



Progressive Education Society's  
**Modern College of Arts, Science and Commerce**  
Ganeshkind, Pune - 411 016



**SKILL**  
**Development**  
Courses

Progressive Education Society

Modern College, Ganeshkind, Pune 16



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M.S.M.N.A.M.S.

Chairman, Progressive Education Society



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Chairman, L MC  
Modern College, Pune - 16



**Prof. Shamkant Deshmukh**

Secretary, Progressive Education Society



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Dy. Secretary,  
Progressive Education Society  
Visitor  
Modern College, Pune - 16



**Dr. Sanjay Kharat**

Principal, Modern College, Ganeshkind Pune 16



# Infrastructure



# Modern Youth



## About us

### **Progressive Education Society : A Profile**

Progressive Education Society is one of the leading educational institutions in Maharashtra. It was founded by a dedicated and committed teacher Late Shankarrao Kanitkar along with his colleagues in 1934.

The Institution has evolved and made a mark in the arena of education all over Maharashtra due to the ceaseless efforts of the teaching and administrative staff and the foresight of the management. The Institutions run by P. E. Society are known for imparting quality education in their respective fields.

P. E. Society runs 56 educational institutions, which include Pre-Primary, Primary, Secondary, Higher Secondary Schools and General Education and Professional Colleges. The Institution has diversified into areas such as Law, Pharmacy, Management, Engineering, Special education, etc. Since 1985, P. E. Society has made rapid progress under the dynamic leadership of its Chairman Dr. G . R. Ekbote; a well known surgeon.

### **About Modern College, Ganeshkhind, Pune 16**

Progressive Education Society's Modern College of Arts, Science and Commerce, Ganeshkhind, Pune- 411 016 was established in 1992 in the vicinity of Savitribai Phule Pune University, with the objective of imparting quality education to students. It is permanently affiliated to the Savitribai Phule Pune University and offers various Under Graduate and Post Graduate courses. In a short span, the college has achieved laurels in academic as well as extra curricular activities.

The college has been successful in keeping pace with the changing educational scenario, by introducing new career oriented courses every year. It has firmly established itself as 'Modern' and 'Progressive'. The college has highly qualified and experienced teaching staff, who consistently strive for all round development of the students. In the academic year 2010-2011, NAAC reaccredited Modern College, Ganeshkhind with 'A' Grade. The college has obtained recognition under 2(F)12(B) of UGC, New Delhi. The college has achieved first position (Best College Category) awarded by Savitribai Phule Pune University for the year 2012-13. The college is now identified as DST-FIST sponsored college by DST. The college has been included in DBT - STAR College Scheme Sponsored by DBT.



# VISION

## Statement

We aspire to be recognized as a college of first choice for excellent and accessible higher education dedicated to serving its surrounding communities through intellectual, cultural, technological and professional contributions. We aim to be known as an institution whose members share a passion for teaching and learning, an abiding commitment to innovative findings through research and creative activity and maintain a strong sense of responsibility and accountability towards society and the nation at large.

# MISSION

## Statement



Our goal is to create and develop 'MODERN' youth as responsible citizens with multidimensional personalities by inculcating among students a blending of cultural awareness, compassionate and progressive attitude, scientific insights and time-tested traditional values.

## Skill Development Courses



Skill development is the process of identifying your skill gaps and developing and sharpening these skills. It is important because your skills determine your ability to execute your plans with success.

Skills and knowledge are the motivating forces of the financial growth and community development of any country. They have become even more important, given the increasing pace of globalization and technological changes.

India is among the "young" countries in the world, with the proportion of the work force in the age group of 15-59 years, growing steadily. However, present status shows only 2% of the total employees in India have undergone skills development. Skill development is one of the essential ingredients for India's future economic growth, as the country transforms into a diversified and internationally-competitive

economy. Skill development is going to be the defining element in India's growth story. Firstly, we need to re-define the relationship of education, employment and skills development. Secondly, as a very large population, India would never be able to upskill all of its youth across the country through the conventional education framework.

Skill building can be viewed as a device to improve the efficacy and contribution of labour to overall production. Skill building could also be seen as an instrument to empower the individual and improve their social acceptance. Employability of the growing young demography is an important factor in the economic development of the country and the crisis of skill development has to be turned into opportunity for growth,

The three dimensions of the reform of the higher education is the access, equity and quality. Access to higher

education is to expand the gross enrollment rate, which is still lower than many other countries. Equity is important as it is important to bring the vulnerable groups within the scope of higher education. Without quality, achieving quantitative targets, is counter-productive.

The college has teaching learning program which provides not only academic flexibility but also challenges in learning individual course subjects. We offer various traditional and professional under graduate and post graduate courses under Arts, Commerce and Science' faculty. Students with bright academic background also can avail

the research facility.

Self financing, value added courses and career oriented courses sanctioned by UGC equip our students with advanced knowledge and skill set strengthening the survival in real world. Every department of the college arranges co-curricular activities in innovative manner to gratify the learning process and enhance the knowledge of the respective subject. Faculty keenly tries to promote research and entrepreneur culture.

Additional support for the under privileged students is extended via remedial teaching, earn and learn scheme and counseling centre.

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## Key Features of skill development courses

- Thirty skill development courses developed under the faculties of Arts, Commerce and Science
- Designed to add value to conventional curriculum
- Designed to enrich skills for employability of the students
- Aligned with conventional course curriculum
- As per market demands /trends
- Maximum Practical oriented approach to impart skills
- Focus on soft skills development in addition to technical skill development in specific sector.
- Short term courses to give an impulse in the direction of vocational training as per the guidelines of NSQF
- Curriculum development in consultation with persons from local business establishments, agencies and enterprises

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"Academic Qualification + Employability skills = Career Prospects "

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# National Policy for Skill Development and Entrepreneurship

## Vision

“To create an ecosystem of empowerment by Skilling on a large Scale at Speed with high Standards and to promote a culture of innovation based entrepreneurship which can generate wealth and employment so as to ensure Sustainable livelihoods for all citizens in the country.”

## Mission

The mission is to-

- C**reate a demand for skilling across the country;
- C**orrect and align skilling with required competencies;
- C**onnect the supply of skilled human resources with sectoral demands;
- C**ertify and assess in alignment with global and national standards; and
- C**atalyse an ecosystem wherein productive and innovative entrepreneurship germinates, sustains and grows leading to creation of a more dynamic entrepreneurial economy and more formal wage employment

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**Eligibility criteria:** Students passed 10+2 examination with conventional schooling/vocational background.

**Payment of fees:** Students can pay the fees on Cash Counter of college Office.

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## Skill Development Courses

### ARTS

Sr. No.	Course Name	Course Co-ordinator Name	Course conducted by Dept.
1	Basics of Business Communication	Shampa Chakravorthy	English
2	Marathi D.T.P.	Dr. Sanskriti Awalgaonkar	Marathi
3	Skills in Psycho Social Counselling	Dr. Sadhana Natu	Psychology
4	Social Services and Welfare	Dr. Jyoti Gagangras	Sociology
5	Diversity Inequality & Public Policy	Dr. Jyoti Gagangras	Sociology
6	Blogging and CMS	Prof. Sangeeta Dhamdhere	Library
7	Travel and Tourism	Prof. Motial More	Geography
8	Finishing School	Prof. Shampa Charavorthy	English

### COMMERCE

Sr. No.	Course Name	Course Co-Ordinator Name	Course Conducted by Dept.
1	Transformation Course	Mrs. Sujata Dahiwal	Commerce
2	Computerised Financial Accounting Programme (Tally ERP 9)	Prof. Moreshwar	Commerce
3	E-Filing of Income Tax Returns	Prof. Moreshwar	Commerce
4	Enterpreneurship Development Programme	Prof. Sujata Deshmukh	Commerce



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## Skill Development Courses

### COMPUTER SCIENCE

Sr. No.	Course Name	Course Co-Ordinator Name	Course Conducted by Dept.
1	Making Bakery Products	Ms. Dipali Tamhane	Computer Science
2	Web Designing, Development and hoisting	Prof. Satish Ambike	Computer Science
3	Computer Networks	Prof. Sapkal Kumod	Computer Science

### SCIENCE

Sr. No.	Course Name	Course Co-Ordinator Name	Course Conducted by Dept.
1	Applied Zoology and Biobusiness	Dr. Shakera Inamdar	Zoology
2	Solar PV System Installation and Maintenance	Prof. Vaishali Salunke	Electronics
3	Printed Circuit Board Designing and Manufacturing	Prof. Vaishali Salunke	Electronics
4	Repairing and Maintenance of Electrical and Home Appliances	Prof. Abanave Chhaya	Physics
5	Repair and Maintenance of Mobile Cell	Prof. Deepak S.Kumbhar	Electronics

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## Skill Development Courses

### SCIENCE

Sr. No.	Course Name	Course Co-Ordinator Name	Course Conducted by Dept.
6	Quality Control in Laboratories and Industries	Prof. Gauri Bhagat	Microbiology
7	Mathematical Modelling in Life Sciences	Prof. Swati Kandharkar	Mathematics
8	Use of Scilab Software	Prof. Shamal Deshmukh	Mathematics
9	C-Programming	Prof. Jayashree Jain	Mathematics
10	Vedic Mathematics	Prof. Pratiba Pawar	Mathematics
11	Recent Trends in Biological Techniques	Dr. Shakera Inamdar	Zoology
12	Archeology and Organic Evolution	Prof. Varsha Joshi, Dr. Shakera Inamdar	Physics And Zoology
13	Diversity and Taxonomy with special reference to Entomofauna	Dr. Shakera Inamdar	Zoology
14	Research Methodology and Scientific Communication Skills	Dr. Ravinda Kshirsagar	Zoology
15	Natural Products Biotechnology	Dr. Vinay Kumar	Biotechnology

## Assessment for skill development courses

Student's competency for skill development course will be assessed by a person from allied field or by Industry/subject expert from specific field. A student will be assessed with two methods.

1. **Formative assessment** :- An internal assessment which involves monitoring of ongoing student learning. Students will be assessed on the basis of following parameters .
  - Regular course attendance.
  - Active participation in Lab./ hands on sessions.
  - Completion of assignments on time.
  
2. **Summative assessment**:- Students will be evaluated at the end of courses / course module. Any two of the following mechanisms can be followed assessment
  - Viva voice
  - Test
  - Mini project
  - Seminar

Each mechanisms will be evaluated in terms of grads .The grade points for separate grades of each mechanisms will be added together & converted into grade point average. Final grade will be decided from Grade point average.

The award of letter grades & grade points to the successful learners may be done as in tables below.

Marks	Grade	Grade points
80-100	O:Outstanding	10
70-79	A+:Excellent	9
60-69	A:very good	8
55-59	B+:good	7
50-54	B:above average	6
45-49	C:average	5
40-44	P:pass	4
0-39	F: fail AB: absent	0 0

Grade point Average	Grade
09.00-10.00	O
08.50-09.00	A+
07.50-08.40	A
06.50-07.49	B+
05.50-06.49	B
04.25-05.49	C
04.00-04.24	P
00.00-03.99	F
<p><b>Remark:</b> B + is equivalent to 55% marks and B is equivalent to 50% marks.</p>	



# ARTS

## 1. Basics of Business Communications

**Department Name :** English

**Duration of Course:** 1 1/2 Months

**Course Coordinator Name:** Shampa Chakravorthy

**Lecture**

Theory : 25

Practical : 24

### Syllabus :

Sr. No.	Name of Topic	No. of Lecture	No. of Practical
1	Communication – Nature and Scope	04	-
2	Types of Communication	04	04
3	Oral Communication	04	04
4	Written Communication	06	08
5	Non-Verbal Communication	03	04
6	Barriers in Communication	02	02
7	Para Linguistic Communication	02	02
	TOTAL	25	24

### Objectives :

#### Objective of Course

- Curriculum Enhancement
- Value Addition
- Employability
- Student Progression

#### Remarks / Scope

Enhances speaking and writing skills  
Improve linguistic competency  
Improve Job Prospectus  
Student will become more confident and competent in the job market

### Board of Studies :

- Shampa Chakravorthy
- Ujwala Barve
- Sandeep Sanap
- Jitendra Kumar

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## 2. Marathi D.T.P

Department Name : Marathi

Duration of Course: 2 Months

Course Coordinator Name: Dr. Sanskriti Awalgaonkar

Lecture

Theory : 20

Practical : 30

### Syllabus :

Sr. No.	Name of Topic	No. of Lecture	No. of Practical
1	Pagemaker	08	08
2	Desktop Publishing/Page Layout	04	04
3	Indian Script Manager	03	-
4	DTP Using Marathi Fonts	05	15
5	Project	-	3
	TOTAL	20	30

### Reference Books:

- Note For Computer Course by Shri Phadke , Utility Creation Rs. 200/-
- Fundamental of Computer Operating & Programming by Gokhale & Sharma

### Objectives :

- विविध स्पर्धा परीक्षांसाठी पात्रता पूर्ण करण्यासाठीचे महत्त्वाचे कौशल्य-मराठी टायपिंग.
- रोजगार निर्मितीसाठी.
- मराठी टायपिस्टची भासणारी कमतरता दूर करण्यासाठी.
- नवीन कौशल्य शिकून व्यक्तिमत्त्व विकसित करण्यासाठी.

### Board of Studies :

- Dr. Sanskriti Awalgaonkar
- Parag S Shah
- Dr. Savita J Sabnis
- Mr. Shayam Datal

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### 3. Skills in Psycho Social Counseling

**Department Name :** Psychology

**Duration of Course:** 2 Months

**Course Coordinator Name:** Dr. Sadhana Natu

**Lecture**

Theory : 12

Practical : 12

#### Syllabus :

Sr. No.	Name of Topic	No. of Lecture	No. of Practical
1	Mental Health Spectrum	02	02
2	Measurement of Psycho-Social Status	02	02
3	Human Rights of Persons With Psychological Disabilities	02	02
4	Basic Psycho Social Counselling	02	02
5	Advanced Psycho Social Counselling , Non Formal Care	02	02
6	Prevention, Promotion strategies in mental health care	02	02
	TOTAL	12	12

#### Reference Books:

- Handbook in counseling - Richard Nelson
- WHO Resource book for mental health care
- Counselling Psychology – Charles Gelso

#### Objectives :

Objective of Course	Remarks/Scope
• Curriculum Enhancement	Enhances and hands on skills
• Value Addition	Context Exposure
• Employability	Employment in Various Sectors
• Feedback Received from stake-holders	Felt need of Students, NGO Partnership
• Innovative	Combines theory, rights and practical
• Best Practices	Academician, Practitioner, NGO partnership
• Student Progression	Useful in MA, Research

**Board of Studies :**

- Dr. Sadhana Natu
- Dr. Bhargavi Davar
- Dr. Suvarna Bobade

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## 4. Social Services and Welfare

**Department Name :** Sociology

**Duration of Course:** 3 Months

**Course Coordinator Name:** Dr. Jyoti Gagangras

**Lecture**

Theory : 30

### Syllabus :

Sr. No.	Name of Topic	No. of Lecture
1	Introduction to Social Welfare	03
2	Social Welfare and Administration	03
3	Methods in Social Work	10
4	Empowering through Services	10
5	Role of NGO's	02
6	Job Oppurtunities	02
	TOTAL	30

### Reference Books:

- Social Welfare and Social Work related books are available in Central Library

### Objectives :

- | Objective of Course      | Remarks/Scope                                 |
|--------------------------|---|
| • Curriculum Enhancement | Curriculum Design                             |
| • Value Addition         | Respect and accepting Human being             |
| • Employability          | Work with Individual , NGO's and communities. |
| • Student Progression    | Helpful for student progression               |

### Board of Studies :

- Dr. Jyoti Gagangras
- Dr. Salma Aziz
- Rajkumar Gandhale
- Ajit Padwal

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## 5. Diversity, Inequality & Public Policy

**Department Name :** Sociology

**Duration of Course:** 3 Months

**Course Coordinator Name:** Dr. Jyoti Gagangras

**Lecture**

Theory : 20

Practical : 10

**Syllabus :**

Sr. No.	Name of Topic	No. of Lecture	No. of Practical
1	Gender and Age Diversity	05	-
2	Gender Inequality	05	-
3	Global Issues and Social Change	05	-
4	Public Administration	05	-
5	Visits to NGO's & Institutes	30 Hours	10
	TOTAL	20	10

**Reference Books:**

- Related to subject on Gender studies, Social security, Urban Sociology. Books are available in Central Library & Department

**Objectives :**

Objective of Course	Remarks/Scope
• Curriculum Enhancement	Gender Sensitization
• Value Addition	Course Added Value Education
• Employability	Employability in Government Sector and NGO's
• Feedback Received from stake-holders	Students demand for the course
• Innovative	Uncommon subject hence innovative
• Best Practices	Best practices in Department

**Board of Studies :**

- Dr. Jyoti Gagangras
- Vandana Palsane
- Dr. Megha Deshpande
- Ajit Padwal

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## 6. Blogging and CMS

**Department Name :** Library

**Duration of Course:** 3 Months

**Course Coordinator Name:** Prof. Sangeeta Dhamdhare

### Syllabus :

Sr. No.	Name of Topic	No. of Lecture	No. of Practical
1	Introduction to CMS and Blogging	3	0
2	Open Source Tools and Softwares	1	1
3	Drupal	2	3
4	Jhoomla	2	3
5	Wordpress	2	4
6	Google Blog	2	4
7	Applications, Scope and Opportunities	3	0
	Total	15	15

### Reference Books:

- Learning from libraries that use wordpress: Content Management System best practices and case studies by Kyle M, L. Jones and Polly-Alida Farrington
- Drupal 8 for Absolute Beginners by James Barnett

### Objectives :

- To educate students about how web and web content management system works.
- To make students aware about CMS and blogging open source softwares available to the students.
- To help students to create their weblog, website and get placement in website, blogging and content writing, web content management field.

### Board of Studies :

- Prof. Sangeeta N Dhamdhare
- Mr. Sanjay Vamja, Mr. Manoj Agarwal
- Preeti Deshmukh, Sangeeta Dhamdhare

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## 7. Travel and Tourism

**Department Name :** Geography

**Duration of Course:** 3 Months

**Course Coordinator Name:** Prof. Motilal More

### Syllabus :

Sr. No.	Topic	Lecture
1.	Introduction to Travel and Tourism	2
2.	Nature and Scope of Tourism	4
3.	Classification of Tourism	4
4.	Factors Affecting Travel and Tourism	5
5.	Transportation and Communication	3
6.	Travelling and Accommodation	4
7.	Tour Planning	5
8.	Case Studies of Tourist Centres	3
	Total	30

### Reference Books:

- S.N. Singh: Geography of Tourism and Recreation.
- Manoj Das: India: A Tourist Paradise.
- Maneer Kumar : Tourism today: An Indian Perspective.
- Seth P.N. : Successful Tourism Management
- Gupta V.K. : Tourism of India
- Lonely Planet India
- Shinde S.B. : Geography of Tourism
- Dixit N.K. : tourism Geography
- Robinson H. : A Geography of Tourism
- Smith S.L.J: Tourism Analysis

**Objectives :**

- To acquaint the student's basic concepts of Geography & Tourism.
- To aware the students with utility and application of Tourism.
- To help the students & society to understand the interrelationship between tourism and employment generation opportunities.
- To understand the impact of tourism on physical and human environments.

**Board of Studies :**

- Dr. Sanjay Patil
- Prof. Motilal More
- Shubhada Joshi
- Dr. B.C.Vaidya
- Prof. Amol Desai
- Dr. Vileena Inamdar

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## 8. Finishing School

**Department Name :** English

**Duration of Course:** 1 1/2 Months

**Course Coordinator Name:** Prof. Shampa Chakravarthy

### Syllabus :

Sr. No.	Name of Topic	No of Lectures	No of Practicals
1	Better English for Professional Success	8	7
2	Be a Commanding Communicator	8	12
3	Personal and Professional Excellence	6	4

### Reference Books:

- The Ace of Soft Skills: Attitude, Communication & Etiquette for Success, Gopalswamy Ramesh & Mahadevan Ramesh, Pearson Publication: New Delhi, 2012
- Professional Communication, M. Ashraf Rizvi, Tata McGraw-Hill; New Delhi, 2006
- Technical Communication: Principles and Practice II Edition. Meenakshi Raman & Sangeeta Sharma; Oxford University Press, New Delhi; 2011
- Essentials of Business Communication, Rajendra Pal, Sultan Chand & Sons, New Delhi, 2001

### Objectives :

#### Objective of the course

- | Objective of the course                 | Remark                                      |
|---|---|
| • Curriculum Enhancement :              | Address the gap between campus to corporate |
| • Value Addition :                      | Accelerate career prospects and goals       |
| • Employability :                       | Enhance employability skills                |
| • Feedback received from stakeholders : | Intense need for soft skills                |
| • Innovative:                           | Raise the bar and set new benchmarks        |
| • Best practices :                      | Impact on employability                     |
| • Student Progression:                  | Improve professional competency             |

**Board of Studies :** 

- Shampa Chakravarthy
- Prof. Atul Patil
- Sandeep Sanap
- Jitender Kumar Rawat

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# COMMERCE

## 1. Transformation Course

**Department Name :** Commerce

**Lecture**

**Duration of Course:** 3 Months

Theory : 45

**Course Coordinator Name:** Mrs. Sujata Shirish Dahiwal

**Syllabus :**

Sr. No.	Name of Topic	No. of Lecture
1	Pranayam/Yoga/Meditation	05
2	General Knowledge	06
3	Anatomy	05
4	Beauty Tips	05
5	Health Nutrition and Hygiene	06
6	Soft Skills (Professional Skills)	06
7	Grooming /Mock Interview	06
8	Time and stress Management	06
	TOTAL	45

**Reference Books:**

- Timeless Beauty by Christie Binkley
- The Original beauty bible by Paula Begoun

**Objectives :**

- To bring change in the personality of female students to suit to the requirement of corporate work.
- To ensure women empowerment.
- To impart the valuable inputs in collaboration with eminent experts of industry.

**Board of Studies :**

- Mrs. Shubhangi Joshi
- Mrs. Leena Khandekar
- Mrs. VijayLaxmi Kulkarni
- Mrs. Sujata Dahiwal

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## 2. Computerised Financial Accounting Programme (Tally ERP 9)

**Department Name :** Commerce

**Duration of Course:** 3 Months

**Course Coordinator Name:** Prof. Moreshwar

**Lecture**

Theory : 18

Practical : 34

### Syllabus :

Sr.No.	Name of Topic	No. of Lecture	No. of Practical
1	Basics of Accounting	02	02
2	Accounting for Service Organisation	02	08
3	Accounting with Inventory	02	04
4	Accounting for VAT	04	08
5	Accounting for TDS	04	04
6	Accounting for Excise	02	04
7	Payroll – Accounting	02	04
	TOTAL	18	34

### Reference Books:

- Tally ERP 9
- Guidance note on VAT, TDS, Excise

### Objectives :

- Enhance self employment

### Board of Studies :

- Mrs. Shubhangi Joshi
- CA Amit Desai / CA D.P. Mule
- Prof Moreshwar Y Meashi

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### 3. E-Filing of Income Tax Returns

**Department Name :** Commerce

**Duration of Course:** 2 Weeks

**Course Coordinator Name:** Prof. Moreshwar

**Lecture**

Theory : 12

Practical : 12

#### Syllabus :

Sr. No.	Name of Topic	No. of Lecture	No. of Practical
1	Various Provisions of E-Filing	02	02
2	ITR -1	01	01
3	ITR -2	01	01
4	ITR -3	01	01
5	ITR-4	03	03
6	ITR – 5,6,7	04	04
	TOTAL	12	12

#### Reference Books:

- Income Tax – Students Guide to Income Tax by Taxman Publications – Vinod Singhania
- E-Filing of Income Tax Return – Taxman Publication
- Income Tax Software – Taxbase
- Income Tax Department – Software

#### Objectives :

- Create platform for higher classes
- Groom the Students to work as Tax Consultant

#### Board of Studies :

- Mrs. Shubhangi Joshi
- CA Amit Desai / CA D.P. Mule
- Prof Moreshwar Y Meashi

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## 4. Entrepreneurship Development Programme

**Department Name :** Commerce

**Duration of Course:** 2 Months

**Course Coordinator Name:** Prof. Sujata Deshmukh

**Lecture**

Theory : 30

**Syllabus :**

Sr. No.	Name of Topic	No. of Lecture
1	Introduction, Qualities, motivation	02
2	Business Opportunity Guidance	04
3	Market Survey Process of Starting Business	04
4	Feasibility Study, Project Report Preparation	04
5	Marketing Basics, Management Concepts	04
6	Support Agencies and Documents Required	04
7	Success Stories , Visits 8	08
	TOTAL	30

**Reference Books:**

- Dynamics of Enterprenership by Dr. Vasant Desai
- Stay Hungry Stay Foolish by Dr. Rashmi Bonsai

**Objectives :**

- To make students aware about entrepreneurship as a career.
- To make students aware of support system to start their career as entrepreneur.
- To present them few role model in entrepreneurship.

**Board of Studies :**

- Mrs. Shubhangi Joshi
- Dr. Datta Deshkar
- Prof Manjusha Kulkarni
- Mr. Kiran Desai

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# COMPUTER SCIENCE

## 1. Making Bakery Products

**Department Name :** Computer Science

**Duration of Course:** 2 Months

**Course Coordinator Name:** Ms. Dipali Tamhane

**Lecture**

Theory : 30

### Syllabus :

Sr. No.	Name of Topic	No of Lecture	No. of Practical
1	Introduction - Definition of the term Bakery. Raw material used in the preparation of baked products. Classification - essential and optional Ingredients. Bakery equipment in brief. Different types of oven - Their use care & maintenance.	2	1
2	Biscuit making and other flour & sugar confectionery items.	2	3
3	Cakes - Elements in Cake Making, Role of each Element in Cake Making, Methods of Cake Making, Recipes for Basic Cakes, Faults in Cake Making, Recipe Balancing. Different types, methods, fault correction remedies.	2	4
4	Cake decoration - different types of icing.	2	3
5	Bread Preparation - Importance of choosing the right Ingredients, quality and quantity. Essential and optional ingredients. Role of each ingredient. Bread - Method of mixing, baking, time and temperature.	2	3
6	Cookies Ingredients used, Method	1	2
7	Muffins Ingredients used, Method	1	2
	Total	12	18

**Reference Books:**

- The New Royal Cook Book by Royal Baking Powder Co.
- "On Cooking," 5th Edition, Labensky, Hause, and Martel
- "Foods Today," Kowaltuk

**Objectives :****Objective of the course****Remark**

- Curriculum Enhancement  
To acquire the knowledge of the terms, facts, concepts and principles required for cooking. To develop an understanding of the basic methods of cooking. Matches with food industry demands.
- Value Addition  
Production of food products Setup, breakdown and prepare menu items in a commercial kitchen.
- Employability  
Encourages entrepreneurship with job opportunities.
- Feedback received from stakeholders  
Mostly preferred products at all age levels.
- Innovative  
Produce food products within the time parameters designated by a course objective within a class or for hands-on cooking or baking practical.
- Best practices  
Cook different varieties of bakery products.
- Student Progression  
Provides skill & employment.

**Board of Studies :**

- Dr. Bhatambrekar S. S.
- Mrs. Jyoti Bora
- Mrs. Monica Deshmane , Mrs. Ranjana Shevkar, Mrs. Dipali Meher
- Ms. Aarti Jagtap

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## 2. Web Designing, Development and Hoisting

**Department Name :** Computer Science

**Duration of Course:** 30 Hours

**Course Coordinator Name:** Prof : Satish Ambike

**Lecture**

Theory : 15

Practical : 16

### Syllabus :

Sr. No.	Name of Topic	No of Lecture	No of Practical
1	HTML HTML documents are described by HTML tags. Each HTML tag describes different document content.	2	3
2	HTML CSS Learn how to use HTML and C55 to make web pages. HTML is the markup language that you surround content with, to tell browsers about headings, lists, tables.	3	3
3	Java Script and PHP How to pass variables and arrays from PHP to Java5cript, both with and without the use of JSON.	9	4
4	Database MySQL My5QL Create Database - Learn My5QL from basic to advanced covering database programing clauses command functions administration queries and more	5	4
5	Hosting and Creating Domain Register a domain name and transfer domoins. Reliable web hosting and VPS. Powerful website	1	2
	Total	20	16

### Reference Books:

- HTML & CSS 5.0 Complete References, Thomas Powell
- Creating Your Own Web Pages, 2nd Ed. Andy Shafran
- Beginning PHP 5 and Mysql E-Commen:e: Cristian Daire
- Practical Web Services for Beginners:
- Learning Web Design 4th Edition: Jennifer Niederst Robbins
- Web Design with HTML, CSS, JavaScript and jQuery Set Hardcover: Jon Duckett

**Objectives :**

**Objective of the course**

- Curriculum Enhancement
- Value Addition
- Employability
- Feedback received from stakeholders
- Innovative
- Best practices
- Student Progression

**Remark**

It strengthens the present curriculum & improves the technical skills there by meeting Industry needs

(Add on) Certificate course to improve technical skill

To gain employment and be successful in their chosen occupations which benefits themselves in workplace and business

Need of Cyber world

Course encourages new ideas or methods

Subject understanding in a variety of ways which increases Self Confidence

Helps in improving Learning needs and abilities

**Board of Studies :**

- Dr. Bhatambrekar S. S.
- Mr. Parag Gaykar
- Mrs. Meenal Jabde
- Mr. Rohit Patil

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### 3. Computer Networks

**Department Name :** Computer Science

**Duration of Course:** 30 Hours

**Course Coordinator Name:** Prof. : Sapkal Kumod

**Lecture**

Theory : 18

Practical : 13

**Syllabus :**

Sr. No.	Name of Topic	No of Lectures	No of Practicals
1	Introduction to Networking	01	
2	Network Topologies & Technologies	01	01
3	Media Standards and Network Theory	01	01
4	Types of Cables	01	01
5	Cable Crimping	01	01
6	Network Components	02	02
7	Demonstration & Lab	01	01
8	MAC and IP addressing	02	01
9	WAN Technologies & Remote Access	01	01
10	Firewalls, Proxy Servers + Lab	01	01
11	TCP/IP Trouble shooting Utilities + Lab	02	01
12	Network Troubleshooting	02	01
13	Router Introduction & configuration	02	02
	TOTAL	18	13

**Reference Books:**

- N+ by Todd Lammler
- Computer Networks by TANENBAUM
- Computer Networks and TCP/IP by Black

**Objectives :** \_\_\_\_\_

<b>Objective of the course</b>	<b>Remark</b>
• Curriculum Enhancement	Matches with industry demands.
• Value Addition	Add on Certificate Course
• Employability	Self Employment Course
• Feedback received from stakeholders	Need of Cyber World
• Innovative	Creativity and Motivation
• Best practices	Self Confidence
• Student Progression	Provides skill & employment.

**Board of Studies :** \_\_\_\_\_

- Dr. Bhatambrekar S. S.
- Mr. Dilip Pawar
- Mr. Vedant Mule
- Mr. Rohit Mali

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# SCIENCE

## 1. Applied Zoology & Biobusiness

**Department Name :** Zoology

**Duration of Course:** 3 Months

**Course Coordinator Name:** Prof. : Dr. Shakera Inamdar

**Lecture**

Theory : 15

Practical : 15

### Syllabus :

Sr. No.	Name of the Topic	No. of Lecture	No of Practicals
1.	Vermiculture	03	03
1.1	Habit, habitat and species of Earthworm		
1.2	Anatomy of Digestive system of Earthworm and mechanism of Composting		
1.3	Composition of vermicompost and significance of composting		
2.	Apiculture	03	06
2.1	Habit, Habitat and Nesting Behavior of Honey Bee		
2.2	Life cycle, Colony organization and Division of Labor		
2.3	Honey bee products and Bee keeping equipments		
3.	Fishery	03	06
3.1	Habit, habitat and culture methods of fishes		
3.2	Fishery byproducts		
3.3	Fish Harvesting methods		
4.	Sericulture	03	09
4.1	Introduction, species and Distribution of Silkworm		
4.2	External morphology and life cycle of Bombyx mori.		
4.3	Cultivation and harvesting of mulberry		



**Syllabus :**

Sr. No.	Name of the Topic	No. of Lecture	No of Practicals
5.	Agricultural pest and their control	03	06
5.1	Introduction to pests		
5.2	Major insect pests of Agricultural importance		
5.3	Non insect pests		
	Total no. of lectures=	15	30

**Reference Books:**

- Invertebrate Zoology, 1982, R.D. Barnes, Saunders College, Philadelphia
- Textbook of Zoology, Invertebrates Vol-II, 1992, T.J. Parker and W.A. Haswel, Edited by Marshall and Williams, CBS publications and distribution, New Delhi.
- Modern Textbook of Zoology, Invertebrates. 6th edition, 1992, R.L. Kotpal, Rastogi Publications, Meerut.

**Objectives :**

- To acquire the knowledge of business organization, Self employment of the students.
- To impart the knowledge of self employment management
- To acquaint the students with technical knowledge of self employment.
- To develop the personality of the student in self employment and business organization.
- Prepare the students for entrepreneurship development.

**Board of Studies :**

- Dr. S.A. Inamdar
- Dr. Narke
- Mr. Gound Kishor
- Mr. Saurabh Kalambkar

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## 2. Solar Photo-Voltaic system Installation and Maintenance

**Department Name :** Electronics

**Duration of Course:** 3 Months

**Course Coordinator Name:** Mrs. Salunke Vaishali

**Lecture**

Theory : 10

Practical : 20

### Syllabus :

Sr. No.	Name of Topic	No. of Lectures	No. of Practicals
1	Introduction to Renewable energy & Photo voltaics Basics of Solar Photo Voltaic (PV) System	2	2
2	Site analysis, load calculation Find PV System Requirement	5	10
3	Solar PV System Installation	2	5
4	Solar PV System maintenance & safety	1	3
	Total	10	20

### Reference Books:

- Solar Electricity Handbook - 2015 Edition: A simple, practical guide to solar energy - designing and installing solar PV systems.
- A Practical Guide for Total Engineering of MW capacity Solar PV Power Project
- Solar Panel Installation Guide & User Manual (India) With All Glossary On CD
- Grid-connected Solar Electric Systems: The Earthscan Expert Handbook for Planning, Design and Installation
- Solar Panel Installation Guide & User Manual (Indian Edition) (E-Book)

**Objectives :**

<b>Objective of the course</b>	<b>Remark</b>
<ul style="list-style-type: none"><li>• Curriculum Enhancement</li></ul>	Add - on Course
<ul style="list-style-type: none"><li>• Value Addition</li></ul>	Awareness about use of Renewable source of energy: Solar energy, technical details to PV system installation.
<ul style="list-style-type: none"><li>• Employability</li></ul>	Self-Employment
<ul style="list-style-type: none"><li>• Feedback received from stakeholders</li></ul>	Positive feedback from students who attended related workshop conducted by Department
<ul style="list-style-type: none"><li>• Innovative</li></ul>	Customization of design as per requirement.
<ul style="list-style-type: none"><li>• Best practices</li></ul>	To inculcate the importance of renewable source of energy among students and Initiative to produce skilled workforce for the use of Solar energy for various applications.
7 Student Progression	Provides Skill and Self employment, Technical knowledge enhancement

**Board of Studies :**

- Mrs. Varsha Joshi
- Mr. Sharad Pustake, Advisor Cleantech and Energy, SPPU, Pune
- Mr. Kumbhar D. S.
- Mrs. Mrunalini P. Bhadane
- Mr. Vinayak Raut

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### 3. Printed Circuit Board Designing and Manufacturing

**Department Name :** Electronics

**Lecture :** Theory – 10

**Duration of Course:** 30 Hours

Practical : 20

**Course Coordinator Name:** Mrs. Vaishali Salunke

#### Syllabus :

Sr.No.	Name of Topic	No. of Lectures	No. of Practical hours
1	Basic Component of Electronic Circuit	3	3
2	Introduction to PCB designing Software for prototype	1	2
3	PCB designing	5	10
4	Introduction to steps involved in PCB manufacturing process	1	5
5	Component assembly & testing		
	Total	10	20

#### Reference Books:

- The Art of PCB Reverse Engineering: Unravelling the Beauty of the Original Design
- Make your own PCBs with EAGLE by **Simon Monk**
- Practical Guide to the Packaging of Electronics by **Ali Jamnia**
- Designing Circuit boards with Eagle by **Mathew Scarpino**
- Printed Circuit Boards I PCB Designers Reference by **Chris Robertson**

#### Objectives :

##### Objective of the course

- Curriculum Enhancement
- Value Addition
- Employability
- Feedback received from stakeholders
- Innovative
- Best practices
- Student Progression

##### Remark

(Add on) Certificate course  
 PCB designing Skill  
 Promote self employment  
 Positive with suggestion to improve designing practices  
 Creativity in PCB designing  
 Develop PCB designing and manufacturing skills  
 Provides Skill and employment

**Board of Studies :**

- Mrs. Varsha Joshi
- Mr. Sandip Agashe, Owner, Sandeep Agency
- Mrs. Bapat Varsha M.
- Mrs. Pathakji Pradhnya B.
- Mr. Prasad Pashankar

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## 4. Repairing and Maintenance of Electrical and Home Appliance

**Department Name :** Physics

**Lecture :** Theory – 10

**Duration of Course:** 30 Hours

Practical : 20

**Course Coordinator Name:** Mrs. Abnave Chhaya

### Syllabus :

Sr. No.	Name of Topic	No of Lecture	No of Practical
1	Fundamental study	2	3
2	Earthling concept	1	1
3	Basics of Electricity	2	3
4	Lamps ,Electric Iron, Heater, Mixer, Electric Geyser, Electric Bells and Buzzers, Fan & their types	3	10
5	Hand Tools	2	3
	Total	10	20

### Reference Books:

- Electrician- Prakash Shah
- Electricity- Prakash Shah
- Maintenance and Repairing of Electrical equipment- Prakash Shah home appliances service manual

### Objectives :

#### Objective of the course

- Curriculum Enhancement
- Value Addition
- Employability
- Feedback received from stakeholders
- Innovative
- Best practices
- Student Progression

#### Remark

Application of theoretical study  
 (Add on) Certificate course  
 Self Employment course  
 Need of Maintenance of Home Appliances  
 Creativity and Motivation for self-Employment  
 Developing working skill  
 Provides Skill and employment



**Board of Studies :**

- Mrs. Varsha Joshi
- Mr. Sanjay Sawant, Electrician Trade Instructor, Govt. ITI, Aundh
- Mr. Mahendra Waghmare
- Mrs. Archana Gadre
- Mr. Santosh Ganage

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## 5. Repairing and Maintenance of Mobile Cell

**Department Name :** Electronics

**Duration of Course:** 30 Hours

**Course Coordinator Name:** Mr. Deepak S Kumbhar

**Lecture**

Theory : 10

Practical : 20

### Syllabus :

Sr. No.	Name of Topic	No.of Lectures	No.of Practicals
1	Introduction, Types Of Mobile Phones, Potential Hazards Associated With Mobile Phone Repair.	2	2
2	Mobile Phone Repair Tools, Disassembling And Assembling a Mobile Cell Phone,	2	5
3	Diagnosing And Repairing Mobile Phone Faults	5	10
4	Repair Of Common Mobile Phone Faults	1	3
	Total	10	20

### Reference Books:

- The Cell Phone Handbook 2nd edition By P.J. Stetz, Penelope Stetz
- Smartphone Troubleshooting & Repair by Mr. Victor Emeka
- Shashilata D. 2012.mobile-phone-repairing-tools-equipment-tools-to-repair-mobile-cell-phone.html. [ONLINE] Available at: <http://www.mobilecellphonerepairing.com>. [Accessed 05 February 15].
- Service manuals, Schematics. 2010. Service manuals, Schematics> Mobile Phones> Nokia. [ONLINE] Available at: <http://www.s-manuals.com/phone/nokia>. [Accessed 05 February 15].
- Phone Repair Tutorials.2011.Free Cell Phone Repair Tutorials [ONLINE] Available at: <http://celiphonerepairtutorials.blogspot.com>. [Accessed 05 February 15].

**Objectives :** \_\_\_\_\_

<b>Objective of the course</b>	<b>Remark</b>
• Curriculum Enhancement	(Add on) Certificate course
• Value Addition	Technical Skill development in the applied area
• Employability	Self-Employment
• Feedback received from stakeholders	Positive feedback
• Innovative	Customization of design as per requirement.
• Best practices	To promote the self employment in cutting edge technologies.
• Student Progression	Provides Skill and employment

**Board of Studies :** \_\_\_\_\_

- Mrs. Varsha Joshi
- Ms. Arati Hullyalkar
- Mrs. Valishali S. Salunke
- Mrs. Mrunalini P. Bhadane
- Mr. Vinayak Raut

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## 6. Quality Control In Laboratories & Industries

**Department Name :** Microbiology

**Lecture :** Theory – 14

**Duration of Course:** 30 Hours

**Practical :** 16

**Course Coordinator Name:** Mrs. Gauri Bhagat

**Syllabus :**

Sr.No.	Name of Topic	No. of Lectures	No. of Practicals
1	What is Quality Control	04	-
2	Sample Collection, Processing & Prepration	02	04
3	Sample Analysis – a) Reagenta Prepration b) Equipments c) Data generation & Processing	02	04
4	Results, Interpretation & Reporting	02	02
5	Reporting	02	02
	TOTAL	14	16

**Objectives :**

- The course improves applied aspects and practical skills of the students.
- Independent thinking boosts confidence giving them advantage at the time of employment as fresher .
- The course will inculcate the habit of innovative and independent thinking and develop best practices of time management and entrepreneur qualities.

**Board of Studies :**

1. Mrs.Sneha Ogale
2. Mr. Mihir Thatte
3. Mrs. Gauri Bhagat

## 7. Mathematical Modeling in Life Sciences

**Department Name :** Mathematics

**Duration of Course:** 2 months

**Course Coordinator Name:** Mrs. Swati Kandharkar

**Syllabus :**

Sr.No.	Name of Topic	No. of Lectures	No. of Practicals
1	Basic of Biological Process. Examples	30	15

**Objectives :**

**Remark**

- To understand Mathematical Application in Various Biological Process
- Modelling & Biological process

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**Board of Study :**

- Mrs. Swati Kandharkar

## 8. Use of Scilab Software

**Department Name :** Mathematics

**Duration of Course:** 3 weeks

**Course Coordinator Name:** Mrs. Shamal Deshmukh

**Syllabus :**

Sr.No.	Name of Topic	No. of Lectures	No. of Practicals
1	Basic of commands, Graphs using Scilab, Matrices, Complex Numbers, Solution of a Linear System. Basic programming	12	07

**Reference Books:**

- Introduction to Scilab - Miches Baud in
- Introduction to Scilab - Peter Urban

**Objectives :**

**Objective of the course**

- Objectives of the course
- Value Addition
- Employability

**Remark**

To understand on open source software to students  
To enable student to solve mathematical problems using software  
To teach them basic programming

**Board of Studies :**

- Mrs. Shamal Deshmukh
- Ms. Manisha
- Bhaskarancharya Prathisthan

## 9. C - Programming

**Department Name :** Mathematics

**Duration of Course:** 2 Months

**Course Coordinator Name:** Mrs. Jayshree Jain

**Syllabus :**

Sr. No.	Name of Topic	No. of Lectures	No. of Practicals
1	Basic of C language commands functions. Loops, Nested loop Arrays		

**Reference Books:**

- Let's C by Y. Kanitkar
- Introduction to C-Programming - Balguru Swami

**Objectives :**

**Objective of the course**

- Curriculum enhancement
- Value Addition

**Remark**

To know C language  
Programming skill

**Board of Studies :**

- Mrs. Jayshree Jain
- Mr. Nilesh Arote

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## 10. Vedic Mathematics

**Department Name :** Mathematics

**Duration of Course:** 1 Months

**Course Coordinator Name:** Mrs. Pratibha Pawar

**Syllabus :**

Sr.No.	Name of Topic	No. of Lectures	No. of Practicals
1	Basic operations Vedic sutras example	20	16

**Objectives :**

**Objective of the course**

- Curriculum enhancement
- Value Addition
- Employability

**Remark**

To understand basic Mathematical operations  
Improve, Fast computation skills required in competitive examinations  
Useful to all students

**Board of Studies :**

- Mrs. Pratibha Pawar

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# 11. Recent Trends in Biological Technologies

**Department Name :** Zoology

**Duration of Course:** 3 Months

**Course Coordinator Name:** Mrs. T.A. Kale

**Lecture**

Theory : 16

Practical : 29

## Syllabus :

Sr. No.	Topic No.	Name of topics and sub- topics	Theory	Practical
1.	1.1	Introduction to techniques	03	03
	1.2	Lab Equipments		
2.		Microscopy	03	03
	2.1	Camera Lucida, Dissecting and Compound Microscope		
	2.2	Binocular Microscope		
	2.3	Others		
3.		Microtechniques .	04	06
	3.1	Tissue collection and fixation		
	3.2	Trimming, Processing and Block making		
	3.3	Slide preparation and Staining		
	3.4	Stains		
4.		Hematology	03	06
	4.1	Hemoglobin, Blood group		
	4.2	RBC and WBC Count		
	4.3	Blood pressure, Bleeding and Clotting time		

**Syllabus :**

Sr. No.	Topic No.	Name of topics and sub- topics	Theory	Practical
5.		DNA	02	06
	5.1	Quantification		
	5.2	Isolation		
6.		Collection and Preservation of Insects	01	02
		Total	16	26

**Reference Books:**

- Light microscope in Biology: a practical approach 1999, Alan Lacey, oxford university press.
- Text book of Histology Roland lesson DL.WB Saunder Company, Tokyo
- Wilson and Walker, 4th edition, 2012, Oxford university press Practicals in biology, Plummer, 1999.

**Objectives :**

- To acquire knowledge and application of the recent instruments.
- To develop scientific temperament in students.
- To grow entrepreneurship among the students.
- To impart knowledge for acquiring job opportunities

**Board of Studies :**

- Dr. S. A Inamdar
- Dr. Narke
- Dr. Narke
- Dr. B. B. Nath
- Dr. S. S. Kharat
- Dr. N. A. Patil
- Mrs. T.A. Kale
- Dr. R. V. Kshirsagar
- Ratna M. Pal

## 12. Archeology and Organic Evolution

**Department Name :** Physics and Zoology

**Lecture**

**Duration of Course:** 45 hours

Theory : 21

**Course Coordinator Name:** Mrs. Varsha Joshi, Dr. Shakera Inamdar Practical : 24

### Syllabus :

Sr.No.	Name of Topic	No of Lecture	No of Practical
1	Fundamental study of Archeology	3	3
2	Organic Evolution	4	6
3	Calculations and predications	3	6
4	National and International scenario on archeology excavations	5	-
5	Audio Visual sessions	-	3
6	Antiquity of man-Evolution of anthropoids including man, Zoo Geographical realms with reference to Fauna	3	6
	Total	18	24

### Reference Books:

- Organic evolution - Richard Swann Lull
- Evolutionary Biology- Mohan P Arora
- Evolution- P.K.Gupta
- Encyclopedia of Earth and Physical Sciences- Vol. 10 by Marshal Cavendish
- Aitken, M.J. (1990). Science-based Dating in Archaeology. London: Longman
- Bowman, Sheridan (1995) [1990]. Radiocarbon Dating. London: British Museum Press



## 14. Diversity and Taxonomy with special reference to Entomofauna

**Department Name :** Zoology

**Duration of Course:** 3 Months

**Course Coordinator Name:** Dr. Shakera Inamdar

**Lecture**

Theory : 15

Practical : 15

### Syllabus :

Sr. No.	Name of topics	Theory	Practical
1	Introduction to Insect Orders	3	3
2	Medical Entomology	3	3
3	Economic Entomology	3	3
4	Agricultural Pest and their management	3	3
5	Social Insect	3	3
Total		15	15

### Reference Books:

- Imms' Text book of Entomology- By O. W. Richards and R. G. Davies, (Methuen & Co., London, ), Vols. I & II.
- The Insect: Structure & Function- By R.F. Chapman (E. L.B.S., & E.U.P. London, ).
- "Pest control- A Survey" By A. Woods. (McGraw-Hill, London, 1974).
- Pest control" - By W. W. Kilgore and R. L. Doutt (Academic Press, New York, 1967).
- Bees and Beekeeping. D. P. Abrol, Kalyani Publisher, New Delhi.

### Objectives :-

- To acquire knowledge of insect diversity and taxonomy.
- To acquaint the students with knowledge on insect collection and preservation techniques.
- Brief account on insects as vectors for various diseases.

- To acquaint them with tools of systematic taxonomy. To develop scientific temperament in students. To grow entrepreneurship among the students.
- To impart knowledge for acquiring job opportunities.

**Board of Studies :** \_\_\_\_\_

- Dr. S.A. Inamdar
- Dr. A. B. Hegde
- Dr. S.A. Inamdar
- Dr. R.V.kshirsagar
- Dr. Manoj J. Jadhav
- Dr. Priyanka Dutta Saha

**Research Project :** \_\_\_\_\_

Research Project	Field component	Laboratory component
	5	10
	Total	15

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## 14. Research Methodology and Skill

**Department Name :** Zoology

**Duration of Course:** 3 Months

**Course Coordinator Name:** Dr. Ravindra Kshirsagar

**Lecture**

Theory : 45

Practical : 45

**Syllabus :**

**For Post graduate and Research students:**

Sr. No.	Unit name	Theory	Practical	Total Periods
1	Introduction of Research	5	5	10
	Research Characteristics Objectives Research and Scientific method	5	5	10
2	Research Quantitative vs. Qualitative Research Conceptual vs. Empirical Research	5	5	10
3	Types of Research Descriptive vs. Analytical Research Applied vs. Fundamental	5	5	10
4	Sources of Hypothesis Characteristics of Hypothesis	5	5	10
5	Literature Review Review Concepts and Theories Formulation of Hypothesis Sources of Hypothesis	5	5	10
6	Characteristics of Hypothesis	5	5	10
7	Writing a Article Essay, Research Paper Research Project Legislation Drafting, Judgment Writing, Thesis, Dissertation Book, Plagiarism	5	10	5
8	Computer & Internet: Its Role in Research, MS word,Excel,Power point Presentation	5	5	10
	Total	45	50	95

### Reference Books:

- Research method by Donald H. C. Burney
- Research Methodology by Sanjay Narula
- Research Methodolgy by Ruchika Nath

### Objectives

#### To Understand research methodology and Skill.

#### Specific objectives:

1. Introducing research methods to the participants (both qualitative and quantitative) familiarize the participants on latest techniques of research data analysis.
2. Enhancing their knowledge, confidence and appropriate skills for their field of research.
3. Improving the capability of the participants in selection of appropriate journal for theirfield of research and performing qualitative research article writing.
4. Enhancing their skills for interpretation of results and presentation in user friendly.

### Scope and Job Opportunities :

- For M. phil/ Ph.D.
- In Research and Development
- Research Publications

### Board of Studies :

- Dr. Sanjay Kharat
- Dr. Kshirsagar Ravindra
- Shakera Inamdar
- Manjit Arora
- Vinay Kumar

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# 15. Natural Products Biotechnology

**Department Name :** Biotechnology

**Duration of Course:** 3 Months

**Course Coordinator Name:** Dr. Vinay Kumar

**Lecture**

Theory : 20

Practical : 10

## Syllabus :

### Course Structure

<b>A. Theory</b>	<b>Total 20 Lectures</b>
<b>1. Introduction to Natural Products</b> Overview of Natural Products - Definition, sources and types, Importance, contemporary research and current scenario, success stories.	<b>5L</b>
<b>2. Extraction/ Isolation of Natural Products</b> Preparatory processes for isolation of natural products from biological resources; solvent based extraction, fractionation purification, identification, characterization.	<b>8L</b>
<b>3. Bioactivities of Natural Products</b> Antioxidant activity, Anti-microbial activity, Anti-cancerous activity	<b>2L</b>
<b>4. Natural Product Biotechnology</b> In-vitro production of selected natural product via cell suppression cultures and scaling-up	<b>5L</b>
<b>B. Practicals</b>	<b>Total 10 Practicals</b>
1. Collection, identification and authentication of natural product containing biological resources (Field visit).	<b>2P</b>
2. Isolation/ Fractionation of natural products by Column chromatography.	<b>2P</b>
3. Bioactivities: Antioxidant, Anti-microbial and Anti-cancer activity.	<b>3P</b>
4. In vitro production of selected natural product: Callus and suspension cultures.	<b>3P</b>

### Reference Books:

- Buchanan BB, Grissem W, Vickers K, Jones RL, editors. Biochemistry and molecular biology of plants. John Wiley & Sons; 2015
- Heldt HW, Piechulla B. Plant biochemistry. Academic Press; 2004.
- Journals: Natural Products Research; Natural Products and Bioprospecting; Phytochemistry; Natural Products Communications; Planta Medica etc.

**Objectives :**

**Objective of the course**

- Curriculum Enhancement
- Employability
- Feedback received from stakeholders
- Student Progression

**Remark**

This course has the potential to enrich the curriculum  
The course will certainly add to the employability of the participating students  
The course has been developed on the basis of students-feedback and needs  
The course will result into students progression for academic and industrial purposes.

**Board of Studies :**

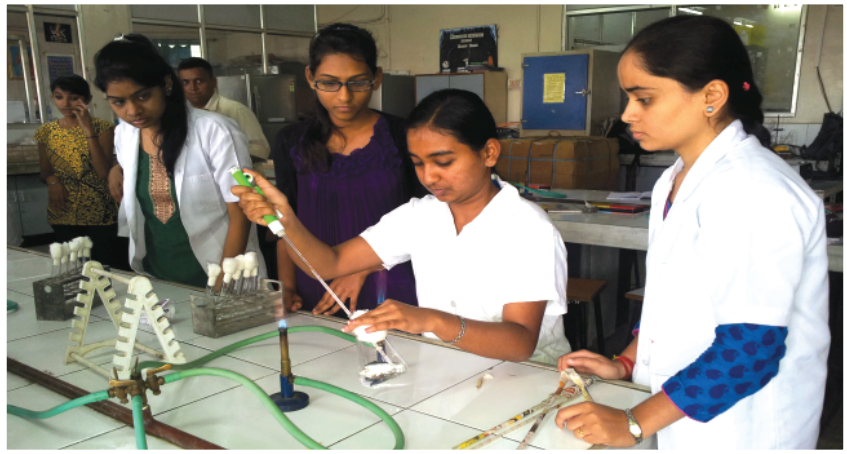
- Dr. Vinay Kumar
- Dr. R. M. Devarumath
- Dr. Pooja Rana
- Ms. Gayatri Mulik

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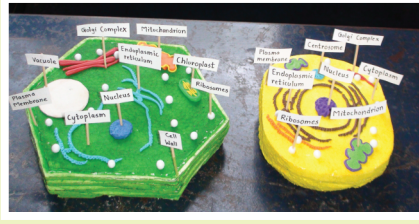
"IT IS POSSIBLE TO FLY WITHOUT MOTORS, BUT NOT WITHOUT KNOWLEDGE AND SKILL."



# Scientific Insight



# Academic Celebration





# Cultural Awareness



# Social Responsibilities



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