

Shikshan Maharshi Dadasaheb Limaye Arts, Commerce and Science  
College, Kalamboli

Department of Geography

FOUNDATION COURSE-I

Year 2022-23

**F.Y.B.A.**

**Course Outcome: -**

Sem-I

1. Creates understanding of multi-lingual, multireligious, multi-cultural nature & political nature of Indian society.
2. Creates understanding of the Indian Constitution & the disparity in Indian society

Sem-II

1. Makes learners understand different evolution of Human Rights.
2. Creates the basic understanding about the issues related to economic changes and its impact on different fields.

**S.Y.B.A.**

Foundation Course II, Sem-III

Course Outcome: -

1. Gives basic understanding on issues related to human rights violations, ecology and urban-rural disparities in access to health and education.
2. Creates the importance of developing scientific temper towards technology and its use in everyday life.

Foundation Course II, Sem-IV

1. Develops a basic understanding about rights of citizen, ecology, role of modern technology.
2. Provides an overview of significant skills required to address competition in career choices.



*H. K. Kamble*

**PRINCIPAL**  
I/C PRINCIPAL

SES'S S. M. Dadasaheb Limaye  
ACS College, Kalamboli,  
Tal :- Panvel, Dist :- Raigad.

शिक्षण महर्षी दादासाहेब लिमये कला, विज्ञान व वाणिज्य महाविद्यालय, कळंबोली नवी मुंबई

Course Outcome

Course – B.A. Marathi

Academic year – 2022- 23

Course Outcome B A Marathi	
Course	Outcomes After completion of these students should be able to
मराठी (अनिवार्य) सत्र १ – मराठी निवडक कथा , सत्र – २ मराठी निवडक कविता	१. मराठी साहित्यातील विविध वाङ्मयीन परंपरा माहीत होतात. २. मराठी साहित्याबाबत आवड निर्माण होते. ३. विविध साहित्य प्रकारांचा परिचय होतो. ४. मराठी भाषेचे व्यक्तिमत्व विकासातील महत्व लक्षात येते. ५. व्यावहारिक मराठी शिकण्यातून मराठी शुद्धलेखन व व्यवहारातील लागणारे औपचारिक ज्ञान प्राप्त होते.
मराठी (ऐच्छिक) अभ्यासपत्रिका क्रं. – १ सत्र – १ (नाटक – साहित्यप्रकार) सत्र २ – ( मराठी ललितगद्य )	१. विद्यार्थ्यांना नाटक या विषयाची आवड निर्माण व्हावी २. अभिनय कौशल्याची गोदी निर्माण व्हावी ३. नाटकाचे विविध प्रकार विद्यार्थ्यांना समजावेत ४. मराठी रंगभूमीचा इतिहास त्यांच्या लक्षात यावा ५. मराठी साहित्यातील ललित गद्याची संकल्पना लक्षात आणून देणे ६. प्रवासवर्णन कसे करावे या संदर्भात विद्यार्थ्यांना माहिती होते


<p>मराठी (ऐच्छिक)</p> <p>अभ्यासपत्रिका क्रं. -२ सत्र - ३ (कादंबरी साहित्यप्रकार) सत्र - ४ (मराठी नाटक - साहित्यप्रकार)</p>	<ol style="list-style-type: none"> <li>१. मराठी कादंबरी या साहित्याची ओळख होते</li> <li>२. मराठी बोलीची विविध रूपे कादंबरीतील भाषे द्वारा समजतात</li> <li>३. माराठी कथा संकल्पना कळते</li> <li>४. कथालेखनाची आवड निर्माण करणे</li> <li>५. नाटकासाठी आवश्यक संवादलेखन करण्याची आवड निर्माण करणे</li> <li>६. एकांकिका लेखनाची आवड निर्माण करणे</li> <li>७. विद्यार्थ्यांमध्ये मराठी रंगभूमी विषयी आस्था निर्माण करणे</li> <li>८. नाटक पाहण्याची व वाचनाची आवड निर्माण करणे</li> <li>९. विद्यार्थ्यांमध्ये ज्ञानलालसा निर्माण करणे</li> </ol>
<p>मराठी (ऐच्छिक)</p> <p>अभ्यासपत्रिका क्रं. -३ सत्र - ३ (भाषा आणि बोली) सत्र - ४ (मराठी व्याकरण आणि लेखनकौशल्ये)</p>	<ol style="list-style-type: none"> <li>१. मानवी भाषा, समाज व संस्कृती यांचा अन्योन्यसंबंध काय आहे याची माहिती होते.</li> <li>२. मानवी भाषेच्या स्वरूपाची ओळख होते.</li> <li>३. बोलीच्या आव्यासाची गरज यातून जाणून घेता येते.</li> <li>४. विविध बोलीचा अभ्यास केल्याने मराठी भाषेच्या समृद्ध परंपरेची ओळख होते.</li> <li>५. मराठी व्याकरण आणि लेखन कौशल्ये विकसित होतात.</li> <li>६. स्पर्धा परीक्षेसाठी उपयुक्त अभ्यास असल्यामुळे विद्यार्थी त्याकडे चांगले लक्ष देतात.</li> <li>७. स्पर्धा परीक्षेसाठी विद्यार्थ्यांना वेगळा अभ्यास करण्याची गरज पडत नाही</li> </ol>

<p>मराठी विशेषस्तर अभ्यासपत्रिका क्रं. - ४ ( मराठी वाङ्मयाचा इतिहास )</p>	<ol style="list-style-type: none"> <li>१. मराठी साहित्यातील विविध संप्रदायांची ओळख होते</li> <li>२. संत साहित्यातून मानवी मूल्यांची जाणीव होते</li> <li>३. महाराष्ट्रासाठी संत साहित्याचे योगदान काय आहे याची ओळख विद्यार्थ्यांना होते</li> <li>४. इतर धर्मियांच्या साहित्याची ओळख होते</li> <li>५. अभंग, ओवी , लावणी , बखरगद्य या कवितेच्या प्रकारातून लेखनाची आवड निर्माण करणे</li> </ol>
<p>मराठी विशेषस्तर अभ्यासपत्रिका क्रं. - ५ ( भारतीय व पाश्चात्य साहित्यविचार )</p>	<ol style="list-style-type: none"> <li>१. विद्यार्थ्यांना भारतीय साहित्य शास्त्राची ओळख करून देणे</li> <li>२. संस्कृत काव्यरचना जाणून घेणे</li> <li>३. साहित्यातील विविध रसांची माहिती करून देणे</li> <li>४. पाश्चात्य साहित्यिकांची माहिती करून देणे</li> <li>५. साहित्याच्या संदर्भात पाश्चात्य साहित्यिकांचे विचार काय होते हे जाणून घेणे</li> </ol>
<p>मराठी विशेषस्तर अभ्यासपत्रिका क्रं. - ६ ( साहित्य आणि समाज )</p>	<ol style="list-style-type: none"> <li>१. साहित्य आणि समाज यांचा संबंध कसा असतो हे सांगणे</li> <li>२. साहित्य , संस्कृती आणि समाज यांचा परस्परसंबंध काय आहे याची विद्यार्थ्यांना ओळख करून देणे</li> <li>३. ग्रामीण, दलित , स्त्रीवादी , महानगरीय या साहित्य प्रकारांची खोलवर जाणीव करून देणे</li> <li>४. निवडक कलाकृतीच्या आधारे वाङ्मयीन प्रवाह समजावून घेणे</li> </ol>

<p>मराठी विशेषस्तर अभ्यासपत्रिका क्रं. -७ भाषाविज्ञान व मराठी व्याकरण</p>	<ol style="list-style-type: none"> <li>१. भाषाविज्ञानाची ओळख होते.</li> <li>२. भाषेच्या प्रमुख अंगांचा परिचय करून घेता येतो.</li> <li>३. भाषेच्या अभ्यासाचे महत्व समजून घेता येते.</li> <li>४. मराठी व्याकरणातील सखोलता लक्षात येते.</li> <li>५. व्याकरणाच्या विविध तत्वांचा सविस्तर परिचय होतो.</li> <li>६. व्याकरण आणि भाषाविज्ञान यातील महत्वाचा भेद लक्षात येतो.</li> </ol>
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<p>मराठी विशेषस्तर अभ्यासपत्रिका क्रं. - ८ आधुनिक मराठी साहित्य</p>	<ol style="list-style-type: none"> <li>१. आधुनिक साहित्याचा परिचय होतो.</li> <li>२. वेगवेगळ्या रुपबंधाचे आकलन होते.</li> <li>३. कथा, कविता, कादंबरी व नाटक या चार साहित्य प्रकारांचा अभ्यास करता येतो.</li> <li>४. वेगवेगळ्या आशयानुरूप आलेल्या साहित्याचा त्यानुसार विचार करण्याची दृष्टी निर्माण होते.</li> <li>५. सामाजिक व भाषिक आवकाश विकसित होतो.</li> </ol>
<p>मराठी विशेषस्तर अभ्यासपत्रिका क्रं. - ९ व्यवसायभिमुख मराठी</p>	<ol style="list-style-type: none"> <li>१. पूर्णतः व्यासायभिमुख अभ्यास करता येतो.</li> <li>२. भाषांतर संकल्पना कळते व व्यवसायात त्याचा कसा उपयोग करता येईल हे समजते.</li> <li>३. मराठीतील भाषिक कौशल्याचा वापर करून प्रसार माध्यमांद्वारे कामाच्या संधि मिळतात.</li> <li>४. मुलाखत, ग्रंथपरीक्षण यासारख्या घटकांचा व्यावसायिकदृष्ट्या चांगले उपयोग करून घेता येतो.</li> <li>५. स्वमत व्यक्त करण्याचा सराव होतो.</li> </ol>

  
Subject Teacher

  
**Head**  
Head of the Department  
Department of Marathi  
S. M. D. L. College, Kalamboii.

  
**PRINCIPAL**  
Principal  
S.E.S.'s College, Kalamboii  
College, Kalamboii  
Tal : Panvel, Dist : Raigad.



Shikshan Maharshi Dadasaheb Limaye Arts, Commerce and Science  
College, Kalamboli  
Department of Geography  
Academic Year 2022-23

**Course Outcomes**

Class	Course	semester	Outcome
FYBA	<b>Human Geography</b>	I	<ol style="list-style-type: none"> <li>1. Develop interest in landforms around</li> <li>2. Have basic knowledge of processes shaping the Earth's crust.</li> <li>3. Acquire skill to understand basic contour patterns</li> <li>4. Know the landforms seen in areas near by</li> </ol>
	<b>Environmental Geography</b>	II	<ol style="list-style-type: none"> <li>1. Develop interest in human imprints on Earth</li> <li>2. Understand the concept of resource</li> <li>3. Correlate human activities with geographical setting</li> <li>4. Develop skill of drawing graphs</li> </ol>
S.Y.B.A.	<b>Geography of Maharashtra</b>	III	<ol style="list-style-type: none"> <li>1. Understand the nature of atmosphere</li> <li>2. Better knowledge of distribution of climatic factors on Earth</li> <li>3. Learn processes behind climatic phenomenon occurring around</li> <li>4. Learn to read Weather maps</li> </ol>
S.Y.B.A.	<b>Agricultural Geography</b>	III	<ol style="list-style-type: none"> <li>1. Understand the agricultural setting of India</li> <li>2. Know the soil resource potential of India</li> <li>3. Learn about industrial regions of India</li> <li>4. Acquire map filling skill</li> <li>5. Learn to convert map scales</li> </ol>



	<b>Geography of India</b>	IV	<ol style="list-style-type: none"> <li>1. Understand the physiographic setting of India</li> <li>2. Know the water resource potential of India</li> <li>3. Learn about mineral resource richness of India</li> <li>4. Acquire map filling skill</li> <li>5. Learn to draw map scales</li> </ol>
	<b>Travel and Tourism Geography</b>	IV	<ol style="list-style-type: none"> <li>1. Understand the about travel and tourism</li> <li>2. Know and learn the Tourist places of India</li> <li>3. Learn about travel of India</li> <li>4. Acquire map filling skill</li> <li>5. Learn to convert map scales</li> </ol>
T.Y.B.A.	<b>Settlement Geography</b>	V	<ol style="list-style-type: none"> <li>1. Understand variety of settlements in rural and urban settings</li> <li>2. Learn changing patterns in urban settlements</li> <li>3. Know the functions settlements perform</li> <li>4. Know the urbanisation in India</li> </ol>
	<b>Population Geography</b>	V	<ol style="list-style-type: none"> <li>1. This course will provide the information on population changes and its impact on Human society and environment.</li> <li>2. It will also encourage the participation of students in positively influencing their family and society in qualitatively and quantitatively improving the demographic trends.</li> </ol>
	<b>Tools and techniques for spatial Analysis -I</b>	V	<ol style="list-style-type: none"> <li>1. This course will create awareness about maps, map use and computers.</li> <li>2. It also empowers their computer knowledge regarding hardware, software and digital cartography.</li> </ol>
	<b>Regional Planning and Development</b>	V	<ol style="list-style-type: none"> <li>1. This course will empower students with the knowledge of regional differences in development of India,</li> </ol>




			2. Importance of planning and active participation of youth in the process of development and planning.
<b>Geography of Resources</b>	V		<ol style="list-style-type: none"> <li>1. This course will enhance student's ability to know about various resources and its utilization.</li> <li>2. It will also create an understanding about wise utilization of resources and sustainable outlook with a renewable implementation.</li> </ol>
<b>Geospatial Technology</b>	V		<ol style="list-style-type: none"> <li>1. This course provides extensive knowledge about Remote Sensing and Geographical Information Systems with their recent applications.</li> <li>2. This paper helps students get oriented with geospatial jobs in the employment market and makes them capable enough to be placed early.</li> </ol>
<b>Environmental Geography</b>	VI		<ol style="list-style-type: none"> <li>1. This course will make students environmentally aware.</li> <li>2. Syllabus empowers them to positively change the environment around them by creating wise-developments.</li> <li>3. It also makes them environmentally sensitive to teach the society the values of environment and enact positively for the betterment of the society.</li> </ol>
<b>Tourism and Recreation</b>	VI		<ol style="list-style-type: none"> <li>1. This course enables the knowledge of students regarding Travel, Tourism and Recreation.</li> <li>2. It develops their entrepreneurial skills to build a start-up.</li> </ol>
<b>Tools and techniques for spatial Analysis -II</b>	VI		<ol style="list-style-type: none"> <li>1. This course enables students to have knowledge and application of statistics in Geography.</li> </ol>

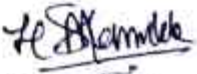




			2. It interests the students to carry out socio-economic and geographical surveys by utilizing statistical techniques in the research.
	<b>Economic Geography</b>	VI	<ol style="list-style-type: none"> <li>1. This course makes students aware about the economic activities and their linkages with the Geography.</li> <li>2. Syllabus also helps to develop an understanding regarding various economic events in the day-to-day life and its application with a critical outlook.</li> </ol>
	<b>Social Geography.</b>	VI	<ol style="list-style-type: none"> <li>1. This course will encourage students to study social issues and became a best citizen.</li> </ol>
	<b>Research Methodology</b>	VI	<ol style="list-style-type: none"> <li>1. This course will increase the students' 'curiosity and cultivate a research streak in them which in turn will be beneficial to the subject as students will take more interest in contributing to the subject matter.</li> </ol>

  
 Head of Department  
 Department of Geography  
 S. M. D. L. College, Kalamboli.



  
 Principal  
 SES'S S. M. D. Dadasaheb Limaye  
 ACS College, Kalamboli,  
 Tal :- Panvel, Dist :- Raigad.

**Shikshan Maharshi Dadasheb Limaye College Kalamboli, Dist.-Raigad, Maharashtra**

**Department of History**

**Programme - B. A. HISTORY**

**Course Outcome**

**Academic Year 2022-23**

*On completing the course, the student will be able to:*

**Semester I**

**Course: FYBA**

**Course Title: History of Modern India (1857-1947)**

**CO 1: The course is designed to make the student aware about the making of modern India and the struggle for independence**

**CO 2: Understand British colonialism and its impact on India.**

**CO 3: Identify different patterns of political consciousness in the struggle for freedom.**

**Understand the basis of contemporary politics in the history of pre-independent India.**

**Semester –II**

**Course: FYBA**

**Course Title: History of Modern India: Society and Economy.**

**CO 4: Understand the Socio – Economy Transformation during British Period in India.**

**CO 5: Identify different patterns of Socio – Economy Transformation in the struggle for freedom.**

**CO 6: Contribution of Women, Dalit and Tribes In Indian Modern History.**

**Semester –III**

**Course: SYBA- II**

**Course Title: Landmarks in World History, 1300 A.D.-1945 A.D.**

**CO 7: To enable the students to comprehend the transition of Europe from medieval to modern times and its impact on the world.**

**CO 8: To provide accurate knowledge of the most significant events and personalities of the period under study and encourage understanding of the making of the modern world**

**CO 9: Understand how World War I unfolded.**

**Course: SYBA - III**

**Course Title: Ancient India from Earliest Times to 1000 A.D.**

CO 10: Get a broad understanding of the main political trends, social formations and economic systems of early India.

CO 11: Analyze the prehistoric cultures in India, Indus civilization, Aryan invasion and Vedic society, formation of states (mahajanapathas), Jainism and Buddhism.

CO 12 : Initiate a spirit of inquiry into the early history of India

#### **Semester –IV**

**Course: SYBA- II**

**Course Title: Landmarks in World History, 1300 A.D.-1945 A.D.**

CO 13: Understand the Post war Period of World History.

CO 14: What is a Causes of Rise of Fascism, Nazism etc.

**Course: SYBA- III**

**Course Title: Ancient India from Earliest Times to 1000 A.D.**

CO 15: Evaluate the rise of Magadas and Nandas, Alexander's invasion, Mauryan empire, Chandragupta, Asoka's Dhamma and his inscriptions, Mauryan administration, Gupta & Later Gupta, Harshawardhan Period and Rulers of South India

CO 16: Trace the growth of foreign trade and its cultural impact.

#### **Semester – V**

**Course: TYBA- IV**

**Course Title: History of Medieval India (1000 CE – 1526 CE)**

CO 17: Know the sources of history and historiography of the period under review.

CO 18: Have an overview of the political events in medieval India (1000 CE – 1526 CE)

CO 19: Form a deeper understanding of transitions and political processes at work.

**Course: TYBA- V**

**Course Title: History of Modern Maharashtra (1818 CE-1960 CE)**

CO 19: understand the process of Transformation from 19th to 20th century Maharashtra

**CO 20: take initiative part to celebration of birth anniversary of imminent personality of modern Maharashtra.**

**CO 21: write article and present their own view related the topic of modern Maharashtra.**

**CO 22: discuss and summaries current issue in the area of social religious reform movement in 19th century Maharashtra**

**Course: TYBA VI**

**Course Title: Introduction to Archaeology**

**CO 23: This paper will help the students to understand the other papers of ancient Indian history where archaeology plays a very important role. They will be able to grasp the ideas of ancient sites and human landscapes in a much meaningful manner.**

**Course: TYBA VII**

**Course Title: History of the Marathas (1630 CE -1707 CE)**

**CO 24: able to analysed Administrative Systems of Marathas.**

**CO 25: able to explain Nature of Maratha Polity CO3:**

**CO 26: able to identify Strength & weakness of Maratha Administrative system**

**CO 27: Understood the Socio- Political Power Structure of Maratha period.**

**Course: TYBA VIII**

**Course Title: History of Contemporary World (1945 CE -2000 CE)**

**CO 28: trace some of the major events of post-World War II period.**

**CO 29: Developed the understanding of new military and political ideas and institutions**

**CO 30: comprehend the ways in which events of the latter half of the twentieth century have influenced the present.**

**CO 31: understand the process and impact of globalization CO4: able to understand contemporary world from historical perspective**

**Course: TYBA IX A**

**Course Title: Research Methodology and Sources of History**

**CO 32: teach students basics of research methodology in history with a view to promote historical research.**

CO 33: Understand the various kinds of sources of history and its interpretation.

CO 34: Acquaint students with the new trends and approaches in history writing.

#### **Semester – VI**

**Course: TYBA IV**

**Course Title: History of Medieval India (1526 CE – 1707 CE)**

CO 35: Know the sources of history and historiography of the period under review.

CO 36: Have an overview of the political events in medieval India (1526 CE – 1707 CE)

CO 37: Form a deeper understanding of transitions and political processes at work.

**Course: TYBA V**

**Course Title: History of Contemporary India (1947 CE- 2000 CE)**

CO 38: Understand the economic and Political Transformation of Contemporary India

CO 39: understand the process of making the Constitution and the Integration and Reorganization of Indian States.

CO 40: comprehend the socio-economic changes and progress in science and technology in India.

CO 41: Understand the Progress of India after Independence.

**Course: TYBA VI**

**Course Title: Introduction to Museology and Archival Science**

CO 42: inform the students about the role of Museums in the preservation of Heritage.

CO 43: Encourage students to pursue careers in various Museums and Archives in India and abroad.

CO 44: Understand the importance of Archival Science in the study of History.

**Course: TYBA VII**

**Course Title: History of the Marathas (1707 CE - 1818 CE)**

CO 45: Understand the emergence of Maratha power in India

CO 46: Study the evolution of Peshwaship

CO 47: Examine the shift in the balance of power in western India.

CO 48: contribution of the Marathas in the national politics of the 18th century.

CO 49: Understanding of the society and culture in Maharashtra in the 18th century.

**Course: TYBA VIII**

**Course Title: History of Asia (1945 CE -2000 CE)**

CO 50: understand the ways in which Asian nations resisted and defied the control of the West.

CO 51: comprehend some of the trends that emerged in Asia.

CO 52: Understand The Change Happened after World war II in ASIA.

**Course: TYBA IX A**

**Course Title: Research Methodology and Sources of History**

CO 53: Understand the new trends and approaches in history writing.

CO 54: Importance of Documents and its Interpretation in History.

CO 55: Understand the Steps & Scope Historical Research

Head, Department of History

Head

Department of History

S. M. D. L. College, Kalamboli.



I/O PRINCIPAL

SES'S S. M. Dadasaheb Limaye

ACS College, Kalamboli,

Tal :- Parvel, Dist :- Raigad.

Academic year 2022-23

## DEPARTMENT OF ECONOMICS

### Course Outcomes

- Understand the meaning, nature, scope of economic
- To understand utility demand analysis and types elasticity.
- Understanding Demand forecasting of business unit
- Analysis objective of firm and industry.
- Understand the basic knowledge of Production Function
- Ability to understand the micro and macro economics
- Able to analyses the performance of firms under different market structures
- Recognize how monetary and fiscal policy can be used to achieve policy goals
- Understood the concept of economic development
- Students acquired knowledge about inequality, poverty, Education, health and family welfare
- Acquired knowledge of agricultural prices, marketing, finance & subsidies in India
- To aware the students about financial institutions and its function.
- Able students to build on the constituents in the future years.
- To help the students apply micro economics to the real world.
- To enable the students knowing the economic survey of India.
- Analysis key aspects of Indian economic development during second half of British colonial rule.
- To Understand economic cause of environmental problem.
- To Understand Indian thinkers and their ideas and contribution in Indian economy.
- Students acquired knowledge about Government welfare policy .



*Te. Shikashan*

Principal

SES's S. M. Dadasaheb Limaye  
ACS College, Karamboli,  
Tal : Panvel, Dist : Raigad.

**Shikshan Maharshi Dadasheb Limaye College Kalamboli, Dist.-Raigad, Maharashtra**

**Department of History**

**Programme - M. A. HISTORY**

**Course Outcome**

**Academic Year 2022-23**

*On completing the course, the student will be able to:*

**M.A I**

**Semester I**

**Course: M.A I**

**Course Title: Core Paper I. – Research Methods in History**

CO 1: Students know the basic scientific methodology and tenets as implemented in history writing.

CO 2 Understand the historical trends in early, medieval and modern Europe

CO 3: Identify the nature of Annales historical approaches including history of mentality and History of Everyday life

CO 4: Explain the concept and approaches of post positivism, anti-foundationalism and discourse analysis and Foucault's concept of history and Subaltern Approaches to History

**Course: M.A I**

**Course Title: Core Paper II: Social, Economic and Administrative History of Early India (up to 1000 CE)**

CO 5: enable students to understand with the evolution of socio-cultural, religious and political processes in the early Indian past on the basis of which the plural Indian society was formed.

CO 6: Understand the Economic, Political, Cultural Transformation in Early India.

CO 7 Students know about Religious and Political Evaluation in Early India.



**Course: M.A I**

**Course Title: Core Paper III: Social, Economic and Administrative History of Medieval India (1200 CE – 1700 CE)**

CO 8: facilitate students with the evolution of socio-cultural, religious and political processes in Medieval Indian past and introducing them to important social, cultural ideas and institutions.

CO 9: Understand how World War I unfolded.

CO 10: Relates key historical developments during medieval period occurring in one place with another.

CO 11: Understand the Political & Cultural Transformation in Medieval India.

CO 12 Knowledge about Evaluation of Institution and Concept in Medieval India.

**Course: M.A I**

**Course Title: Core Paper II: Social, Economic and Administrative History of Modern India (1757 CE – 1947 CE)**

CO 13: facilitate students with the evolution of socio-cultural, religious and political processes in Modern Indian History as well as impact of British rule in India.

CO 14 "Social, Economic and Administrative History of Modern India (1757 CE – 1947 CE) " topic as a part of History is a very important section as far as the Syllabus of any competitive examination is possible, especially Civil Services exams.

CO 15. Students understand of the stages of development in Modern India, why certain events happened and analysis of the consequences of such developments that paves an impact on our society, economy and our political system.

CO 16. Modern Indian History Importance for competitive examination.

**M.A II**  
**Semester – III**

**Course: Elective Group I (M.A II)**

**Course Title: History of Architecture in Medieval India**

CO 17. Students will get an overall understanding of the development of the Medieval Art and Architecture.

CO 18. They will understand the changing patterns of the Art and Architecture during the Medieval India.

CO 19. They will have an understanding of the impact of Persian Art on Islamic Course:

**Course: Elective Group II (M.A II)**

**Course Title: History of Indian Archaeology**

CO 20: introduce the students to basic concept of Indian Archaeology. To familiarize students with various cultures from pre-historic period onwards. To develop interest of students in Numismatics and

CO 21: Understand about Types of Excavated Artefacts and Dating Methods in Archaeology

CO 22: Understand about Ancient Culture In India.

**Course: Elective Group III (M.A II)**

**Course Title: Indian National Movement (1857 CE to 1947 CE)**

CO 23: understand the factors leading to the rise of Nationalism. To understand the constitutional development and the rise of new forces.

CO :24 Able to Debate on Nationalism & Freedom Movement

CO 25 Understand the Historiographical Development of the Indian National Movement

**Course: Elective Group IV (M.A II)**

**Course Title: Socio – Economic and Cultural History of India (1850 CE - 1947 CE)**

CO 26: understand the Social and Economic development of Colonial India and the immediate years after Independent.

CO 27: Student Will Trace the Impact of Nationalist Struggle

**Course: Elective Group V (M.A II)**

**Course Title: History of Modern Europe**

CO 28: Orient the students with political history of Modern Europe.

CO 29: Understand the economic transition in Europe during the 18th and 19th Century Europe.

CO 30: To understand the impact of the world war.

**M.A II**

**Semester – IV**

**Course: Ability Enhancement Course VI:**

**Course Title: Sources in Historical Research**

CO 35: understand the historiography and theory related to historical research, writing, and presentation

CO 36: The course focuses on building basic skills for conducting historical research including locating, utilizing, and analysing sources

CO 37. Guidelines for Citation and Historical Writing are discussed.

CO 38 Understand the various kinds of sources of history and its interpretation.

**Course: Interdisciplinary Course VII:**

**Course Title: History of India: Concept and Theory**

CO 39 To understand the concepts and theories in Indian history

CO 40 This will help students to understand the basic tenets of Indian History from the earliest times up to the present.



**Head, Department of History**  
**Head**  
Department of History  
S. M. D. L. College, Kalamboli.



**Principal**  
**I/C PRINCIPAL**  
SES'S S. M. Dadasaheb Limaye  
ACS College, Kalamboli,  
Tal: Panvel, Dist: Raigad.

**SES SHIKSHAN MAHARSHI DADASAHEB LIMAYE COLLEGE**

**KALAMBOLI-410218**

**Course Outcome**

**Academic Year 2022-23**

**Name of Faculty- Prof. Seema M.**

**Rawat Class- F.Y. B.A.**

**Subject- Communication Skills in**

**English Semester-1**

**Department- English**

**COURSE OUTCOME**

- 1) Understand the role of communication in personal & professional success.
- 2) Develop awareness of appropriate communication strategies.
- 3) Prepare and present messages with a specific intent.
- 4) Analyze a variety of communication acts.
- 5) Ethically use, document and integrate sources.



SUBJECT TEACHER



PRINCIPAL



HC PRINCIPAL

SES'S S. M. Dadasaheb Limaye  
ACS College, Kalamboli,  
Tal. - Panvel, Dist. - Raigad.

**SES SHIKSHAN MAHARSHI DADASAHEB LIMAYE COLLEGE**

**KALAMBOLI-410218**

**Course Outcome**

**Academic Year 2022-23**

**Name of Faculty- Prof. Seema M.**

**Rawat Class- F.Y. B.A.**

**Subject- Communication Skills in**

**English Semester-2**

**Department- English**

**COURSE OUTCOME**

- 1) Understand the role of communication in personal & professional success.
- 2) Develop awareness of appropriate communication strategies.
- 3) Prepare and present messages with a specific intent.
- 4) Analyze a variety of communication acts.
- 5) Ethically use, document and integrate sources.



**SUBJECT TEACHER**



**PRINCIPAL**



**I/C PRINCIPAL**  
**SES'S S. M. Dadasaheb Limaye**  
**ACS College, Kalamboli,**  
**Tal. - Panvel, Dist. - Raigad.**

**Sudhagad Education Society's,  
Shikshan Maharshi Dadasaheb Limaye Arts, Commerce & Science College,  
Kalamboli-Navi Mumbai.  
Academic Year – 2022-2023  
Department of Commerce**

**Course Outcome**

<b>Class</b>	<b>Subject</b>	<b>Semester</b>	<b>Course Outcomes</b>
FYBCOM	Accountancy & Financial Management- I	I	1.The primary goals of the course are to familiarize students with accounting of manufacturing concerns and introduce them to the Accounting Standards published by ICAI. 2. to raise knowledge of departmental accounting and hire buy transactions as examples of regular accounting.
	Accountancy & Financial Management-II	II	1. The primary goal of the course is to provide working knowledge regarding consignment sales, fire insurance claims, branch accounts, and accounts that must be prepared from partial records.
SYBCOM	Accountancy & Financial Management- III	III	1. To give the students a thorough understanding of accounting with regard to partnership accounting so they can handle real-world scenarios involving partnership accounting.
	Financial Accounting & Auditing-V – Introduction to Management Accounting	III	1.To provide students with the analytical skills necessary to read and understand financial statements, as well as the ability to interpret various ratios and analyze working capital techniques, so they can meet industry requirements.
	Accountancy & Financial Management- IV	IV	1.The goal of the course is to increase knowledge of the company accounts, the accounting treatment of debentures and preference shares that have been redeemed, and the treatment of profit before incorporation.
	Financial Accounting & Auditing VI Auditing	IV	1.To provide a basic understanding of the different audits that are carried out to confirm if the financial statements present a true and fair picture. 2. To familiarize students with the documentation that an auditor maintains. 3. To acquaint them with the many kinds of audits and the documentation associated with them.

TYBCOM	Financial Accounting and Auditing–VII Financial Accounting	V	1.To impart practical expertise in company accounting and the calculation of gains and losses in investment accounts
	Financial Accounting and Auditing– VIII Cost Accounting	V	1.To disseminate knowledge about how cost accounting is used to determine product element costs.
	Direct & Indirect Tax Paper -I	V	1.To impart knowledge of the direct tax code's provisions, the practical side of tax planning, and to expose students to actual situations involving taxation under multiple heads of income. Students will also be able to articulate how to utilize different deductions to lower their taxable income.
	Financial Accounting and Auditing–IX Financial Accounting	VI	To provide a basic understanding of company accounting and how to calculate profits and losses on investment accounts
	Financial Accounting and Auditing– X Cost Accounting	VI	To impart practical knowledge of company accounting and the calculation of gains and losses on investment accounts
	Direct & Indirect Tax Paper -I	VI	1.To comprehend the Indirect Tax Law, particularly the GST; to familiarize students with the fundamentals of Indirect tax law; to comprehend tax laws and recognized tax procedures.
FYBCOM	Commerce-I (Introduction to Business)	I	To introduce students to the fundamentals of business. 2. To educate students about the prevailing business trends.
	Commerce-II (Service Sector)	II	1.To introduce the students to the fundamental idea of services. 2. To educate students on the newest developments in the service industry.
SYBCOM	Commerce-III (Management: Functions and Challenges)	III	To educate students on the history and current state of management knowledge. 2. To acquaint the students with management functions.
	Commerce-IV (Management: Production and Finance)	IV	1. To educate students on the history and current state of management knowledge. 2. To acquaint the students with management functions administration. 2. To give a general understanding of the Indian financial system. 3. Provide students with current financial trends
TYBCOM	Commerce-V(Marketing)	V	1. Give the students a basic understanding of marketing.

			2. To gain knowledge and comprehension of the choices made in marketing regarding the product, place, price, and promotion
	Export Marketing	V	1. To introduce students to India's potential for export marketing. 2. To provide conceptual clarity and understanding of terms used in export marketing.
	Commerce-VI (Human Resource Management)	VI	1. To introduce the students to the fundamentals of human resource management (HRM). 2. To familiarize the students with the various facets of human relations and human resource development.
	Export Marketing	VI	1. To familiarize the students with choices made regarding pricing and product planning for export sales. 2. To acquaint students with different approaches to export risk insurance and export financing.
FYBCOM	Business Economics	I	1. To assist students in comprehending how a business operates within the economy. 2. To assist students in comprehending the idea of microeconomics and how it applies to business.
	Business Economics	II	1. To present different pricing strategies and assist students in understanding various market structures. 2. To present investment appraisal techniques and capital project evaluation.
SYBCOM	Business Economics	III	1. To give a general review of macroeconomic topics and introduce working models for calculating inflation, output, employment, and interest rates. 2. Use monetary and fiscal policies to demonstrate how macroeconomic theory is applied in policy.
	Business Economics	IV	1. To acquaint students with the basic ideas and problems of public finance, including the roles and functions of the government, market efficiency, sources of public income, the kinds and importance of public debt and expenditures, fiscal management, and the efficacy of policies, among other things. 2. To raise public awareness of the Indian Mixed Economy and the effects of variables like nation integration, globalization, economic sustainability, and Gandhian principles.
TYBCOM	Business Economics	V	1. To assist students in comprehending how the



			<p>New Economic Policy has affected the various economic sectors.</p> <p>2. To offer a thorough comprehension of the Indian financial industry.</p>
	Business Economics	VI	<p>1. To present the fundamental theories of international trade to the students.</p> <p>2. To offer a thorough explanation of the balance of payments concept and balance of payments disequilibrium.</p>
FYBCOM	Foundation Course I	I	<p>To comprehend Indian society's pluralistic structure in light of diversity</p> <p>2. To comprehend the caste, class, and estate-based social stratification</p> <p>3. To comprehend the ideas of intergroup conflict and inequality.</p>
	Foundation Course II	II	<p>1. To comprehend the ideas of globalization, privatization, and liberalization.</p> <p>2. To comprehend the evolution of human rights and their source.</p>
FYBCOM	Business Communication	I	<p>1. To become conscious of the intricacy of communication in a fast-paced business setting.</p> <p>2. To improve the students' proficient writing, listening, and speaking abilities.</p>
	Business Communication	II	<p>1. To assist the students in demonstrating how to use communication technology effectively.</p> <p>2. To support students in becoming excellent business communicators.</p>
FYBCOM	Mathematical and statistical Techniques-I	I	<p>1. To increase the quantitative aptitude needed for different competitive exams</p> <p>2. To establish the foundation for financial analysis needed for courses on finance.</p>
	Mathematical and statistical Techniques-II	II	<p>To establish the foundation for financial analysis needed for courses on finance</p> <p>2. To ascertain how two variables are related and how strong that relationship</p>
SYBCOM	Business Law Paper I	III	<p>1. To comprehend the Indian Contract Act's framework for business laws in India.</p> <p>2. To familiarize students with case laws and fundamental ideas such as contracts, special contracts, sales of goods, and negotiable instruments.</p>
	Business Law Paper II	IV	<p>1. To expose students to both modern and historical laws, including the Limited Liability Act of 2008, the Indian Companies Act of 2013, the Partnership Act of 1932, and IPR laws, among others Students were able to relate to pertinent issues thanks to this.</p>

SYBCOM	Advertising I	III	<ol style="list-style-type: none"> <li>1. To highlight the role of advertising for the success of brands and its importance within the marketing function of a company.</li> <li>2. It aims to orient learners towards the practical aspects and techniques of advertising.</li> <li>3. It is expected that this course will prepare learners to lay down a foundation for advanced post-graduate courses in advertising.</li> </ol>
	Advertising II	IV	<ol style="list-style-type: none"> <li>1. To highlight the role of advertising for the success of brands and its importance within the marketing function of a company.</li> <li>2. It aims to orient learners towards the practical aspects and techniques of advertising.</li> <li>3. It is expected that this course will prepare learners to lay down a foundation for advanced post-graduate courses in advertising.</li> </ol>
	Foundation Course III	III	<ol style="list-style-type: none"> <li>1. Develop a basic understanding about issues related to Human Rights of weaker sections, ecology, and science and technology.</li> <li>2. Gain an overview of significant skills required to address competition in career choices.</li> <li>3. Appreciate the importance of developing a scientific temper towards technology and its use in everyday life.</li> </ol>
	Foundation Course IV	IV	<ol style="list-style-type: none"> <li>1. Develop a basic understanding about Significant, contemporary Rights of Citizens</li> <li>2. To Approaches to understanding Ecology</li> <li>3. Significant Modern Technologies, Features and Applications, Control, Access and Misuse of Technology</li> </ol>
FYBCOM	Environmental studies I	I	<ol style="list-style-type: none"> <li>1. To study about Environment and Ecosystem and Natural Resources</li> <li>2. To raise awareness about Populations and Emerging Issues of Development</li> </ol>
	Environmental studies II	II	<ol style="list-style-type: none"> <li>1. To Aware the students about the issues about Solid Waste Management for Sustainable Society</li> <li>2. Agricultural and Industrial Development</li> <li>3. Tourism in India : Nature, Scope, Potentials, Ecotourism</li> <li>4. Environmental Movements and Management</li> <li>5. Map Filling</li> </ol>

*Prakash*  
**H.O.D**  
**Head**

Department of Commerce  
S. M. D. L. College, Kalamboli.



*Te. Manik*  
**Principal**

**I/C PRINCIPAL**  
SES'S S. M. Dadasaheb Limaye  
ACS College, Kalamboli.  
Tal :- Panvel, Dist :- Raigad.

**SES's**  
**SHIKSHAN MAHARSHI DADASAHEB LIMAYE ASC COLLEGE KALAMBOLI**  
**COURSE OUTCOME OF ORGANIC CHEMISTRY AY 2022-2023**  
**COURSE OUTCOME -**

**F.Y.BSc SEM 1 & 2**

After studying this course, the learner will be able to:	
CO 1	Write IUPAC name of mono and bi-functional aliphatic compounds including their cyclic analogues.
CO 2	Draw structures of organic compounds based on their systematic names.
CO 3	Comprehend the fundamental concepts which govern the structure, bonding, hybridization, bond angles and shapes of molecules.
CO 4	Know the concept of electronic effects.
CO 5	Understand the importance of reaction intermediates
CO 6	Identify types of isomers of given organic compounds.
CO 7	Assign stereo-descriptors using CIP rules.
CO 8	Compare the stability of cycloalkanes.
CO 9	Draw the spatial arrangement of alkanes.
CO 10	Know the reactions involved in aliphatic hydrocarbons
CO 11	Recognize the mechanism involved in electrophilic aromatic substitution reactions.
CO 12	Understand the effect of nitro group on nucleophilic aromatic substitution reaction.

**Chemistry Practicals :-**

1. Method of Purification: Purification of a given organic compound by crystallization.
2. Characterization of organic compound containing C, H, (O), N, S and X :-



**SUBJECT TEACHER**



**PRINCIPAL**  
**PRINCIPAL**

S.E.S.'s S. M. Dadasaheb Limaye  
College, Kalamboli,  
Tal : Panvel, Dist : Raigad.



SES's  
SMDL College of Arts, Science & Commerce, Kalamboli  
COURSE OUTCOMES  
Academic Year : 2022-23

Name of the Faculty : - Dr. Usha Sainger  
Class :- F.Y B.Sc.(P)  
USBO102  
Form and Functions

Semester- I Theory  
Subject- Botany  
Paper- II

**COURSE OUTCOMES**

1. Introduction to cell Biology ultrastructure of cell wall, plasma membrane, to understand the transport mechanisms via these membranes.
2. To understand the concept of Mendelian inheritance selection of model organisms.
3. Explanation of monohybrid and dihybrid crosses. Terminologies used in genetics, test cross and backcross.
4. To go beyond Mendelian inheritance and understand the concept of genetic ,epistatic interactions,multiple alleles and inheritance of blood groups in man.



**SUBJECT TEACHER**  
Dr. Usha R. Sainger



**HEAD OF DEPARTMENT**  
Dr. Usha R. Sainger



**I/C PRINCIPAL**  
SES'S S. M. Dadasaheb Limaye  
**PRINCIPAL**  
ACS College, Kalamboli,  
Tal. - Panvel, Dist. - Raigad.



SES

Shikshan Maharshi Dadasaheb Limaye Arts, Commerce, Science and Computer Science College,  
Kalamboli

Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: I

Class: - F.Y. BSc.

Paper: I

Title of the Paper: - Fundamentals of Microbiology

Objectives: - To understand the fundamentals of Microbiology.

Course Contents: -

- History, Introduction and Scope of Microbiology Prokaryotic Cell Structure
- Eukaryotic Cell Structure
- Biosafety in Microbiology
- Macromolecules

Learning Outcomes

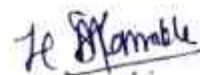
1. Students will learn History, Introduction and Scope of Microbiology.
2. Students will learn the Discovery of Microorganisms.
3. Students learn the types of Cell Structure.
4. Students will learn Biosafety in Microbiology.
5. Students will learn about the Macromolecules.

  
HOD

Head

Department of Microbiology  
S. M. D. L. College, Kalamboli.





Principal

I/C PRINCIPAL

SES'S S. M. Dadasaheb Limaye  
ACS College, Kalamboli,  
Tal :- Panvel, Dist :- Raigad.

SES

Shikshan Maharshi dadasaheb Limaye Arts, Commerce, Science and Computer Science College,  
Kalamboli

Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: I

Title of the Paper: - Basic Techniques in Microbiology

Class: - F.Y.BSc

Paper: II

Objectives: - To learn the Basic techniques used in Microbiology

Course Contents: -

- Microscopy and Staining
- Control of Microorganisms
- Microbial Nutrition, Cultivation, Isolation and Preservation.

Learning Outcomes: -

1. Students will study the Microscopy and Staining.
2. Students will learn about the control of Microorganisms.
3. Students will learn about the Microbial Nutrition, Cultivation, Isolation and Preservation.

HOD

Head

Department of Microbiology  
S. M. D. L. College, Kalamboli.



Principal

I/C PRINCIPAL

SES'S S. M. Dadasaheb Limaye  
ACS College - Kalamboli,  
Tal - Panvel, Dist - Raigad.

Shikshan Maharshi dadasaheb Limaye Arts, Commerce, Science and Computer Science College,  
Kalamboli

Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: II

Title of the Paper :- Basics of Microbiology

Class :- F.Y.BSc.

Paper: I

Objectives :- To learn the Basics of Microbiology.

Course Contents :-

- Study of Different Groups of Microbes I.
- Study of Different Groups of Microbes II.
- Microbial Growth.

Learning Outcomes :-

1. Students will learn the Different types of microbes.
2. Students will study properties, structure, cultivation of Microorganisms.
3. Students will learn the life cycle of microorganisms.
4. Students will learn the Classification, Morphological, Reproductive characteristics and significance of microorganisms.



HOD  
Head

Department of Microbiology  
S. M. D. L. College, Kalamboli.



Principal

I/C PRINCIPAL  
SES'S S. M. Dadasaheb Limaye  
ACS College, Kalamboli,  
Tal :- Panvel, Dist :- Raigad.

SES

Shikshan Maharshi dadasaheb Limaye Arts, Commerce, Science and Computer Science College,  
Kalamboli

Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: II

Title of the Paper: - Exploring Microbiology.

Class: - F.Y. BSc.

Paper: II

Objectives: - To Explore the Microbiology of Microorganisms.

Course Contents: -

- Microbial Interactions.
- Microbes and Human Health
- Advance Techniques in Microbiology and Instrumentation.

Learning Outcomes: -

1. Students will learn about the microbial interaction
2. Students will study about the Human microbe interaction.
3. Students will learn the Microbial association with vascular plants.
4. Students will study the Advance techniques in microbiology
5. Students will learn the Instrumentation.

HOD  
Head

Department of Microbiology  
S. M. D. L. College, Kalamboli.



Principal  
I/C PRINCIPAL  
SES'S Dadasaheb Limaye  
ACS Kalamboli,  
Tal :- Parvat, Dist :- Raigarh



**SES's**  
**SMDL College of Arts, Science & Commerce, Kalamboli**  
**COURSE OUTCOMES**  
**Academic Year : 2022-23**

**Name of the Faculty : - Dr. Usha Sainger**

**Class :- F.Y B.Sc.(P)**

**USBO201**

**Form and Functions**

**Semester- II Theory**

**Subject- Botany**

**Paper-II**

**Course Outcomes**

1. Anatomy of plants, cells, tissues, salient characters of simple and complex tissues.
2. Explain the primary structure of dicot and monocot root, stem and leaf.
3. To allow the students to understand the difference in the anatomy of dicot and monocot, learn to apply this knowledge in identification of isolated plant organs.
4. Study of epidermal outgrowths and stomata of dicot and monocot leaves.
5. Medicinal Botany: To understand the concept of primary and secondary metabolites. Ingredients of grandma's pouch and its medicinal uses.



**SUBJECT TEACHER**  
**Dr. Usha R. Sainger**



**HEAD OF DEPARTMENT**  
**Dr. Usha R. Sainger**



**IC PRINCIPAL**  
**PRINCIPAL**  
SES'S S. M. Dadasaheb Limaye  
ACS College, Kalamboli,  
Tal. - Panvel, Dist. - Raigad.



## CO Academic Year -2022-23

Name of the Faculty: Mr. Dnayneshwar R. Bade

Course Code: UGPH 101

Course Title: Classical Physics Academic year 2022-23

### COURSE OUTCOMES

COURSE OUTCOME	DESCRIPTION
CO 1	Propose different ways to implement three Newton's laws and apply them in calculations of the motion of simple systems.
CO 2	Use the free body diagrams to analyze the forces on the object
CO 3	Understand the concepts of friction and the concepts of elasticity, fluid mechanics and be able to perform calculations using them
CO 4	Understand the concepts of lens system and interference
CO 5	Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process
CO 6	Demonstrate quantitative problem solving skills in all the topics covered

Course Code: UGPH 102

Course Title: Modern Physics Academic year 2022-23

### COURSE OUTCOMES

COURSE OUTCOME	DESCRIPTION
CO 1	Understand basic knowledge about Nucleus such as charge, radius and experimental determination by Rutherford, Hofstadter. Analyse relation between mass defect- and binding energy- stability of Nucleus.
CO 2	Acquire knowledge and understand statistical nature of the disintegration process of radioactivity with associated different equilibriums and four basic chains of decay in nature, about use of radioisotopes in fields of medicine, food, agriculture. Exploring application in Age determination of archaeological samples and Earth.
CO 3	Learn about practical methods of detection of nuclear particles and types of nuclear reactions with knowledge of Fusion and Fission reactions
CO 4	Learn about Origin of Quantum Theory- Wave particle Duality, and about Davisson-Germer Experiment, Thomson Experiment, Uncertainty principle and its Applications
CO 5	Study X-Rays, Compton Effect, Pair Production, Photons & Gravity, Gravitational Red Shift and analyse X-rays using Bragg's x-ray spectrometer

Course Code: USPHPI

Course Title: Physics practical course –Academic year 2022-23

**COURSE OUTCOMES**

COURSE OUTCOME	DESCRIPTION
CO 1	Understand & practice the skills while performing experiments.
CO 2	Understand the use of apparatus and their use without fear & hesitation.
CO 3	Correlate the physics theory concepts to practical application.
CO 4	Understand the concept of errors and their estimation.



*S. M. Dadasaheb Limaye*

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Tal : Panvel, Dist : Raigad.

## CO Academic Year -2022-23

Course Code: UGPH 201

Course Title: Optics I Academic year 2022-23

### COURSE OUTCOMES

COURSE OUTCOME	DESCRIPTION
CO 1	Understand the concept of lens, lens defects and the minimization
CO 2	Significance of combination of lenses implied to eyepiece of optical instrument.
CO 3	Understand interference of light with few well known daily life examples
CO 4	Understand Lasers and Optical fibers, the applications in day today life.

Course Code: UGPH 202

Course Title: Electricity and Electronics Academic year 2022-23

### COURSE OUTCOMES

COURSE OUTCOME	DESCRIPTION
CO 1	Understand the basic concepts of Alternating current theory, AC bridges and Circuit Theorems
CO 2	Understand the basics of Analog and Digital Electronics and apply the mineral life situations
CO 3	Demonstrate quantitative problem solving skills in all the topics covered

Course Code: USPHP2

Course Title: Physics practical course –Academic year 2022-23

### COURSE OUTCOMES

COURSE OUTCOME	DESCRIPTION
CO 1	Understand & practice the skills while performing experiments.
CO 2	Understand the use of apparatus and their use without fear & hesitation.
CO 3	Correlate the physics theory concepts to practical application.
CO 4	Understand the concept of errors and their estimation.



*S. M. Dadasaheb*  
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**SES's**  
**SMDL College of Arts, Science & Commerce, Kalamboli**  
**COURSE OUTCOMES**  
**Academic Year : 2022-23**

Name of the Faculty : - Dr. Usha Sainger

Class :- F.Y B.Sc.(P)

Sub :- Botany

Department : Science

**USBO201**

**Plant Diversity- I**

**Semester- II Theory**

**Subject- Botany**

**Paper- I**

**COURSE OUTCOMES**

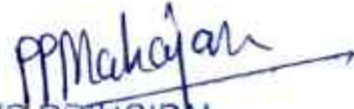
1. Land plants, first vascular plants Pteridophytes. Study of Nephrolepis to understand the stages of life cycle and alternation of generations.
2. Gymnosperms identify the characters. Structure life cycle of a commonly grown gymnosperm Cycas to understand the stages of life cycle.
3. Bentham and Hooker's system of classification. Introduction to plant families by study of family Malvaceae and Amaryllidaceae.



**SUBJECT TEACHER**  
**Dr. Usha R. Sainger**



**HEAD OF DEPARTMENT**  
**Dr. Usha R. Sainger**



**I/C PRINCIPAL**  
**SES'S S. PRINCIPAL**  
**Prab Limaye**  
**ACS College, Kalamboli,**  
**Tal. - Panvel, Dist. - Raigad.**



**SES's**  
**SMDL College of Arts, Science & Commerce, Kalamboli**  
**COURSE OUTCOMES**  
**Academic Year : 2022-23**

**Name of the Faculty : - Dr. Usha Sainger**  
**Class :- F.Y B.Sc.(P)**  
**Sub :- Botany**  
**Department : Science**

**USBO101**  
**Plant Diversity**

**Semester- I Theory**  
**Subject- Botany**  
**Paper-I**

**COURSE OUTCOMES**

1. **Introduce** students to algae and let them explore the diversity in the thallus structure ranging from simple to complex. Learn the taxonomy of Chlorophyta represented by **Spirogyra**. Also create awareness about the utility of algae in industries like production of **nutraceuticals**, biofuel green fuel technology.
2. **Introduction** to fungi from simple Phycomycetes represented by Rhizopus life cycle. **Modes** of nutrition in fungi and economic importance of fungi to enable students to think **about** strain selection.
3. **Bryophytes'** amphibious habitat progressing towards land habitat features of **bryophytes**, general characters of Hepaticae and life cycle of widely available Riccia.



**SUBJECT TEACHER**  
**Dr. Usha R. Sainger**



**HEAD OF DEPARTMENT**  
**Dr. Usha R. Sainger**



**I/C PRINCIPAL**  
**SES'S S. M. Dadasaheb Limaye**  
**PRINCIPAL**  
**ACS College, Kalamboli,**  
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*Sudhagad Education Society's*

**Shikshan maharshi Dadasaheb Limaye College of Arts Commerce &  
Science, Kalamboli**

**Year 2022-2023**

**Course outcomes**

**DEPARTMENT MATHEMATICS**

FYBSC MATHS-I	Calculus-I	Describe the real line as a complete, ordered field. Determine the basic topological properties of subsets of the real numbers, Use the definitions of convergence as they apply to sequences, series, and functions, Determine the continuity, differentiability, and integrability of functions defined on subsets of the real line, Apply the Mean Value Theorem and the Fundamental Theorem of Calculus to problems in the context of real analysis, and Produce rigorous proofs of results that arise in the context of real analysis. Write solutions to problems and proofs of theorems that meet rigorous standards based on content, organization and coherence, argument and support, and style and mechanics.to
FYBSC MATHS-II	Algebra I and Linear Algebra	1) Students will be able to set up and solve linear systems/linear inequalities graphically/geometrically and algebraically (using matrices).2. Represent vectors analytically and geometrically, and compute dot and cross products for presentations of lines and planes, 3. Solve systems of linear equations, Analyze vectors in $R^n$ geometrically and algebraically, Recognize the concepts of the terms span, linear independence, basis, and dimension, and apply these concepts to various vector spaces and subspaces, Use matrix algebra and the related matrices to linear transformations.

SYBSC MATHS-I	Calculus III	<p>Perform operations with vectors in two and three dimensional space and apply to analytic geometry</p> <p>2. Differentiate and integrate vector-valued functions and apply calculus to motion problems in two and three dimensional space</p> <p>3. Determine the limits, derivatives, gradients of multivariate functions</p> <p>4. At the end of the course students will be familiar with the construction of an integral from fundamental principles, including important theorems. They will know when it is possible to integrate or differentiate term-by-term and be able to apply this to, for example, trigonometric series.</p>
SYBSC MATHS-II	Algebra III and Ordinary Differential Equations	<p>Use matrix algebra and the related matrices to linear transformations, Compute and use determinants, Write mathematical proofs and reason abstractly in exploring properties of groups.</p> <ul style="list-style-type: none"> <li>• Use the division algorithm, Euclidean algorithm, and modular arithmetic in computations and proofs about the integers.</li> <li>• Construct examples of, and explore properties of groups, including symmetry groups, permutation groups and cyclic groups.</li> <li>• Determine subgroups and factor groups of finite groups.</li> <li>• Use and apply homomorphism's between groups</li> </ul> <p>Solve differential equations of first order using graphical, numerical, and analytical methods, Solve and apply linear differential equations of second order (and higher),.Analyze basic population models, including both exponential and logistic growth models,</p>



SYBSC MATHS- III	Discrete Mathematics	After completion of this course, the student will be able to: solve the problems on simple and advance counting in combinatorics. Student will learn about permutation cycles and recurrence relation and function and can solve the problems for the same.
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*H. Shinde*  
**PRINCIPAL**  
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 College, Kalamboli,  
 Tal : Panvel, Dist : Raigad.

**Shikshan Maharshi Dadasaheb Limaye Arts, Commerce and Science  
College, Kalamboli  
Department of Science  
FOUNDATION COURSE-I  
Year 2022-23  
Semester-I**

**F.Y.B.Sc.**

**Course Outcome: -**


1. Creates an understanding of the multi-lingual, multi-religious, multi-cultural nature & political nature of Indian society.
2. Creates an understanding of the Indian Constitution & the disparity in Indian society.



**Subject Teacher**



**H.O.D**



**Principal**



**PRINCIPAL**  
S. E. S.'s S. M. Dadasaheb Limaye  
College, Kalamboli,  
Tal. Panvel, Dist. Raigarh

SES's

Shikshan Maharshi Dadasaheb Limaye College of Arts Commerce &  
Science, Kalamboli.

Year: -2022-2023

Department of Chemistry  
Course Outcomes

**Class: F.Y.B. Sc. Chemistry**

**Semester I**

**Course (Paper) Name and No.: Paper I Inorganic**

- CO1 Learn Rutherford atomic model and Bohr theory with its limitation.
- CO2 Describe the structure of hydrogen atom.
- CO3 Explain hydrogen energy levels, shells, subshells and orbitals.
- CO4 Explain shielding effect and effective nuclear charge.
- CO5 Understand Aufbau principle.
- CO6 Classify the elements as the main group, transition and inner transition elements.
- CO7 Explain periodicity in properties for atomic and ionic size.
- CO8 Describe electron gain enthalpy and ionization enthalpy.
- CO9 Describe electronegativity by Pauling, Mulliken and Alfred Rochow method

**Course (Paper) Name and No.: Paper II**

- CO1 Explain what is meant by main group elements.
- CO2 Learn and explain metallic and nonmetallic nature of main group elements.
- CO3 Understands the concept of electronegativity of main group elements
- CO4 Learn about what is meant by anomalous behavior and anomalous behavior of second period elements.
- CO5 Understands and explain allotropic modifications of group — 14, 15 and 16 elements
- CO6 Learn about the concept of diagonal relationship between 2nd period elements and 3rd period elements.
- CO7 Get the knowledge about chemistry of carbides, oxides and hydrides of group I and group II elements.
- CO8 Learn and explain the preparation, properties and uses of some important compounds like  $\text{NaHCO}_3$ ,  $\text{Na}_2\text{CO}_3$ ,  $\text{NaCl}$ ,  $\text{NaOH}$ ,  $\text{CaO}$  and  $\text{CaCO}_3$ ,
- CO9 Know the general environmental aspects of oxides of carbon, oxides and oxyacids of sulphur and nitrogen.
- CO10 Get the knowledge about Photochemical smog, Acid rain, Global warming its control techniques and health hazards.

**Course (Paper) Name and No.: Practical**

- CO1 Determine the strength of  $\text{Na}_2\text{CO}_3$  and  $\text{NaHCO}_3$  in a solution of two by titration with standard acid.
- CO2 Determine the strength of commercial sample of acid.
- CO3 Calculate and report the amount of acetic acid in an organic acid sample by titrimetric method
- CO4 Determine the percentage purity of  $\text{ZnO}$  containing  $\text{ZnCO}_3$ .
- CO5 Determine the percentage purity of  $\text{BaSO}_4$  containing  $\text{NH}_4\text{Cl}$ .

SES's

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Science, Kalamboli.

**Semester II**

**Course (Paper) Name and No.: Paper I Inorganic**

- CO1 describe concept of qualitative analysis like precipitation equilibria, common ion effect etc.
- CO2 describe introductory part of coordination compounds as well as terminology in coordination compounds.
- CO3 classify the ligands.
- CO4 describes Arrhenius, Lowry bronsted, Solvent — Solute concept of acids- bases.
- CO5 explain hard and soft acids and bases with applications.
- CO6 understand mechanism of organic reactions like friedel acylation / alkylation.
- CO7 explain calculations of titration curve involving strong acid and strong base.

**Course (Paper) Name and No.: Paper II**

- CO1 Explain the types of chemical bonds and can do the comparison between ionic and covalent bonds.
- CO2 Define polarizability ( Fajan's rule ) and can understand the shapes of molecules.
- CO3 Draw the Lewis dot structure
- CO4 Explain the Sidgwick Powell Theory and basic VSEPR theory for AB<sub>n</sub> type molecules with and without lone pair of electrons
- CO5 Understands the isoelectronic principles, applications and limitations of VSEPR theory.
- CO6 Understands the concept of Reduction potentials: half reactions, balancing redox reactions
- CO7 Explain Redox stability in water by: i) Latimer and Frost diagrams ii) pH dependence of redox potentials.
- CO8 Understands the applications of redox chemistry like:
  - i) extraction of elements (example: isolation of copper by auto reduction)
  - ii) redox reagents in volumetric analysis  $\text{I}_2$  and  $\text{KMnO}_4$
  - iii) titration curves: i) single electron system ii) multi electron system

**Course (Paper) Name and No.: Practical**

- CO1 Analysis qualitatively cations and anions from a sample.
- CO2 To determine the percentage of copper (II) present in a given sample by titration.

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**Class: S.Y.B. Sc. Chemistry**

**Semester III Course (Paper) Name and No.: General Chemistry - I**

- CO1 Explain Ionic Bonding and conditions for formation of ionic bond;
- CO2 Explain Types of ionic crystals with examples,
- CO3 Apply Radius ratio rule in structure determination;
- CO4 Explain Lattice energy and factors affecting Lattice energy;
- CO5 Calculate Lattice energy using Born-Lande equation and Kapustinskii equation,
- CO6 Represent Born-Haber cycle for the formation of ionic bond;
- CO7 Appreciate Importance of Born-Haber cycle
- CO8 Explain the Valence Bond approach for the formation of covalent bond;
- CO9 Appreciate postulates of Valence Bond theory;
- CO10 Describe formation of  $H_2$  molecule and potential energy curve;
- CO11 Explain the formation of mononuclear diatomic molecules;
- CO12 Define the term resonance and give conditions for resonance;
- CO13 Understand the concept of formal charge;
- CO14 Explain the different types of hybridisation and draw shapes of simple covalent molecules;
- CO15 Understand equivalent and non-equivalent hybrid orbitals;
- CO16 Compare atomic orbitals and molecular orbitals
- CO17 Understand linear combination of atomic orbitals

**Course (Paper) Name and No.: General Chemistry-II**

- CO1 Explain preparation of simple boranes.
- CO2 Describe structure and bonding in diborane and tetraborane.
- CO3 Explain synthesis of borax.
- CO4 Describe occurrence, structure and inertness of  $SiO_2$ .
- CO5 Prepare silicon tetrachloride and describe its structure.
- CO6 Explain occurrence and extraction of Germanium.
- CO7 Explain concept of preparation of extra pure Silicon or Germanium.
- CO8 Explain trends in chemical reactivity.
- CO9 Describes Bosch - Haber process for synthesis of ammonia.

**Course (Paper) Name and No.: Practical**

- CO1 Paper II: Inorganic Chemistry Discuss Identification of cations in a given mixture and Analytically separating them [From a mixture containing not more than two of the following:  $Pb(II)$ ,  $Ba(II)$ ,  $Ca(II)$ ,  $Sr(II)$ ,  $Cu(II)$ ,  $Cd(II)$ ,  $Mg(II)$ ,  $Zn(II)$ ,  $Fe(II)$ ,  $Fe(III)$ ,  $Ni(II)$ ,  $Co(II)$ ,  $Al(III)$ ,  $Cr(III)$ ]
- CO2 Understand practical aspect of Preparation Crystallisation of potassium iodate and to estimate its purity before and after the separation.
- CO3 Appreciate Estimation of total hardness
- CO4 Describe. Investigation of the reaction between Copper sulphate and Sodium Hydroxide (Standard EDTA solution to be provided to the learner).

**Semester IV****Course {Paper} Name and No.: General Chemistry I inorganic**

- CO1 learn the position of transition metals in the periodic table; natural occurrence principal ores and minerals
- CO2 Know the electronic configurations of transition elements
- CO3 Appreciate the relative stability of various oxidation states in terms of electrode potential values
- CO4 Describe Origin of colour for transition metals and their compounds
- CO5 Explain magnetic properties of transition metal compounds
- CO6 Describe the Chemistry of Titanium and vanadium with respect to occurrence, extraction and properties of Oxides and chlorides
- CO7 Understand its use in titrimetric analysis
- CO8 Understand the qualitative tests for various transition metal ions-1st transition series
- CO9 Know the meaning of basic terms in Coordination Chemistry
- CO10 Explain Types of ligands,
- CO11 Explain characteristics of complex ions
- CO12 Learn the rules of nomenclature of coordination compounds.
- CO13 Write the rules formulas and names of coordination compounds
- CO14 Define Different Types of isomerism in coordination compounds
- CO15 Understand the nature of bonding in coordination compounds in terms of VBT CO16 Appreciate the importance and applications of coordination compounds in our day to day life
- CO17 Appreciate the postulates of Werner's coordination theory;
- CO18 Explain EAN rule and eighteen electron rule;
- CO19 Distinguish inner orbital complexes and outer orbital complexes

**Course {Paper} Name and No.: General Chemistry-II**

- CO1 Explain concept of hydration of anions with respect to effect of charge and radius. CO2 Explains physical properties of concentrated oxoacids.
- CO3 Describes uses and environment aspects of concentrated acids like sulfuric acid, nitric acid and phosphoric acid.

**Course {Paper} Name and No.: Practical****Paper II: Inorganic Chemistry**

- CO1 Compare Inorganic preparat ion -Nickel dimethyl glyoxime using microscale method
- CO2 Understand Complex cation - Tris (ethylene diamine) nickel (II) thiosulphate
- CO3 Discuss Complex anion - Sodium Hexanitrocobaltate (III) The aim of this experiment is to understand the preparation of a soluble cation (sodium) and a large anion hexanitrocobaltate(III) and its use to precipitate a large cation (potassium)
- CO4 Understand practical aspect of Preparation Inorganic salt - Calcium or magnesium oxalate using PFHS technique.

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Science, Kalamboli.

Year: -2022-2023

Department of Chemistry  
Course Outcomes

Class: S.Y.B. Sc. Chemistry

Semester III

Course (Paper) Name and No.: Paper III Analytical Chemistry

- CO1 Explain the important terms in Analytical chemistry.
- CO2 Describe the purpose of chemical analysis
- CO3 Classify different methods of analysis.
- CO4 Name the different sampling technique .
- CO5 Identify and explain terms involved in sampling.
- CO6 Reports the errors in analysis.
- CO7 Categorize the errors in analysis.
- CO8 Distinguish between classical and non-classical methods of analysis.
- CO9 Classify and describe different types of titration.
- CO10 Explain the gravimetric analysis.
- CO11 Titrimetric Methods- Terms involved in Titrimetric methods of analysis.  
Comparing volumetry and Titrimetry
- CO12 The Conditions suitable for titrimetry
- CO13 Types of titrimetry — Neutralisation (Acidimetry, alkalimetry), Redox, (Iodometry, lodimetry,) Precipitation and Complexometric titrations and indicators used in these titrations
- CO14 Tools of Titrimetry: Graduated glasswares and Calibration Standard solutions (Primary and Secondary standards in Titrimetry) and Calculations in Titrimetry.
- CO15 Neutralisation Titrations -Concept of pH and its importance in Neutralisation Titrations End point and Equivalence point of Neutralisation titrations
- CO16 Determination of End point by using -i. Indicators causing colour change ii. Change in potential, (by potentiometry) iii. Change in conductance (by conductometry)
- CO17 Construction of titration curve (on the basis of change in pH )of a titration of -i. Strong acid-weak base ii. Strong base-weak acid
- CO18 Gravimetric analysis - General Introduction to Gravimetry.
- CO19 Types of Gravimetric Methods -Precipitation Gravimetry:
- CO20 i. Steps involved in precipitation gravimetry analysis ii. Conditions for precipitation iii. Completion of precipitation, iv. Role of Digestion, Filtration, Washing, Drying Ignition of precipitate.
- CO21 Applications of Gravimetric Analysis

## SES's

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Science, Kalamboli.

CO2 Basic Concepts in Instrumental methods -Relation between the Analyte, Stimulus and measurement of change in the observable property

CO23 Block Diagram of an Analytical instrument.

CO24 Types of Analytical Instrumental methods based on

- i. Optical interactions (eg. Spectrometry: uv-visible, Polarimetry)
- ii. Electrochemical interactions (eg. Potentiometry, Conductometry,)
- iii. Thermal interactions (eg. Thermogravimetry)

CO25 Spectrometry - Interaction of electromagnetic radiation with matter:

Absorption and Emission spectroscopy

CO26 Basic Terms: Radiant Power, Absorbance, Transmittance, Monochromatic light, Polychromatic light, Wavelength of maximum absorbance, Absorptivity and Molar Absorptivity

CO27 Statement of Beer's Law and Lambert's Law, Combined Mathematical Expression of Beer-Lambert's Law, Validity of Beer-Lambert's Law, Deviations from Beer-Lambert's Law ((Real deviations, Instrumental deviations and Chemical deviations)

CO28 Instrumentation for absorption spectroscopy: Colorimeters and Spectrophotometers

CO29 Block Diagrams for Single beam and Colorimeter, and Spectrophotometer

(Principles, Construction and working-Details of Components expected i.e ,source

, Sample holder, Filters/Monochromators, Detectors such as Photomultiplier tube) CO30

Applications of UV-Visible Spectrophotometry

(a) Qualitative analysis such as Identification of functional groups in Organic compounds , Chromophores and Auxochrome, cis and trans isomers

(b) Quantitative analysis by Calibration curve method

CP31 Photometric Titrations: Principle , Instrumentation, Types of Photometric titration Curves with examples



SES's

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Science, Kalamboli.

Semester IV Course

(Paper) Name and No.: Analytical Chemistry – III

CO1 Classify separation methods.

CO2 Explain different separation methods.

CO3 Explain the basic principles of electrophoresis.

CO4 Classify and compare the chromatographic methods.

CO5 Describe the solvent extraction.

CO6 Explain the various applications of chromatography.

CO7 Differentiate between single step and multistep extraction process.

CO8 Explain the principle of paper and thin layer chromatography.

CO9 Instruments based on the electrochemical properties of the analytes

CO10 Potentiometry:- Principle. 2.1.2. Role of Reference and indicator electrodes

CO11 Applications in Neutralisation reactions with reference to the titration of a Strong acid against a Strong Base (using quinhydrone electrode)

CO12 Graphical methods for detection of end points

CO13 pHmetry: Principle 2. Types of pH meters. Principle, Construction Working and Care of Combined Glass electrode Applications in Titrimetry (Strong acid-Strong Base)

biological and environmental analysis

CO14 Conductometry: Principle 2. Conductivity cell its construction and care

CO15 Applications in Neutralisation Titrimetry with respect to i. Strong Acid-Strong Base ii. Strong Acid-Weak Base iii. Strong Base-weak Acid iv. Weak Acid-Weak Base.

CO16 Advantages & limitations of conductometric titrations

CO17 Nature of Indeterminate Errors: The true and acceptable value of a result of analysis Measures of central tendency: mean, median, mode, average Measures of dispersion: Absolute deviation, relative deviation, relative average deviation, standard deviation, (s, sigma) variance, coefficient of variation

CO18 Distribution of random errors: Gaussian distribution curve. Equation and salient features of Gaussian distribution curve

CO19 Concept of Confidence limits and confidence interval and its computation using — (i) Population standard deviation (ii) Student's t test (iii) Range

CO20 Criteria for rejection of doubtful result—(i) 2.5 d rule (ii) 4.0 d rule (iii) Q test

CO21 Test of Significance —(i) Null hypothesis (ii) F-test (variance ratio test)

CO22 Graphical representation of data and obtaining best fitting straight line —(a) For line passing through origin (b) For line not passing through origin



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ACSE  
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SES

Shikshan Maharshi Dadasaheb Limaye Arts, Commerce, Science and Computer Science College,  
Kalamboli

Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: III

Class: - S.Y. BSc.

Paper: I

Title of the Paper: - Biomolecules and Microbial taxonomy

Objectives: - To understand the Structure and Functions of Biomolecules.

Course Contents: -

1. Estimation of Microbial Taxonomy
2. Nucleic acid Structure and Chemistry.
3. Microbial Taxonomy

Learning Outcomes:

1. Students will gain knowledge about structure and functions of biomolecules.
2. Students will learn the methods of estimation of biomolecules.
3. Students will study the detailed structure of Nucleic acid.
4. Students will get to know about the microbial taxonomy & Nomenclature.
5. Students will study various genetic analysis & sequencing methods.

HOD

Head

Department of Microbiology  
S. M. D. L. College, Kalamboli.



Principal

V/C PRINCIPAL

SES'S S. M. Dadasaheb Limaye  
ACS College, Kalamboli,  
Tal :- Panvel, Dist :- Raigad.

SES

Shikshan Maharshi Dadasaheb Limaye Arts, Commerce, Science and Computer Science College,  
Kalamboli

Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: III

Class: - S.Y. BSc.

Paper: II

Title of the Paper: - Environmental Microbiology

Objectives: - To study about the microbiology in our surrounding environment.

Course Contents: -

1. Air Microbiology
2. Fresh water and Sewage Microbiology
3. Soil and Geo Microbiology

Learning Outcomes:

1. Students will gain the knowledge of airborne pathogens & toxins.
2. Students will study about collection devices of air samples.
3. Students will get knowledge of fresh water environments and microorganisms found in it.
4. Students will get to know about indicator organisms and their detection in water.
5. Students will study about removal of pathogens by sewage treatment processes.
6. Students will learn methods of studying soil microorganisms.
7. Students will learn about biogeochemical cycles.

HOD

**Head**

Department of Microbiology  
S. M. D. L. College, Kalamboli.



Principal

**I/C PRINCIPAL**

SES'S S. M. Dadasaheb Limaye  
ACS College, Kalamboli,  
Tal:- Panvel, Dist:- Raigad.

Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: III

Class: - S.Y. BSc.

Paper: III

Title of the Paper: - Introduction to Clinical Microbiology

Objectives: - To understand the role of microorganisms in daily life and how they cause diseases.

Course Contents: -

1. Basic Microbiology
2. Common infectious diseases, Epidemiology and public health awareness
3. Control of microorganisms & safety in clinical microbiology.

Learning Outcomes:

1. Students will gain the knowledge of microbes in our lives.
2. Students will study about staining, bacterial anatomy, growth & multiplication of bacteria.
3. Students will learn about culture methods & bacterial taxonomy.
4. Students will study about structure & function of skin, nervous system, respiratory system, digestive system and diseases related to it.
5. Students will learn about Epidemiology of Infectious Diseases & how infection spread.
6. Students will gain the knowledge of measures for control of disease.
7. Students will get to know about methods of sterilization & disinfection of rooms, skin, spillage, etc.
8. Students will study about Safety in Clinical Microbiology.



HOD  
Head

Department of Microbiology  
S. M. D. L. College, Kalamboli.



Principal

I/C PRINCIPAL

SES'S S. M. Dadasaheb Limaye  
ACS College, Kalamboli  
Tal:- Panvel, Dist:- Raigad

**Course Outcomes for B.Sc. (Microbiology)**

Semester: IV

Class: - S.Y. BSc.

Paper: I

**Title of the Paper:** - Metabolism and Basic Analytical Techniques

**Objectives:** - To understand metabolism, Bioenergetics & Analytical Techniques.

**Course Contents:** -

1. Introduction To Metabolism & Bioenergetics
2. Enzyme Kinetics
3. Analytical techniques

**Learning Outcomes:**

1. Students will get to know about metabolism, metabolic pathways.
2. Students will study about Thermodynamics of Life.
3. Students will gain an overview of Enzymes and Coenzymes.
4. Students will learn about Enzyme kinetics.
5. Students will get the knowledge of different types of chromatography.
6. Students will study about Centrifugation & Electrophoresis.



HOD  
Head

Department of Microbiology  
S. M. D. L. College, Kalamboli.



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Tal :- Parvel, Dist :- Raichad

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Shikshan Maharshi Dadasaheb Limaye Arts, Commerce, Science and Computer Science College,  
Kalamboli

Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: IV

Class. - S.Y. BSc.

Paper: II

Title of the Paper: - Applied Microbiology

Objectives: - To understand the concept of host defence, food & dairy microbiology.

Course Contents: -

1. Host defence and public health.
2. Food Microbiology
3. Dairy Microbiology

Learning Outcomes:

1. Students will get the knowledge of classification of immune system and cells of immune system.
2. Students will study about epidemiology of infectious diseases.
3. Students will get to know about FDA, USDA, FSSAI, HACCP
4. Students will learn about important microbes in food microbiology.
5. Students will get the knowledge of Food spoilage and preservation of food.
6. Students will get to know about methods of microbial estimation of foods.
7. Students will study about Pasteurization, ultra-pasteurization, whey, butter, fermented milk products & QC of milk and milk products.

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Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: IV

Class: - S.Y. BSc.

Paper: III

**Title of the Paper:** - Fermented Foods, Food Sanitation and Microbial Ecology

**Objectives:** - To understand the concept of Fermented food, food sanitation and microbial evolution.

**Course Contents:** -

1. Fermented Foods
2. Food Sanitation
3. Microbial evolution and ecology

**Learning Outcomes:**

1. Students will get to know about the microorganisms used in food fermentation & fermented beverages.
2. Students will get to know about the probiotics & how they are useful for our body.
3. Students will get to know about the food sanitation, food laws and food adulteration.
4. Students will get to know about the Consumer protection & consumer guidance society.
5. Students will get to know about the Microbial evolution and microbial ecosystem.
6. Students will get to know about the Microbial ecology and its methods.



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**SES's**  
**Shikashan Maharshi Dadasaheb Limaye, Arts,**  
**Commerce and Science College, Kalamboli.**

**Course Outcomes**  
**Academic Year : 2022-23**  
**SEMESTER -III**

Name of the Faculty : - Dr. Usha Sainger

Class :- S.Y. B.Sc.

Sub :- Foundation Course

**COURSE OUTCOMES**

- 1) To make students examine the socio-economic problems faced by vulnerable groups, the various constitutional and legal rights and Redressal mechanisms available to them.
- 2) To educate students on various aspects of disaster and the steps in disaster management with special reference to Indian case studies.
- 3) To foster interest in science and technology with development of scientific temper and attitude.
- 4) To help students to examine the various aspects of interpersonal as well as business communication.



**SUBJECT TEACHER**  
Dr. Usha R. Sainger



**HEAD OF DEPARTMENT**  
Dr. Usha R. Sainger



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**Commerce and Science College, Kalamboli.**

**COURSE OUTCOMES**  
**Academic Year : 2022-23**

**Name of the Faculty : - Dr. Usha Sainger**

**Class :- S.Y. B.Sc.**

**Sub :- Foundation Course**

**SEMESTER - IV**

**COURSE OUTCOMES**

- 1) To sensitize students towards recent trends in ecological studies.
- 2) To illustrate tTo provide students an idea about the contemporary rights of Indian citizens.
- 3) he students about new types of technologies used in day to day life with a brief idea about misuse of technology and ways to avoid it.
- 4) To make students identify the various competitive examinations to shape their career necessary life skills such as time management, goal setting etc.



**SUBJECT TEACHER**  
**Dr. Usha R. Sainger**



**HEAD OF DEPARTMENT**  
**Dr. Usha R. Sainger**



**PP Mahajan**  
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**SES'S S. PRINCIPAL**  
**Shikshan Maharshi Dadasaheb Limaye**  
**ACS College, Kalamboli,**  
**Tal. - Panvel, Dist. - Raigad.**



**SES's**  
**SHIKSHAN MAHARSHI DADASAHEB LIMAYE ASC COLLEGE KALAMBOLI**  
**COURSE OUTCOME OF ORGANIC CHEMISTRY AY 2022-2023**

**COURSE OUTCOME**

**T.Y.BSc SEM 5 & 6**

After studying this course, the learner will be able to:	
CO 1	Apply fundamentals of Organic Reaction Mechanism to various reactions.
CO 2	Compare various conformations of some organic compounds
CO 3	Apply the concepts of stereochemistry to Organic reactions.
CO 4	Assign IUPAC names to spiro, bicyclo and heterocyclic compounds.
CO 5	Understand Basics of Polymer Chemistry.
CO 6	Illustrate basics of Green Chemistry to Organic Synthesis.
CO 7	Classify carbohydrates.
CO 8	Study reactions shown by Glucose
CO 9	Illustrate general applications of various catalysts and Reagents
CO 10	Understand basic principles of Photochemistry
CO 11	Know basics of Natural Product chemistry- Including Amino acids, nucleic acids etc
CO 12	Apply Spectral techniques to Structure Determination

**Chemistry Practicals :- I) Binary Mixture Separation: Separation of mixture containing (VL + NVL) & (VL+ S) components.**

1. Minimum Six mixtures to be completed by the learners.
2. Components of the liq-liq mixture should include volatile liquids like acetone, methylacetate, ethylacetate, isopropylalcohol, methyl alcohol, ethyl alcohol, chloroform and non- volatile liquids like chlorobenzene, bromobenzene, aniline, N,N-dimethylaniline, acetophenone, nitrobenzene, ethyl benzoate.
3. Components of the liq- solid mixture should include volatile liquids like acetone, methylacetate, ethylacetate, ethyl alcohol, methyl alcohol, isopropylalcohol, chloroform and solids such as water insoluble acids, phenols, bases, neutral.
4. A sample of the mixture one ml to be given to the learner for detection of the physical type of the mixture.
5. After correct determination of physical type, separation of the binary mixture to be carried out by distillation method using microscale technique.
6. After separation into component A and component B, the physical constants and the yield of the separated components is to be determined.

**II) Binary Mixture Separation & Identification (Solid + Solid)**

(2.0 g mixture to be given)

1. Minimum six mixtures to be completed by the learners.
2. Components of the mixture should include water soluble and water insoluble acids (carboxylic acid), water insoluble phenols ( $\alpha$ -naphthol,  $\beta$ - naphthol), water insoluble bases (nitroanilines), water soluble (urea and thiourea) and water insoluble neutrals (Aromatic hydrocarbons, m- dinitrobenzene, anilides, amides)
3. A sample of binary mixture to be given (<1.0 gram) to the learners for detection of chemical type of mixture. After correct determination of the chemical type, the fixing reagent should be decided by the learners for separation.
4. Follow separation scheme with the bulk sample of the binary mixture.
5. After separation of the components into independent components A and B,

a. One component (decided by the examiner) is to be analyzed and identified by chemical method with melting point and also by IR spectroscopy. (This component is not to be weighed).

b. The other component is to be purified, dried, weighed and melting point is to be determined.

*Achhad*

**SUBJECT TEACHER**

*J. Kamble*

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Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: V

Class: - T.Y. BSc.

Paper: I

Title of the Paper: - Microbial Genetics

Objectives: - To understand the various concepts in genetics.

Course Contents: -

1. DNA Replication
2. Transcription, Genetic Code and Translation
3. Mutation and Repair
4. Genetic Exchange & Homologous Recombination

Learning Outcomes

1. **DNA Replication:** The learner will understand the sequence of events, mechanism, enzymes and proteins involved in replication of DNA in prokaryotes and eukaryotes.
2. **Transcription, Genetic Code and Translation:** The student will know the central dogma of biology its two-step transcription and translation, maturation of RNA.
3. **Mutation and DNA repair:** The learner will know the concept of mutation, its types, causes and their effects. This module will also make them understand types of mutagens, damage to DNA due to mutagenesis, various mechanisms of DNA repair.
4. **Genetic exchange:** The student shall understand the various mechanisms of gene transfer in bacteria and genetic recombination.
5. **Practicals:** The students will acquire skill to perform the laboratory techniques and experiments based on the above topics.



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Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: V

Class: - T.Y. BSc.

Paper: II

Title of the Paper: - Medical Microbiology & Immunology: Part-I

Objectives: - To help students to build on the basic information regarding host defence mechanisms that they have gained in S.Y.B.Sc.

Course Contents: -

1. Bacterial Strategies for Evasion and Study of a Few Diseases
2. Study of few diseases (wrt. Cultural characteristics of the etiological agent, pathogenesis & clinical features, laboratory diagnosis, treatment and prevention only)
3. General Immunology – I
4. General Immunology – II

Learning Outcomes: The students should be able to


1. Give details of the virulence factors and other features of the pathogen
2. Correlate these virulence factors with the pathogenesis and clinical features of the disease
3. Comment on the mode of transmission, and therefore modes of prophylaxis of these diseases
4. Comment on the methods of diagnosis of the disease.
5. Conceptualize how the adaptive immune responses coordinate to fight invading pathogens and the organs and tissue involved
6. Discuss the role of antigen in initiating the immune response
7. Correlate the structure & functions of immunoglobulin
8. Understand the importance of cytokines, MHC, APCs, Cytokines, and the role in adaptive immunity.
9. Understand the various antigen – antibody reactions

  
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Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: V

Class: - T.Y. BSc.

Paper: III

Title of the Paper: - Microbial Biochemistry

**Objectives:** - The course thus focuses on the need to study uptake, various intermediary metabolic processes and methods to study metabolism both invitro as well as invivo.

**Course Contents:** -

1. Biological Membranes & Transport
2. Bioenergetics & Bioluminescence
3. Studying Metabolism & Catabolism of Carbohydrates
4. Fermentative Pathways & Anabolism of Carbohydrates

**Learning Outcomes:** The students should be able to

1. Understand the architecture of the membrane and how solute is transported inside the cell.
2. Describe and explain the electron transport chains in prokaryotes and mitochondria and understand the mechanism of ATP synthesis.
3. Explain bioluminescence mechanism and its significance
4. Discuss the experimental aspect of studying catabolism and anabolism and the various pathways for the breakdown of carbohydrates along with reactions in amphibolic pathways.
5. Describe various other pathways which produce different end products.
6. Describe anabolic reactions in carbohydrate synthesis.
7. Apply the concepts of energetics and catabolism in biodegradation of various substrates.



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Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: V

Class: - T.Y. BSc.

Paper: IV

Title of the Paper: - Bioprocess Technology

**Objectives:** - Bioprocess Technology I course is designed to develop the learner's ability to study the techniques used in the different phases of industrial microbiology such as strain improvement, basic fermentation equipment & its sterilization aspects.

**Course Contents:** -

1. Upstream Processing
2. Fermentation Modes, Equipments and Instruments
3. Traditional Fermentations
- 4.

**Learning Outcomes:** The students should be able to:

1. Describe the applications of microbes and its strain improvement in Industrial Microbiology.
2. Apply kinetic formula to determine growth and productivity parameters of batch, continuous, fed batch and solid substrate fermentations
3. Describe the design of bioreactors for different applications and its process parameters
4. Design media, growth conditions and techniques for producing and recovering different types of products of commercial value.
5. Learner will be well-versed with the containment and levels of containment.

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College, Kalamboli

Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

**Semester:** V

**Class:** - T.Y. BSc.

**Paper:** V

**Title of the Paper:** - Introduction to Biotechnology (Applied Component)

**Objectives:** - Students will get knowledge of the basic techniques of biotechnology with respect to gene cloning and cloning vectors. To give the students an overview of bioremediation of soil, water and the different methods of using genetically engineered microbes and plants.

**Course Contents:** -

1. Basic Techniques in Biotechnology
2. Bioremediation in Biotechnology
3. Animal Biotechnology
4. Industrial and Marine Biotechnology

**Learning Outcomes:** The students should be able to

1. Students will become competent by gaining knowledge of bioremediation, industrial production and animal biotechnology which will enhance their chances for employment and for further education.

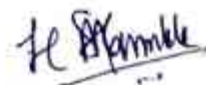
2. The students will acquire knowledge to carry out techniques in biotechnology and will understand the applications of transgenic animals and the methods used for obtaining transgenic animals.



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Department of Microbiology

Academic Year 2022-23

**Course Outcomes for B.Sc. (Microbiology)**

**Semester:** VI

**Class:** - T.Y. BSc.

**Paper:** I

**Title of the Paper:** - rDNA Technology, Bioinformatics & Virology

**Objectives:** - This paper deals with the basic steps in gene cloning, Recombinant DNA Technology & Structure and life cycle of different viruses.

**Course Contents:** -

1. Recombinant DNA Technology
2. Applications of rDNA Technology & Bioinformatics
3. Regulation & Basic Virology
4. Advanced Virology

**Learning Outcomes:** The students should be able to

1. construct recombinant DNA molecules; also know the tools required like vectors, restriction enzymes etc.
2. **Application of rDNA technology and Bioinformatics:** The learner will know about applications of rDNA technology, through bioinformatics the student will understand the use of databases and software tools for understanding biological data.
3. **Gene Regulation and Basic Virology:** The student will know about gene expression in prokaryotes, operon as a unit of gene regulation, regulation of gene expression in prokaryotes and bacteriophages. The student will also understand about general structure, life cycle and classification of viruses.
4. **Advanced Virology:** The learner will understand the basic structure and life cycle of different viruses and their cultivation. The student will get basic knowledge on Prions, Virioids and viruses causing cancer.
5. **Practicals:** The students will acquire skill to perform the laboratory techniques and experiments based on the above topics. The students will understand computational biology and insilico analytical techniques.



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Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: VI

Class: - T.Y. BSc.

Paper: II

Title of the Paper: - Medical Microbiology & Immunology: Part - II

Objectives: - Medical microbiology encompasses the etiology, transmission, pathogenesis, clinical manifestations, laboratory diagnosis, prophylaxis, and treatment of various diseases that are most common to humans through which the students build on the basic information regarding host defence mechanisms that they have gained in S.Y.B.Sc.

Course Contents: -

1. Study of a Few Diseases with Emphasis on Cultural Characteristics of the Etiological Agent, Pathogenesis, Laboratory Diagnosis and Prevention
2. Chemotherapy of Infectious Agents
3. Immunology – I
4. Immunology – II

Learning Outcomes: The students should be able to

1. Give details of the virulence factors and morphological and cultural features of the pathogen
2. Correlate these virulence factors with the pathogenesis and clinical features of the disease
3. Comment on the mode of transmission, and modes of prophylaxis of these diseases
4. Given a few key clinical features, identify the likely causative agent.
5. Comment on the methods of diagnosis of the disease.
6. Understand the structure and role of T and B cells in generating adaptive immunity and thereby study effector responses in both Humoral & Cell Mediated Immunity. Acquire an understanding of the role of immune system in disease.
7. Understand the activation of complement system
8. Apply the concept of immunity to prevention of disease by development of vaccines

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Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

**Semester:** VI

**Class:** - T.Y. BSc.

**Paper:** III

**Title of the Paper:** - Microbial Biochemistry

**Objectives:** - The contents of this paper is designed to understand how myriad organic compounds such as lipids, carbohydrates, proteins and nucleic acids can be utilized by the living cells.

**Course Contents:** -

1. Lipid Metabolism & Catabolism of Hydrocarbons
2. Metabolism of Proteins and Nucleic Acids
3. Metabolic Regulation
4. Prokaryotic Photosynthesis & Inorganic Metabolism

**Learning Outcomes:** The students should be able to

1. Metabolism of Lipids, Fatty acids, Nucleotides and Amino acids
2. Catabolism of Protein and aliphatic hydrocarbons
3. Regulation of metabolic process at various levels
4. Photosynthesis
5. Metabolism of inorganic molecules with special reference to nitrate and sulfate
6. Biological Nitrogen fixation
7. Lithotrophy

  
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Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

**Semester:** VI

**Class:** - T.Y. BSc.

**Paper:** IV

**Title of the Paper:** - Bioprocess Technology: Part-II

**Objectives:** - Bioprocess Technology II is designed to develop the learner's ability to study the techniques use in the downstream process used for the final product and industrial effluent treatment.

**Course Contents:** -

1. Downstream Processing
2. Advances in Bioprocess Technology
3. Quality Assurance, Quality Control, Instrumentation and Bioassay
4. Industrial Fermentations

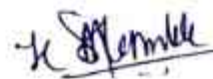
**Learning Outcomes:** The students should be able to

1. Understand the actual process involved in fermentations of important products.
2. To apply the knowledge of applications of animal and plant tissue culture techniques.
3. Learn the applications of immobilized enzymes in various fields.
4. Understand the working of important instruments used in biochemical analysis and bioassay.
5. Learn the salient features of quality management and regulatory procedures.



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Department of Microbiology

Academic Year 2022-23

Course Outcomes for B.Sc. (Microbiology)

Semester: VI

Class: - T.Y. BSc.

Paper: V

Title of the Paper: - Applied Biotechnology (Applied Component)

**Objectives:** Aims at imparting knowledge on recent trends in plant and healthcare biotechnology. Aims at highlighting the significance of bioenergy and biofuel. Create awareness of the importance of Biotechnology in society.

**Course Contents: -**

1. Role of Biotechnology in Society
2. Bioenergy and Biofuel
3. Plant Biotechnology
4. Healthcare Biotechnology

**Learning Outcomes:** The students should be able to

1. Students will be trained to address issues of Bioenergy and Biofuels.
2. They will be skilled to respond to issues related to genetic engineering in plant biotechnology.
3. The learner will be able to comprehend details of the role of biotechnology in society.



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Year: -2022-2023

Department of Chemistry

Course Outcomes

Class: F.Y.B. Sc. Chemistry

Semester I

Course (Paper) Name and No.: Paper I Physical

- CO1 Understand different types of systems like open and closed system.
- CO2 Understand various properties of a system under study.
- CO3 Learn zeroth and first law of thermodynamics.
- CO4 Acquire the concepts of heat, work and internal energy.
- CO5 Apply the knowledge of heat, work and internal energy to system under study.
- CO6 Acquire knowledge of different form of heat changes taking place in dissolution and chemical reactions.
- CO7 Learn various ways of defining concentration of a compound in solution.
- CO8 Apply the knowledge acquired for calculating the concentration of a compound in solution.
- CO9 Convert one concentration unit to other.

Course (Paper) Name and No.: Paper II

- CO1 Derive an expression for rate constant of a first order reaction.
- CO2 Derive an expression for rate constant of second order reaction with equal initial concentration of two reactant.
- CO3 Discuss the following methods used in determination of order of reaction. a) Graphical Method b) Half life time c) Ostwald's isolation method
- CO4 Explain liquid Crystal and its Characteristics
- CO5 Types of liquid crystals
- CO6 Measuring of surface tension using stalagmometer
- CO7 Explain the factors on which viscosity of a liquid depends
- CO8 Measurement of refractive index experimentally

Course (Paper) Name and No.: Practical

- CO1 Perform the standardization of NaOH solution of various concentration.
- CO2 Prepare the solutions of different normality.
- CO3 Describe the reaction of hydrolysis of ester by HCl
- CO4 Examine the rate of reaction of hydrolysis of ester.
- CO6 Calculate the enthalpy of dissolution of salt.

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Year: -2022-2023  
Department of Chemistry

**Course Outcomes**

**Class: F.Y.B. Sc. Physical Chemistry**

**Semester II**

**Course (Paper) Name and No.: Paper I**

- CO1 Learn ideal gas laws, kinetic theory of gases.
- CO2 Learn deviation of real gases from ideal gas laws.
- CO3 Apply knowledge acquired to real systems.
- CO4 Derive van der Waals equation of state.
- CO5 Understand Joule-Thomson effect and its significance.
- CO6 Acquire knowledge of reversible and irreversible reactions.
- CO7 Learn laws governing a chemical reaction and the terms involved.
- CO8 Apply the acquired knowledge to calculate different parameters concerning a chemical reaction.
- CO9 Learn second law of thermodynamics.
- CO10 Learn thermodynamic derivation of equilibrium constant.
- CO11 Apply the acquired knowledge to calculate equilibrium constant.

**Course (Paper) Name and No.: Paper II**

- CO1 Difference between amorphous and crystalline solid
- CO2 Explain law of crystallography
- CO3 Explain law of rationality
- CO4 Explain Planck's theory of quantization of radiation
- CO5 Describe different types of interaction between radiation and matter
- CO6 Explain different type of electromagnetic spectrum and give importance of UV, Visible and IR regions in spectroscopic studies.
- CO7 Define the term degree of ionization. What are factors that affects the degree of ionization?
- CO8 Derive Henderson's equation for i) Acidic buffer ii) Basic buffer.
- CO9 Explain how a buffer consisting of a weak acid/base and salts resist change in pH
- CO10 Deduce the expression for ionic product of water

**Course (Paper) Name and No.: Practical**

- CO1 To determine the rate constant for the separation reaction between ethyl acetate and NaOH.
- CO2 To determine the dissociation constant ( $K_a$ ) of weak acid ( $\text{CH}_3\text{COOH}$ ) using Hendersons equation pH metrically.
- CO3 Verify Beer-Lamberts law using  $\text{KMnO}_4$  solution by coloumetric method.
- CO4 Standardize the commercial sample of HCl using borax.

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**Class: S.Y.B. Sc. Chemistry**

**Semester III**

**Course (Paper) Name and No.: General Chemistry I Physical Chemistry**

- CO1 Understand and apply laws of thermodynamics to chemical systems.
- CO2 Understand variation of Gibbs free energy with temperature and pressure.
- CO3 Understand concept of partial molal properties.
- CO4 Apply understanding of the concept of partial molal properties for determining feasibility of a chemical reaction.
- CO5 Determine feasibility of a chemical reaction from the relation between equilibrium constant and Gibbs free energy.
- CO6 Calculate heat of reaction knowing equilibrium constant of gaseous as well as aqueous reaction.
- CO7 Comprehend concept of electrolysis.
- CO8 Explain dependence of conductance on parameters such as concentration
- CO9 Understand Kohlrausch's law of independent migration of ions.
- CO10 Apply Kohlrausch's law for the determination of degree of dissociation and dissociation constant of a weak electrolyte conductometrically.
- CO11 Apply Kohlrausch's law for the determination of solubility and solubility product of sparingly soluble salts conductometrically.
- CO12 Apply Kohlrausch's law for the determination of ionic product of water conductometrically.
- CO13 Understand concept of transference number of transport number of ions.
- CO14 Learn experimental determination of transport number using moving boundary method.
- CO15 Calculate transport number of given cation and/or anion.
- CO16 Recognize different factors affecting transport number of an ion.

**Course (Paper) Name and No.: General Chemistry-II**

- CO1 Classify complex chemical reactions like Reversible or opposing.
- CO2 Explain effect of temperature on the rate of reaction, Arrhenius equation, concepts of energy activation.
- CO3 Explain theories of reaction rates like collision theory and activated complex theory.
- CO4 Describe Thermodynamics of ideal solutions.
- CO5 Explain distillation of solutions.
- CO6 Understand Partial miscibility of liquids.
- CO7 Understand Immiscibility of liquids.
- CO8 Explain Nernst distribution law and its applications
- CO9 Describe electron deficient compounds with respect to Lewis acidity and applications.



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**Course (Paper) Name and No.: Practical**

**CO1 Paper I: Physical Chemistry**

CO1 Understand practical aspects of Preparation To verify Ostwald's dilution law for weak acid conductometrically

CO2 Explain to determine dissociation constant of weak acid conductometrically.

CO3 Discuss To determine the critical solution temperature (CST) of phenol - Water System.

CO4 Explain Determination of energy of activation of acid catalyzed hydrolysis of methyl acetate.

CO5 Discuss To investigate the reaction between  $K_2S_2O_8$  and KI with equal initial concentrations of the reactants

CO6 Appreciate To determine solubility of sparingly soluble salts (any two) conductometrically.

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**Class: S.Y.B. Sc. Physical Chemistry**

**Semester IV**

**Course {Paper} Name and No.: General Chemistry I**

- CO1 Comprehend difference between galvanic cells and electrolysis.
- CO2 Know different forms of electrodes used in electrochemistry.
- CO3 Represent electrochemical cells.
- CO4 Write redox reactions taking place in electrochemical cells.
- CO5 Calculate thermodynamic parameters from EMF of cell.
- CO6 Determine equilibrium constant from EMF of cell.
- CO7 Acquire knowledge of types of galvanic cells.
- CO8 Learn problems arising in using electrolyte concentration cells.
- CO9 Learn methods in which problems relating to use of electrolyte concentration cells can be solved.
- CO10 Understand construction and working of hydrogen electrode and quinhydrone electrode for the determination of pH.
- CO11 Compute pH of given solution using hydrogen gas electrode and/or quinhydrone electrode.
- CO12 Learn Gibbs phase rule as applied to phase equilibria.
- CO13 Understand different terms present in Gibbs phase rule.
- CO14 Apply Gibbs phase rule to one component systems.
- CO15 Apply Gibbs phase rule to two component systems.
- CO16 Learn importance of Clausius- Clapeyron equation in phase equilibria.
- CO17 Calculate change in melting or boiling point of a given compound with pressure using Clausius- Clapeyron equation.

**Course {Paper} Name and No.: General Chemistry-II**

- CO1 Explain laws of crystallography.
- CO2 Describe the characteristics of cubic system.
- CO3 Calculate interplanar distance in cubic lattice.
- CO4 Explain types of catalyzed reactions.
- CO5 Understands mechanisms and kinetics of catalyzed reactions.
- CO6 Understands Mechanisms of enzyme catalyzed reactions.
- CO7 Explain efficiency of nanoparticles as catalyst.
- CO8 Explain the concept of hydration of cation with respect to effect of charge and radius.
- CO9 Describe the terms involved in Latimer equations.

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CO10 Explain relationship between pka, acidity and  $Z^2/r$  ratios.

CO11 Classify cations on the basis of acidity with pka values range.

Course (Paper) Name and No.: Practical

CO1 Paper I: Physical Chemistry

Explain To determine standard EMF and the standard free energy change of Daniel cell potentiometrically.

CO2 Understand the To determine the amount of HCl in the given sample potentiometrically.

CO3 Explain Compare the strengths of HCl and H<sub>2</sub>SO<sub>4</sub> by studying kinetics of acid hydrolysis of methyl acetate.

CO4 Understand the Industrial visit report.

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**Class: T.Y.B. Sc. Chemistry**

**Semester V**

**Course (Paper) Name and No.: Physical Chemistry**

CO1 Memorize concept of dipole moment, polar and non-polar molecules.

CO2 Differentiate Rotational Spectroscopy, Vibrational Spectroscopy, Raman Spectroscopy.

CO3 Apply spectroscopic data for solving different numericals

CO4 In-list different examples of colligative properties.

CO5 Understand Raoult's law, Clapeyron equation, van't Hoff Factor.

CO6 Create own model to show osmosis and reverse osmosis

CO7 Apply Arrhenius Equation for solving of Numericals

CO8 Define basic terms of radioactivity i.e. decay constant, half life time, average life and units of radioactivity.

CO9 Compare G.M. Counter and Scintillation Counter method for detection of radioactivity

CO10 Apply Carbon Dating method to estimate age of fossils of plants and animals.

CO11 Understand Surface tension, Adsorption, Absorption, Adsorbate, Adsorbent.

CO12 Differentiate Freundlich Adsorption Isotherm, Langmuir Adsorption Isotherm and B.E.T. Equation

CO13 Explain the terms Electrophoresis, Electroosmosis, Dorn Effect, Micelle, Surfactant, Streaming Potential.

CO14 Apply how the BET equation can be used to determine the surface area of an adsorbent.

**Practical's**

CO1 Handle and Understand principles of different instruments like Potentiometry, Conductometry, pH Metry.

CO2 Determine molecular weight of substance by using Rast Method CO3 With the help of Fractional change method find out order of reaction.

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**Class: T.Y.B. Sc. Chemistry**


**Semester VI**

**Course {Paper} Name and No.: Physical Chemistry**

- CO1 Recall the concept Ionic Strength, activity and activity Coefficient.  
CO2 Differentiate between Concentration cell and chemical cell.  
CO3 Apply Nernst equation for numerical solving  
CO4 Set up an experiment to show decomposition potential and overvoltage  
CO5 In-list the examples of different polymeric materials.  
CO6 Classified the polymers based on source, structure, thermal response and physical properties.  
CO7 Explain light emitting polymers with their advantages.  
CO8 Define basic terms of Quantum Chemistry i.e. Black body radiation, photoelectric effect, Compton Effect de Broglie's relationship  
CO9 Know the significance of operator in quantum mechanics.  
CO10 Understand the theory of progressive and standing waves.  
CO11 Know Construction Silicon solar cell, Oxygen Fuel Cell.  
CO12 Understand Nuclear Spin, Nuclear magnetic moment, Spin angular moment  
CO13 Draw the diagram of NMR Spectrometer.  
CO14 Know the principle of ESR Spectroscopy.  
CO15 Apply principle NMR and ESR for Numerical solving.
- Practical's**
- CO1 Handle and Understand principles of different instruments like Colorimetry, Potentiometry, Conductometry.  
CO2 Determine molecular weight of any high polymer polyvinyl alcohols by viscosity measurement.  
CO3 Interpret the order of reaction graphically from given experimental data and to calculate the specific rate constant.

  
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Shikshan Maharshi Dadasaheb Limaye College of Arts Commerce &  
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Class: T.Y.B. Sc. Chemistry  
Semester V Course

**Course (Paper) Name and No.: Analytical Chemistry**

CO1 Students will learn importance of quality concept in industry, different grade chemicals and scientific techniques of sampling

CO2 Students will understand theoretical aspects of types of chemical titrations

CO3 Student get acquainted with different measurements techniques based on various spectroscopic techniques

CO4 Students will learn modern and sophisticated separation techniques

Practical's

CO1 Students will get hands on practice of various techniques of quantitative estimation

CO2 Students will get an opportunity to handle and understand principles of different instruments such as colorimeter, spectrophotometer, pH meter, flame photometer and turbidimeter

CO3 Students will come across with different types of samples such as cosmetics, polluted water, fertilizer, food, chemicals etc. and their analysis

**Semester VI**

**Course (Paper) Name and No.: Analytical Chemistry**

CO1 Students will understand basic principles and applications of electroanalytical techniques

CO2 Students will learn principle of different separation techniques

CO3 Students will appreciate different aspects of food processing and cosmetics industry and the analysis

CO4 Students will get familiar with various thermal methods of analysis and various method validation parameters and their importance.



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**Practical's**

CO1 Students will get hands on practice of various techniques of quantitative estimation.

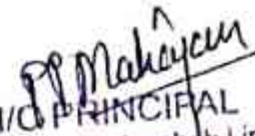
CO2 Students will get an opportunity to handle and understand principles of different instruments such as colorimeter, spectrophotometer, pH meter, flame photometer and turbidimeter

CO3 Students will come across with different types of samples such as cosmetics, polluted water, fertilizer, food, chemicals etc. and their analysis



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Year: -2022-2023

Department of Chemistry  
Course Outcomes

**Semester V**

**Course {Paper} Name and No.: Drugs & Dyes**

CO1 Describe the basic scientific concepts and principles that serve as the foundational underpinnings of the pharmacological sciences including pharmacokinetics; pharmacodynamics; drug metabolism; and drug-drug interactions; and explain how these fundamental pharmacological properties can influence route of administration, drug action; drug efficacy and potency; drug levels in the body; potential for drug interactions; drug toxicity; and the appropriate choice of drug for pharmacotherapy in a given patient.

CO2 Explain how to use drug-specific and patient-specific pharmacokinetic parameters to calculate the physiochemical properties that influence rates of drug disposition and clearance in the body, and how these parameters can be used to monitor, design and modify appropriate dosing regimens of drugs in specific patient populations.

CO3 Describe the process by which new drugs are discovered, developed, tested and finally approved by the Federal Drug Administration for use in the clinic.

CO4 List the major drugs and drug classes currently used in medical practice.

CO5 Describe the specific pharmacology of the major drugs and drug classes currently used in medical practice including their indications, contraindications, clinical use, mechanisms of action, physiological effects, pharmacokinetic properties, major adverse effects and clinically significant drug interactions; and apply this knowledge together with both disease specific and patient-specific factors to select the most appropriate medication(s) for the effective pharmacotherapy of a given disease or condition in a specific patient.

CO6 Recognize the currently accepted diagnostic criteria required to specifically diagnose disease and initiate drug therapy and the anticipated therapeutic goals likely to be achieved by therapeutic intervention for the most commonly encountered pathophysiological state(s) and/or disease mechanism(s), as well as any clinical testing requirements for monitoring drug effectiveness and potential toxicity.

CO7 Explain the physiological, pharmacological, and psychological effects of acute and chronic exposure of individuals to drugs of abuse, and describe the consequences of sudden withdrawal of such a drug from a drug dependent individual.

CO8 Describe the effective use of non-pharmacological therapeutic interventions in the treatment of specific diseases, conditions and symptoms.



## SES's

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CO9 Discuss the basic principles of toxicology; the mechanisms by which excess exposure to certain drugs, toxins, chemicals, heavy metals and poisons can lead to adverse toxicological effects; and the basic principles of clinically managing the poisoned patient.

CO10 Students will be able to describe the term addiction and explain various theories of causation.

CO11 Students will be able to Identify and describe different approaches used in the treatment of addictions.

CO12 Define the routes of administration, methods of ingestion, tolerance, withdrawal and interactions of these drugs with other psychoactive and non-psychoactive drugs.

CO13 Describe warning sign, symptoms, and the course of substance use disorders.

CO14 To familiarize the basic classification of drugs

CO15 To learn about the structure and synthesis of antibiotics

#### Practical's

CO1 Students can able to do the synthesis's of simple drugs i.e aspirin

CO2 Students can able to perform estimation of Ibuprofen.

CO3 Students can able to find out acid neutralizing capacity of antacid.

CO4 Students can able to do the separation of chlorophyll pigment.

CO5 Students able to do the dyeing of cotton.

CO6 Students can able to write monogram of any drug.

#### Semester VI

##### Course {Paper) Name and No.: Drugs & Dyes

CO1 Describe the basic scientific concepts and principles that serve as the foundational underpinnings of the pharmacological sciences including pharmacokinetics; pharmacodynamics; drug metabolism; and drug-drug interactions; and explain how these

fundamental pharmacological properties can influence route of administration, drug action; drug efficacy and potency; drug levels in the body; potential for drug interactions;

drug toxicity; and the appropriate choice of drug for pharmacotherapy

CO2 Explain how to use drug-specific and patient-specific pharmacokinetic parameters to calculate the physiochemical properties that influence rates of drug disposition and clearance in the body, and how these parameters can be used to monitor, design and modify appropriate dosing regimens of drugs in specific patient populations.

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CO3 Describe the process by which new drugs are discovered, developed, tested and finally approved by the Federal Drug Administration for use in the clinic.

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SES's


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**Practicals**

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Class: T.Y.B. Sc. Chemistry

Course (Paper) Name: Inorganic Chemistry

- CO1 describe molecular symmetry and concept of point group
- CO2 explain different types of point group with examples
- CO3 Appreciate importance of symmetry in chemistry
- CO4 Explain lattice energy and factors affecting lattice energy
- CO5 Assign the point group for given molecule
- CO6 Describe molecular orbital theory of heteronuclear diatomic molecules
- CO7 Compare homonuclear and heteronuclear diatomic molecules
- CO8 Understand application of molecular orbital theory to poly atomic species
- CO9 Explain important terms viz. crystal lattice, lattice point, unit cell and lattice constants;
- CO10 Explain seven basic crystal systems
- CO11 Explain closest packing of rigid spheres and different types of closest packing of rigid spheres
- CO12 Calculate the packing density of different types of cubic unit cells
- CO13 Describe the imperfections in solids and their effect on properties
- CO14 Explain consequences of frenkel and schottky defects and differentiate them; CO15 Explain the terms superconductivity, transition temperature and meissner effect; CO16 Explain different types of super conductors
- CO17 Give application of superconductors;

**Semester VI**

Course (Paper) Name and No.: Inorganic Chemistry

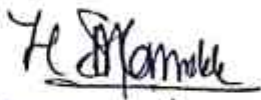
- CO1 Explain merits and Limitations of Valence Bond Theory.
- CO2 Explain the shapes of d- orbitals
- CO3 Explain the basic concepts of Crystal Field Theory
- CO4 Explain the Splitting of d orbitals in different geometries;
- CO5 Calculate Crystal field stabilization energy (CFSE), for octahedral complexes
- CO6 Describe Distortions from the octahedral geometry
- CO7 Crystal field splitting parameters  $\Delta$ : its calculation and factors affecting it in octahedral complexes, Spectrochemical series.
- CO8 Explain Consequences of crystal field splitting on various properties of metal complexes of the first transition series.
- CO9 Explain Limitations of CFT;

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- CO10 Explain Evidences for covalence in metal complexes
- CO11 Understand Molecular Orbital Theory for coordination compounds:
- CO12 Identify the central metal orbitals and their symmetry Suitable for formation of 6 bonds with ligand orbitals.
- CO13 Construct ligand group orbitals
- CO14 Construct- 6 molecular orbitals for an ML<sub>6</sub> complex
- CO15 Explain Effect of  $\pi$ -bonding on complexes
- CO16 Understand Thermodynamic and kinetic stabilities of metal complexes;
- CO17 Explain Stability constants: stepwise, overall stability constants, their interrelationship.
- CO18 Explain Factors affecting thermodynamic stability of complexes.
- CO19 Compare Inorganic and organic reactions
- CO20 Explain Types of reactions in metal complexes.
- CO21 Describe Inert and labile complexes;
- CO22 Correlate electronic configurations and stability of complexes.
- CO23 Explain Ligand substitution reactions considering Associative and Dissociative mechanisms.
- CO24 Explain Acid hydrolysis, base hydrolysis and anation reactions
- CO25 Describe origin of electronic spectra
- CO26 Describe the different types of electronic transitions in coordination compounds:
- CO27 Learn the Selection rules for electronic transitions.
- CO28 Appreciate rules for determination of ground state term.
- CO29 Determine Terms for p<sup>2</sup> and d<sup>1</sup> electronic configurations

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