepts of computer.
2. Describe peripheral devices and number systems.
3. Understand operating environment.
4. Demonstrate the use of Linux operating system commands.

**Course Name: Introduction to Programming using C**: After completion of this course students will be able to :

1. Implement the algorithms and draw flowcharts for solving mathematical problems.
2. Ability to design and develop computer programs, analyze and interprets the concept of pointers, declarations,initialization, operation on pointers and their usage.
3. Able to define data types and use them in simple data processing applications also he/she must be able to use the concept of array of structures and file handling.
4. Develop the confidence fr self education and ability for lifelong learning needed for computer language.

**Course Name: Principles of Management:** After completion of this course students will be able to :

1. Understand the influence of historical forces on current practice of management.
2. Understand frameworks in the four functions of management.
3. Understand leadership styles to anticipate the consequences of each leadership style
4. Be able to identify and apply appropriate management techniques for organizations; and
5. Understand social responsibility involved in business situations.

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**Course Name: Business Communication:** After completion of this course students will be able to :

1. Communicate in English in written as well as oral mode
2. Make presentations in English
3. Do effective business correspondence

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**Course Name: Office Automation**: After completion of this course students will be able to :

1. Understand the components of office automation
2. Perform operations using MS Word and PowerPoint
3. Surf details through Internet
4. Understand and discuss about the use of Office Package and internet in daily life

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**Course Name: Lab Course I**: After completion of this course students will be able to :

1. Understand and trace the execution of programs written in C language.
2. Write the C code for a given algorithm
3. Implement Programs with pointers and arrays, perform pointer arithmetic and file handling.

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**Course Name: Lab Course II**: After completion of this course students will be able to :

1. Use internet and internet tools.
2. Perform operations using MS Word and PowerPoint
3. Create business presentations using PowerPoint

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**Course Name: Database Management System**: After completion of this course students will be able to :

1. Describe the basic concepts of DBMS and various databases used in real applications
2. Demonstrate the principles behind systematic database design approaches.
3. Design the database structure by applying the concepts of Entity relational model and Normalization.
4. Learn MS-Access for database creation and handling transactions.

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**Course Name: Operating System:** After completion of this course students will be able to :

1. Possess knowledge of Operating Systems and their types.
2. Apply the concept of a process and scheduling algorithms.
3. Realize the concept of deadlock and different ways to handle it.
4. Understand various memory management techniques and file system.

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**Course Name: Web Technology I**: After completion of this course students will be able to :

1. Understand basics of website and web development life cycle.
2. Design website using HTML and CSS
3. Implement client side scripting for website development
4. Understand importance and working of HTML5

**Course Name: Financial Accounting with Tally**: After completion of this course students will be able to :

1. Use basic accounting terminology, procedures and systems of maintaining accounting records.
2. Understand financial statements
3. Learn to create company, enter accounting voucher entries and also print financial statements, etc. in Tally.
4. Demonstrate MIS reports in Tally ERP.

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**Course Name: Mathematical Foundations For Computer Applications:** After completion of this course students will be able to :

1. Basic knowledge of set theory, functions and relations concepts, matrix needed for designing and solving problems.
2. Construct simple mathematical proofs and possess the ability to verify them.
3. Write an argument using logical notation and determine if the argument is valid or is not valid.
4. Use graph algorithms to solve problems.

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**Course Name: Lab Course III**: After completion of this course students will be able to :

1. Use MS-Access DBMS and design database.
2. Perform operations on data using MS access features.
3. Create company using Tally ERP.
4. Perform accounting using Tally ERP.

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**Course Name: Lab Course IV**: After completion of this course students will be able to :

1. Understand Web Design Concept.
2. 2: Design Web Pages using CSS, HTML & Java Script.

# TYBCA Course Outcomes

**Course Name: Java Programming**: After completion of this course students will be able to :

1. Understand the features of Java Language .
2. Demonstrate Object-Oriented Programming using Java
3. Develop Multi threaded and Networking applications
4. Design GUI applications using AWT and Swing.

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**Course Name: Data Warehousing and Data Mining**: After completion of this course students will be able to :

1. Define the Data warehouse architecture and its Implementation.
2. Describe the Architecture of a Data Mining system.
3. Understand the various Data pre-processing Methods.
4. Perform classification and prediction of data.

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**Course Name: IT Security:** After completion of this course students will be able to :

1. Understand the concept and need of IT security,
2. Identify different security threats to information systems.Describe security controls used for IS security.
3. Understand provisions in IT Act 2000 and Design
4. Security policy for IT Enabled Organization.

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**Course Name: Python Programming:** After completion of this course students will be able to :

1. Acquire programming skills in core Python.
2. Develop Python programs with conditionals and loops.
3. Understand advance datatype in Python Programming.
4. Develop problem solving skills and their implementation through Python.

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**Course Name: Digital Marketing:** After completion of this course students will be able to :

1. Learn the applications of Digital Marketing
2. Analyze the different digital marketing avenues.
3. Examine digital marketing tools.

**Course Name: Lab Course IX:** After completion of this course students will be able to :

1. Implement the Concept of OOP in Java through simple programs.
2. Implementation and Evaluation of concept related to class and inheritance,concept of Multi-programming and Exception Handling

**Course Name: Lab Course X:** After completion of this course students will be able to :

1. Demonstrate and use different Datatype in Python.
2. Apply various built looping statements and Modules provided by Python.

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**Course Name: Cloud Computing**: After completion of this course students will be able to :

1. Understand the fundamental principles of Cloud Computing.
2. Understand the importance of virtualization in distributed computing and how this has enabled the development of Cloud Computing.
3. Explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing.
4. Describe cloud computing applications.

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**Course Name: Android Programming**: After completion of this course students will be able to :

1. Understand the building blocks of Mobile Operating Systems
2. Analyze different elements of Android Development Environment
3. Illustrate the structure of Mobile Applications using Android.
4. Identify different components used in Mobile Applications using Android.

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**Course Name: ERP**: After completion of this course students will be able to :

1. Understand concept, need and significance of ERP.
2. Demonstrate different ERP models with their subsystem.
3. Evaluate features of ERP products, select ERP application and plan ERP project.
4. Describe organizational opportunities and challenges in the design system within a business scenario.

**Course Name:Soft Skills and Personality Development**: After completion of this course students will be able to :

1. Reflect on the importance of Professional behavior.
2. 2. Articulate and adapt the various facets that make up one's personality.

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**Course Name:Industrial Visit**: After completion of this course students will be able to :

1. Linking existing knowledge with learning experience
2. Examining the gap between classroom theoretical training and practical learning in a real-life environment.

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**Course Name:Lab Course XI**: After completion of this course students will be able to :

1. Design Mobile Applications using different UI components in Android.
2. Apply Android Application Framework to develop mobile applications