

Handbook of Value Added Courses & Massive Open Online Courses



DIRECTORATE OF ACADEMIC AFFAIRS

Annamalai University

2020

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Year of Publication: 2020

Place: Annamalainagar

Private Circulation only

Published by

Directorate of Academic Affairs
Annamalai University
Annamalainagar 608 002

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**ANNAMALAI UNIVERSITY****GUIDELINES FOR VALUE ADDED COURSES****2020-21**

The ever-changing global scenario makes the world more competitive and requires high levels of lateral thinking and the spirit of entrepreneurship to cope up with the emerging challenges. Many a times, the defined skill sets that are being imparted to students today with Programme Specific Objectives in educational institutions become redundant sooner than later due to rapid technological advancements. No university curriculum can adequately cover all areas of importance or relevance. It is important for higher education institutions to supplement the curriculum to make students better prepared to meet industry demands as well as develop their own interests and aptitudes.

Annamalai University offers a wide variety of Value Added Courses which are conducted after class hours. These courses are conducted by experts and help students stand apart from the rest in the job market by adding further value to their resume. They are mostly independent to each type of the fields.

1. Objectives

The main objectives of the Value Added Course are:

- ❖ To provide students an understanding of the expectations of industry.
- ❖ To improve employability skills of students.
- ❖ To bridge the skill gaps and make students industry ready.
- ❖ To provide an opportunity to students to develop inter-disciplinary skills.
- ❖ To mould students as job providers rather than job seekers.

2. Course Designing

The department interested in designing a Value Added Course should undertake Training Need Analysis, discuss with the generic employers, alumni and industrial experts to identify the gaps and emerging trends before designing the syllabus. According to the content and target group, the

appropriate pedagogical methods should be adopted in the curriculum. Any new Value Added Course developed by a Department should be placed before the Board of Studies and Faculty (Standing Committee) and approved by the Academic Council. The course offered should not be the same as any course listed in the curriculum of the respective programme/ or any other programme offered in University Departments. A unique nine digit course code is to be given for each course. The nine digit XXXXVACXX code, where the first letter represents the Faculty (code given by IQAC), the next three letters represents the Department offering the course (code given by IQAC), the next three letters shall be the identifier i.e., VAC (Value Added Course) and the last two digits represents the serial number of value added course developed and introduced by the concerned department. The detail of codes given is shown in [Annexure I](#).

3. Guidelines for conducting value added courses

Value Added Course is not mandatory to qualify for any programme and the credits earned through the Value Added Courses shall be over and above the total credit requirement prescribed in the curriculum for the award of the degree.

It is a teacher assisted learning course open to all students without any additional fee. However, students shall pay the prescribed examination fee and register along with other courses in that particular semester.

- ✓ Classes for a VAC are conducted during the **RESERVED** Time Slot in a week or beyond the regular class hours
- ✓ The value added courses may be also conducted during weekends / vacation period.
- ✓ A student will be permitted to register only one Value Added Course in a Semester.
- ✓ No student will be encouraged to opt for the VAC offered by his/her parent Department/Faculty.
- ✓ Industry experts / eminent academicians from other Institutes are eligible to offer the value added course.
- ✓ The course can be offered only if there are at least 5 students opting for it.

- ✓ The students may be allowed to take value added courses offered by other departments after obtaining permission from Head of the Department offering the course.

4. Duration

The duration of value added course is 30 hours with a combination 18 hours (60%) of theory and 12 hours (40%) of practical. However, the combination of theory and practical shall be decided by the course teacher with the approval of the Head of the Department.

5. Procedure for registration

The list of Value Added Courses shall be displayed in the University Website along with the syllabus. A student shall register for a Value Added Course offered during the semester by submitting the duly filled in registration form ([Annexure II](#)) through the concerned Head of the Department.

The Head of the Department shall segregate according to the choice opted and send it to the Dean Office for onward transmission to the Dean of the Faculty offering the particular VAC with a copy to the Director of Academic Affairs.

6. Venue

The Dean of the respective Faculty shall provide class room/s based on the number of students/batches. Except the Faculty of Marine Sciences, VAC shall be conducted in the respective Faculty itself. The Dean, Faculty of Marine Sciences shall identify class rooms in the Main Campus in consultation with the Deans of Cluster I and III.

Cluster	Venue
Cluster I: Students opting for VAC offered by Faculty of Arts/ Science/Indian Languages / Education /Fine Arts/ Medicine.	The Department or Faculty offering the Value Added Course that shall be communicated by the course teacher.

Cluster	Venue
Cluster II: Students opting for VAC offered by Faculty of Marine Sciences.	Identified Class room in the Main Campus that shall be communicated by the course teacher.
Cluster III: Students opting for VAC offered by Faculty of Engineering and Technology and Agriculture.	The Department or Faculty offering the Value Added Course that shall be communicated by the course teacher.

7. Time Slot*

Considering the nature of the course and to enable cross faculty or inter-disciplinary learning, a fixed slot of two hours is reserved for Value Added Courses during Odd and Even Semesters as follows.

Cluster I: 2.00-3.00 p.m. On **Monday, Wednesday and Friday**

Cluster II: 2.00-5.00 p.m. On **Thursday**

Cluster III: 2.30-3.30 p.m. On **Monday, Wednesday and Friday**

* shall be decided and communicated before the start of the course in mutual consultation with the Deans of Faculties.

8. Attendance

Each faculty handling a course shall be responsible for the maintenance of *Attendance and Assessment Record* for candidates who have registered for the course.

- The Record shall contain details of the students' attendance, marks obtained in the Continuous Internal Assessment (CIA) Tests, Assignments and Seminars. In addition, the Record shall also contain the organisation of lesson plan of the Course Instructor.
- The record shall be submitted to the Head of the Department once a month for monitoring the attendance and syllabus coverage.
- At the end of the semester, the record shall be duly signed by the Course Instructor and the Head of the Department and placed in safe custody for any future verification.

- The Course Instructor shall intimate to the Head of the Department at least seven calendar days before the last instruction day in the semester about the attendance particulars of all students.
- Each student shall have a minimum of 75% attendance in all the courses of the particular semester failing which he or she will not be permitted to write the End-Semester Examination.
- Relaxation of attendance requirement up to 10% may be granted for valid reasons such as illness, representing the University in extracurricular activities and participation in NCC / NSS / YRC / RRC.

9.0 Evaluation

The value added course shall carry 100 marks with 25% Continuous Assessment and 75% End Semester assessment.

9.1 Continuous Internal Assessment (CIA)

The CIA shall be a combination of a variety of tools such as class test, assignment, seminars, and viva-voce that would be suitable to the course.

The internal assessment shall be done based on the performance in the two Continuous Internal Assessment Tests, Seminar and Assignment. The break-up of marks shall be as follows:

	Marks
Test-I & Test-II	15
Seminar	5
Assignment	5
Total	25

9.2 Continuous Internal Assessment Tests

- ❖ Two Assessment Tests shall be conducted preferably one in the middle and the other at the end of the course by the Department concerned.
- ❖ CIA Test-I will cover the syllabus of the first two units while CIA Test-II will cover the last three units.
- ❖ The duration of assessment is one hour each.

- ❖ The pattern of question paper will be decided by the respective faculty.
- ❖ For the CIA Tests, the assessment will be done by the Course Teacher.
- ❖ A student cannot repeat the CIA Test-I and CIA Test-II. However, if for any valid reason the student could not attend the test, the prerogative of arranging a special test lies with the teacher in consultation with the Head of the Department.

9.3 End Semester Examinations

- ✓ The End Semester Examinations for the ODD semester will normally be conducted in November and for the EVEN semester in May.
- ✓ A candidate who does not pass the examination shall be permitted to reappear in such course(s) that will be held in the subsequent semester/year.
- ✓ The End Semester Examination will be of three hours duration and will cover the entire syllabus of the course.
- ✓ The Question Papers will be framed to test different levels of learning based on Bloom's taxonomy viz. Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation/Creativity.

10. Assessment of Value-added Courses

- ❖ Assessment of VACs shall be internal.
- ❖ Two CIA Tests shall be conducted during the semester by the Department(s) offering VAC and evaluated by the course teacher.
- ❖ The End Semester Examination shall be valued by the internal examiner appointed by the Controller of Examination on the recommendation of the Head of the Department.

11. Passing Requirement and Grading

The passing requirement for value added courses shall be 50% of the marks prescribed for the course. While a minimum of 40% marks in End Semester Examination is essential, and there is no passing minimum for CIA Tests.

A student is declared to have passed the course if he/she secures not less than 40% marks in the End Semester Examination and not less than

50% marks in aggregate taking CIA and End Semester Examination marks together.

A candidate who has not secured a minimum of 50% of marks in a course (CIA + End Semester) shall reappear for the course in the next semester/year.

The grades obtained in VACs will not be included for calculating the GPA.

The percentage of marks obtained by a candidate in a course will be indicated in a letter grade.

Evaluation of the performance of the student will be rated as shown in the Table.

Letter Grade	Marks %
S	90 and above
A	80-89
B	70-79
C	60-69
D	55-59
E	50-54

If the course is offered during any semester, it will appear in that semester's mark sheet. However, if the course is offered in summer / winter vacations, the course will be included in the grade sheet of the subsequent semester

The grades Obtained shall figure in the Mark sheet under the title 'Value Added Courses'. The other grades RA, will not figure in the mark sheet. The credits earned through value added courses shall not be considered for calculating GPA and CGPA.

12.Awarding Certificate

Learners can get a certificate after they have registered for, written the exam and successfully passed. The students who have successfully completed the Value Added Course shall be issued with a Certificate ([Annexure III](#)) duly signed by the Authorized signatories along with the semester mark sheet.

Apart from the VAC specific guide lines, the general regulations like end semester question paper pattern prescribed for any other course in a programme shall be followed.

FACULTY OF ARTS**DEPARTMENT OF ENGLISH****AENGVAC01 - Speaking and Writing English Effectively -
A Practical Course****Learning Objectives**

- This course aims to prepare students to communicate effectively in both speaking and writing in various professional contexts. In order to achieve this, students will be given intensive training to acquire the forms and proper register for telephone communication, greetings and introductions, and formal and informal presentations, and to master the forms and proper register for writing emails, reports, and formal proposals, business letters, research papers and articles and the preparation of letters of introduction to accompany Curriculum Vitae for job applications.

Course Outcomes

At the end of the course, the student will be able to:

- Improve their language skills and competence level of sentence structures
- Enhance their vocabulary and enrich their communication and language skills
- Familiarize with different rhetorical functions of the language
- Write meaningful sentences, effective paragraphs, and thought-provoking essays

Unit I

Learning the Sounds of English Production of Speech Characteristics of Voice Organization of Speech (from Speaking English Effectively by Krishna Mohan & N.P. Singh)

Unit II

Modes of Delivery Speeches for Special Occasion Motivation and Personality Development Pronouncing individual sounds (from *Speaking English Effectively* by Krishna Mohan & N.P. Singh) Acquiring the right intonation (Practice Material by course teacher) Developing conversational ability (Practice Material by course teacher)

Unit III

Public Speaking and Oral Presentation (from *Developing Communication Skills* by Krishna Mohan & Meera Banerji) Role Play (Practice Material by course teacher) Welcome Address – Vote of Thanks – Inaugural address – Speeches based on situations – Immortal speeches by various personalities (Models chosen by course teacher)

Unit IV

Correct English Usage Tests: Building Blocks – Spotting Errors – Sentence Improvement Vocabulary Tests: Building Blocks – Test of Synonyms – Test of Antonyms – Test of Analogy (From *Objective English* by Edgar Thorpe & Showik Thorpe)

Unit V

English Proficiency Tests: One Word Substitutions – Idioms and Phrases – Idiomatic Use of Verbs – Cloze Tests (From *Objective English* by Edgar Thorpe & Showik Thorpe) Written Communication: Business Correspondence – Job Applications with Letters of introduction and Curriculum Vitae – Technical Proposals – Research Paper and Articles – Advertising and Job Description (from *Developing Communication Skills* by Krishna Mohan & Meera Banerji)

Text Books:

Mohan, Krishna, Banerji and Meera. *Developing Communication Skills*. New Delhi, Trinity Press, 2015.

Mohan, Krishna and Banerji, Meera. *Speaking English Effectively*. New Delhi, Trinity Press, 2015.

Thorpe, Edgar, Thorpe and Shovik. *Objective English*. 6th Edition. New Delhi, Pearson, 2016.

AENGVAC02 - English for Effective Communication

Learning Objectives

By introducing the course, it is intended to:

- Improve the four essential skills of mastering the English Language
- Enhance the communication skills of the learners' in English
- Make them listen, speak, read, and write effectively

Course Outcomes

At the end of the course, the students will be able to:

- Read diligently and communicate effectively
- Improve their language skills and competence level of sentence structures
- Enhance their vocabulary and enrich their communication and language skills
- Familiarize with different rhetorical functions of the language
- Write meaningful sentences, effective paragraphs, and thought-provoking essays

Unit I Effective Listening

Active Listening Introduction Reasons for Poor Listening Traits of a Good Listener Listening Modes Types of Listening Barriers to Effective Listening for General Content and Specific Information Exercises

Unit II Effective Speaking

Effective Speaking Introduction Basic Sounds of English Word Stress Sentence Stress Intonation

Unit III Effective Speaking

Achieving Confidence, Clarity, and Fluency Vocal Cues Exercises
Conversations and Dialogues Introduction Conversations Telephonic
Conversations and Etiquette Dialogue Writing

Unit IV

(Effective Reading) Reading Comprehension Introduction Improving
Comprehension Skills Techniques for Good Comprehension Predicting the
Content Understanding the Gist SQ3R Reading Technique Study Skills
Exercises

Unit-V

(Effective Writing) Vocabulary Development Using the Dictionary and
Thesaurus Changing Words from One Form to Another, Word Formation:
Prefixes and Suffixes Synonyms and Antonyms, Idioms, Confusables, One-
word Substitutes, Homonyms Homophones, Eponyms. Elements of Effective
Writing Introduction Rights Words and Phrases Sentences Writing for the
Web Exercises. The Art of Condensation. Introduction Steps to Effective
Precise Writing Guidelines- Samples Exercises

Text Book:

Raman, Meenakshi and Sharma, Sangeeta. *Technical Communication: Principles and Practice*. New Delhi: Oxford UP, 2015. Third Edition.

References:

Mohan, Krishna, Banerji and Meera. *Developing Communication Skills*.
New Delhi, Trinity Press, 2015.

Mohan, Krishna, Banerji and Meera. *Speaking English Effectively*.
New Delhi, Trinity Press, 2015.

Thorpe, Edgar, Thorpe and Shovik. *Objective English*. 6th Ed. New Delhi,
Pearson, 2016.

DEPARTMENT OF HISTORY**AHISVAC01 - General Studies for Civil Services and Other Competitive Examinations****Unit 1 CURRENT AFFAIRS**

National symbols - Profile of India - - Latest inventions on science & technology - Eminent personalities & places in news - Sports & games - Books & authors - Awards & honours - Cultural panorama - Policy on environment and ecology - India and its neighbours - Latest terminology - Appointments - who is who? - Latest court verdicts - public opinion - Political parties and political system in India - Public awareness & general administration - Role of voluntary organizations & govt. - Welfare oriented govt. schemes, their utility – Flagship Programmes of Central Government - Mass media & communication.

Unit 2 HISTORY AND CULTURE OF INDIA

Pre Historic India – Indus Valley – Vedic Culture – Sangam Age and Heritage of Tamils – Jainism – Buddhism – Early Political History – Mauryas and Guptas – Hindu Revivalism – Delhi Sultanate – Bhakti Movement – Mughal – Impact of British Administration – Socio Religious Reform Movement – Freedom Struggle – Dravidian Movement – Character of Indian Culture – Unity of Diversity – Development of Science and Technology after Independence.

Unit 3 CONSTITUTION OF INDIA

Salient features of Indian constitution Union, State and territory Citizenship Fundamental rights Fundamental duties Union Executive- Union legislature – State executive and Legislature – Status of Jammu & Kashmir Local government – Judiciary in India – Indian federalism – centre – state relations Law-Making Procedure -Emergency provisions Civil services in India Administrative challenges in a welfare state Complexities of district administration Elections Amendments to constitution Anticorruption measures - Central and State Commission Empowerment of women Voluntary organizations and public grievances redressal Human rights charter –Consumer.

Unit 4 INDIAN ECONOMY

Nature of Indian economy Five year plan models an assessment Land reforms & agriculture Application of science in agriculture Industrial growth Capital formation and investment Role of public sector & disinvestment Development of infrastructure Energy Different sources and development Finance Commission Nithi Ayog National Development Council - National income Public finance & fiscal policy Price policy & public distribution Banking, money & monetary policy Role of Foreign Direct Investment (FDI) WTO globalization & privatization Rural welfare oriented programmes Social sector problems – population, education, health, employment, poverty HRD – sustainable economic growth- Economic trends in Tamilnadu.

Unit 5 INDIA AND WORLD AFFAIRS

Indian foreign policy- Foreign Affairs with special emphasis on India's relations with neighbouring countries and in the region Defence, national security system and terrorism – World And Regional organizations and Pacts and Summits - Security and defence related matters Nuclear policy, issues and conflicts International law -The Indian Diaspora and its contribution to India and the World – India and super powers

References

- Chandra, Bibin. 2017. *Modern India*. Penguin Publications, New Delhi.
- Dutt and Sundaram. 2016. *Indian Economy*. S. Chand and Company, New Delhi.
- Fadia B.L. 2017. *Indian Government and Politics*. Sahitya Bhawan, New Delhi.
- Fadia B.L. 2017. *International Relations*. Sahitya Bhawan , New Delhi.
- India Year Book, 2018. Publication Division, New Delhi.

AHISVAC02 HISTORY FOR COMPETITIVE EXAMINATIONS**Learning Objectives**

- To get thorough knowledge in the main aspects of Indian history and its values
- To appear for TNPSC and UPSC examination.
- To understand about the Nationalism and Indian Constitution.

Course Outcomes

At the end of the course, the student will be

- To understand about the Ancient Indian History and its importance towards the development of civilizations
- To examine about the political, social, economic, cultural and religious contribution to Muslim rule in India
- To interpret about the British administration towards educational and industrial developments during colonial period
- To know the role of various national leaders and national parties and their policies and impacts for the development of India

Unit 1

Ancient History - Sources – Prehistoric Age - Indus Valley Civilization - Vedic Age- Sangam Age – Alexander's Invasion- Religions in 6th century BC – Rise of Magada - Mauryas – Guptas- Harshavardhana

Unit 2

Medieval History - Muhammeden Invasions - Delhi Sultanate – Vijayanagar – Bahmini - Pallavas – Cholas - Bhakthi Movement.

Unit 3

Mughal Empire - Babur – Sher Shah – Akbar – Shahjahan – Aurangzeb – Decline of the Mughals – Contribution to culture

Unit 4

Advent of the Europeans -Robert Clive –Warren Hastings – Cornwallis – Wellesley – Bentinck – Dalhousie – Sepoy Mutiny.

Unit 5

Pre and Post Gandhian Era-Nationalism-Moderates - Extremists - Gandhian Era – Indian Independence Act of 1947 - Indian Constitution.

Text Books :

Aggarwal, J.C. *The Ancient, Medieval & Modern Indian History*, New Delhi: S.Chand & Co , 2009

Sathianathier.R., *Political and Cultural History of India*, Vols. I,II & III, Madras, Mohan Pathipagam, 2002.

Reference Books:

Chakravorthy 1999. *Freedom Fighters of India*, Crest Publishing House, New Delhi.

Chandra Bipan et al. 1972. *India's Struggle for Independence*. Penguin Publications, New Delhi.

Sarkar Sumit, 1983. *Modern India 1885 –1947*, Macmillan, New Delhi.

Shailesh Chandra, 2009. *Medieval India (1200 – 1800)*, Alfa Publications, New Delhi.

AHISVAC03 PRINCIPLES AND METHODS OF ARCHAEOLOGY**Learning Objectives**

- This is to bring awareness to the students.
- To know about the latest trends and theories in the discipline of Archaeology.
- To understand the excavation and exploration.

Course Outcome

At the end of the course, the student will be able to

- Understand properly the aspects and value of archaeology as an ancillary subject of history.
- Aware of origin and development of archaeology tracing archaeological excavations in India as well as in Tamilnadu
- Know the methods of exploration and excavation along with conservation techniques.
- Explore the possibilities and scope for further excavations in Tamilnadu for Reconstructing its history.

Unit 1

Definition, Scope and Value of Archaeology – Types of Archaeology – Economic Archaeology, Ethno Archaeology, Marine Archaeology, Aerial Archaeology and Salvage Archaeology – Archaeology and Other Disciplines – History of Archaeology in India.

Unit 2

Surface Exploration – Methods of Site Survey – Map Reading – Analysing the Physical Features – Ethnographic Data – Historical Literature – Field Observation and Ceramic Survey – Scientific Aids in Exploration – Proton Magneto Metre, Thermo-Remnant Magnetic Survey, Electricity Resistivity Survey, Chemical Method, Aerial Survey and Photography.

Unit 3

Excavation Staff and their Functions – Equipments – Methods of Excavation – Stratigraphy – Kinds of Excavation – Vertical, Horizontal and Quadrant Method – Excavation of Towns and Burials – Documentation – Plan and Section – Drawings – Photographic Documentation.

Unit 4

Dating Methods – Relative Dating and Scientific Dating – Radio Carbon Dating – Thermoluminescence Dating – Potassium Argon Dating – Fluorine Dating – Nitrogen Dating – Pollen Analysis – Dendrochronology.

Unit 5

Conservation of Artifacts – Organic and Inorganic Objects – Museum Display – Publication – Excavation report – Stratigraphy – Interpretation – Conclusion – Bibliography.

Text Books:

Barker, P., *Techniques of Archaeological Excavation*, London: Routledge Publisher, 2003.

Chakrabarti K Dilip., *History of Indian Archaeology from the beginning to 1947*, New Delhi: Munshiram Manoharlal Publishers, 2008.

Dowman and Elizabeth., *A Conservation in Field Archaeology*, London: Methuen Publisher, 1970.

Fleming and Stuart, L., *Dating in Archaeology*, London: Saint Martin's Press, 1977.

References:

Chakrabarti, K., *India: An Archaeological History*, New Delhi: Oxford University Press, 2008.

Paul Bahn., *Archaeology – A Very Short Introduction*, New Delhi: Oxford University Press, 2006.

Rajan, K., *Archaeology: Principles and Methods*, Thanjavur: Manoo Pathippakam, 2002.

Raman, K.V., *Principles and Methods of Archaeology*, Madras: University of Madras, 1989.

Venkatraman, R., *Indian Archaeology – A Survey*, Udumalpet: Ennes Publication, 1985.

AHISVAC04 MUSEOLOGY**Learning Objectives**

- To know the history of the Museology, museum management and archival studies.
- To understand the aspects, management and classification of museum
- To acquaint the student community on the officials involved in the administration their hierarchy, storage and materials involved in its functioning.

Course Outcomes

At the end of the course, the student will be able

- To understand the importance of Museology in understanding and rewriting the Ancient History of India
- Well versed in Scientific methods involved in Preservation of the artifacts preserved in Museum
- To be aware of the classification of Museum as per the different specifications and its need
- To have a thorough knowledge on the administrative setup involved in Museums, documents preserved and preservation techniques

Unit 1

Introduction to Museology - Definition and Scope – Origin and Development – History of Museums in India – Museography - Types of Museums - Use of Museums

Unit – 2

Role of Museum in Education –History of Museum in the World – History of Museum Movement in India – Grace Morley – Growing Aspects of Museology - Museum Management – Archival Studies

Unit – 3

Classification of Museums - Subject wise and Administrative – Government - National, Provincial Museums - Textile Museum, Industrial Museum, Rail Museum, Agricultural Museum

Unit – 4

Educational Museum – School, College, Universities - Crafts Museum, Anthropological Museum, Archaeological Museum, Folk Art Museum, Fort Museum

Unit – 5

Role of Curator/Director of museums – Governing body – Committees – Visual storage Museum Management – Administration – Manuscripts, Documents, Records – its importance

Text Books:

Agarwal, O.P., *Preservation of Art Objects and Library Materials*, New Delhi : National Book Trust, 1993.

Harinarayana.N & Jeyaraj.V, *Care of Museum Objects*, Madras :Government Museum, 1995.

Punja, Shobita, *Museums of India*, Hongkong :The Guide Book Company Ltd., 1990.

Singh, A.D., *Conservation and Museum Techniques*, New Delhi :Agam Kala Prakashan, 1987.

Supplementary Readings:

Basham, A.L., *The Wonder that was India*, London : Sidgwick & Jackson, 1954.

Ghosh Arun., *Conservation and Restoration of Cultural Heritage*, New Delhi: Agam Kala Prakashan, 1989.

Nigam, M.L., *Fundamental of Museology*, Hyderabad: Deva Publications, 1985.

Sarkar, H., *Museums and Protection of Monuments and Antiquities in India*, New Delhi: Sundeep Prakashan, 1981.

DEPARTMENT OF POLITICAL SCIENCE**APOLVAC01- Human Rights in the Contemporary World****Learning Objectives**

This course will help the students to:

- develop analytical skills to question and appraise human rights policies and practices at the international and national levels;
- gain substantive knowledge of the international law and policy of human rights and consider prevailing trends in the human rights field and of the challenge and contribution of critics;
- identify improvements, discern ambiguities and identify contradictions in the human rights movement;
- draw useful conclusions about the roles of various state and non-state actors in the identification of rights and in their promotion and enforcement; and
- identify potential roles for oneself in the promotion of human rights.

Course Outcomes

- This course provides the student with the capacity to identify issues and problems relating to the realisation of human rights,
- It also strengthens the ability to contribute to the resolution of human rights issues and problems. It also develops investigative and analytical skills.

Unit I

Meaning and Nature-Connotations-Evolution-Conventions at National and International level Geneva conventions-Constitution-Practices

Unit II

Human Rights in the ancient, medieval and modern era-Natural Justice-different schools of thought-Philosophical perspectives-Human Rights Education

Unit III

Rights at International level-Women rights-Children-Disabled-Elder-Minorities Right Violations-Violence-State Machinery.

Unit IV

Human rights issues-Police-Commissions-Abuses-socio-economic and political exploitation - Welfare state and rights related Hurdles

Unit V

Environmental rights-Tribal Migration-Transgender-Refugees-Terrorism-Arms race and Rights-Human rights commissions:NHRC-SHRC-UNO-WHO-UNICEF-Amnesty International.

Text books:

Bhagwati, *Dimensions of Human Rights*, Madurai: Society for Community Organization Trust, 1987.

Mehta, and Neena Verma, *Human Rights Under the Indian Constitutions*, New Delhi: Deep and Deep Publications, 1995.

Peter Bachr, *Human Rights: Universality in Practice*, New York: Palgrave, 2006.

Supplementary readings:

Bava, Noorjahan, (Ed.). *Human rights and Criminal Justice Administration in India*, Uppal Publishing House, New Delhi. 2000.

Sanajaoba, Naorem. *Human Rights in the New Millennium*, Manas Publications, New Delhi 2000.

APOLVAC02-GENERAL STUDIES FOR CIVIL SERVICES AND OTHER COMPETITIVE EXAMINATIONS

Learning Objectives

- To orient the Students about the Current Affairs (National and International).
- To profess Indian History, Culture and Economy.
- To impart knowledge about relationships exist among Nations.
- To explain about Indian Political System.
- To Exemplify about the recent court verdicts.

Course Outcomes

- CO1. To produce capable Students community in tackling Indian Competitive exams.
- CO2.To make awareness about World Affairs which may broaden the knowledge of Students community.
- CO3.To generate inquisitive awareness about the present happenings.

Unit - I History and Culture of India

Early Political History Jainism – Buddhism – Hindu Revivalism – Delhi Sultanate – Mughal – Impact of British Administration – Socio Religious Reform Movement – Freedom Struggle – Cultural and Linguistic Movements - Dynamics of Modern India.

Unit - II Indian Polity and Administration

Constitution of India- Salient features of Indian constitution - Union, State and territory - Citizenship- Fundamental rights - Fundamental duties - Union Executive- Union legislature – State executive and Legislature – Abrogation of Article 370, Amendment of Citizen Act - Local government – Judiciary in India – Elections- Amendments to Constitution.

Unit- III Indian Economy

Nature of Indian economy – Five-year plan models: an assessment - Land

reforms & agriculture - Public sector - Finance Commission – Niti Ayog - National Development Council -Public distribution - Banking, money & monetary policy - Role of Foreign Direct Investment (FDI) - LPG - Welfare programmes - Social sector problems – Demonetisation- GST – Sustainable economic growth- Global Financial Crisis - Economic trends in Tamil Nadu.

Unit - IV India and World Affairs

Indian foreign policy- India and Neighbours - Defence, national security system and terrorism – World And Regional organizations - Nuclear issues - WMD - International law - UNO and its specialized agencies - The Indian Diaspora and its contribution to India and the World.-India and super powers.

Unit - V: Current Affairs

Profile of India - science & technology - Policy on environment and ecology - Latest terminology - Recent court verdicts - Public Opinion - Political parties and political system in India - Public awareness & administration - Flagship programmes of central government - Mass Media & Communication.

The Student should visit to Famous Historical Places, Political Institutions and Prepare a report. The Student also should identify current economic, political and Important issues, discuss among the students and prepare the assignment

Text Books:

Bipin Chandra, *Modern India*, New Delhi: Penquin Publication, 2017.

Dutt and Sundaram, *Indian Economy*, New Delhi: S.Chand and Company 2016.

Fadia, B.L. *Indian Government and Politics*, New Delhi: New Delhi: Sahitya Bhawan , 2017.

Supplementary Readings:

B.L. Fadia, *International Relations*, New Delhi: Sahitya Bhawan , 2017.

Competitive Success Review Year Book, 2020.

India Year Book 2020, New Delhi: Publication Division, Government of India, 2018.

Manorama Year Book, 2020 Tata McGraw-Hill Year Book, 2020.

APOLVAC03- ENVIRONMENTAL POLICY AND ADMINISTRATION

Learning Objectives

Students will be able to:

- know about the nature and importance of the environment.
- know the steps taken to protection of the environment.
- develop environmental awareness among the students.
- know the environmental Protection Movements and their role in India.
- identify the various environmental issues.

Course Outcomes:

After the successful completion of the course, the students will be able to:

- understand the significance of environment.
- understand and involve in conservation and protection of environment.
- gain knowledge about the present environmental issues.

Unit – I: Introduction

Meaning, Scope and Importance of Environmental Administration – Need to Conserve and Protect Environment – Problems of Development and Environment.

Unit – II: Environmental Problem

Effects of Human Activities on the Qualities of Life - Air and Water Pollution – Health and Sanitation – Liquid and Solid Waste – Nuclear Waste – e waste.

Unit – III: Environmental Movement

Popular Participation in Environment Movement – Genesis of Global

Environmental Movements – People Movements in India: APPIKO and CHIPKO – Save Silent Valley Movement.

Unit – IV: Environment Protection Policy

Evolution of Laws and Policies in India – Environmental Protection Policies – Regulations, Deforestation, Global Warming and Government Policies – Administrative actions.

Unit – V: Environmental Issues

Study of Environmental Assets: Rivers, Ponds, Forests, Grasslands, Hills and Mountains – Study of Common Place, Insects and Birds – Climate Change – Role of Administration.

Students should submit a detailed report about any five environmental degradation issues in their respective areas and make the people aware about the harmful effects of environmental Pollution.

Text Books:

Arun Kumar, *Environmental Problems Protection and Control*, New Delhi: Anmol Publishers, 2002.

Pandey, G. N. *Environmental Management*, New Delhi: Vikas Publishing House, 1977.

Ahluwalia, S.P. and H.S. Bals, *Environmental Education: Concepts and Contours, Education: Issues and Challenges*, New Delhi. Ashish Publishing House, 1992.

Suzanna Andrews and Others (Ed.) *The World Environment*, Hand Book, New York: World Environment Centre, 1999.

Supplementary Readings:

IJPA Special Number on Environment – *An Administration*, July – September, 1990.

Indian Institute of Public Administration, *Environment – Policy in India*. 2000

Suresh Jain and Vimal Jain, *Environment Laws in India*. Lawyers Home, 1996.

World Health Organisation, *Environment*, Pollution Control in Relation to Development Report of WHO Expert Committee, 1993.

APOLVAC04 E-GOVERNANCE**Learning Objectives**

- Familiarizing and making the students to understand the concepts of E-Governance.
- To learn about the strategies and Implementation of E-Governance.
- To investigate the issues related with the process of E-Governance.

Course Outcomes

- Identify the concept and need of E-Governance.
- Analyse the advantages and dis-advantages of E-Governance.
- To know the impact of E-Governance on social and economic empowerment of the people and the nation.

Unit I: - Basics of E-Governance

Meaning, Definitions, Nature, Scope and Significance of E-Governance – Salient features and Approaches to E-Governance – Growth and Development of E-Governance – Towards good governance through E-Governance.

Unit II: - E-Governance Architecture

E-Governance policies and legal frameworks –Infrastructural preparedness: Human, Legal, Institutional and Technological – Leadership and strategic planning.

Unit III: - E-Governance Initiatives

Ministry of Information and Communication Technology – National informatics Centre(nic) – National e-Governance Plan (NeGP) - E-Governance initiatives at centre, state and local Governments - E-Governance in private Sector.

Unit – IV: E-Governance Models across the Globe

E-Governance Models of Different Countries – Case studies of E-Governance outside India – Case studies of E-Governance in India.

Unit – V: Recent Trends and Issues in e-Governance

Artificial Intelligence – Cloud computing – Internet of Things –Computer Surveillance- Data Mining - Ethics of law and Technology – Issue of Security and privacy in e-Governance.

Text Books:

Ashok Agarwal, *E-Governance: Case studies*, India: University Press, 2007.

Prabh, C.S.R. *E-Governance: Concepts and Case studies*, New Delhi: PHI, 2011.

Subash C. Bhatnagar, *E-Government: from vision to implementation: a practical guide with case studies*, New Delhi: SAGE, 2004.

Supplementary Readings:

E-Governance: A Global perspective on a New Paradigm, edited by Toshio Obi, Publisher: IOS Press, 2007.

Electronic Governance and Cross-Boundary Collaboration: Innovation and Advancing Tools, Yu-Che Chen (Northern Illinois University, USA) and Pin-Yu Chu (Natal Chengchi University, Taiwan), Publisher: Information Science Reference, 2011.

Global E-Governance: Advancing E-Governance through innovation and leadership, by J Tubtimhin, Publisher: IOS Press, 2009.

Innovations in E-Government: Governors and Mayors speak-out, By Erwin Blackstone, Michael Bognanno & Simon Hakim. Publisher: Rowman and Little Field Publishers, 2005.

Public Information Technology and E-Governance: Managing the virtual state by G. David Garson, Publisher: Jones & Barlett Learning, 2006.

DEPARTMENT OF ECONOMICS
AECOVAC01 - Pricing Strategies

Learning Objectives

In this course students will

- Learn about the different pricing practices
- Learn how to price for profitability
- Become acquainted with pricing in practice

Course Outcomes

At the end of course, the students will be able to

- Apply Basic Economics Principles to reflect on a range of pricing issues
- Compare and Evaluate alternate perspective on price sensitivity analysis
- Understand the responding to price competition like different types of pricing
- Formulate the segmenting by purchase location and Quality
- Analysis the application of pricing strategies in various field trips

Unit 1

Cost in Pricing Decisions Cost as 'Floor' in pricing decisions Incremental costs and pricing Role of opportunity costs Limitations of cost based pricing

Unit 2

Role of Value in pricing Role of value in pricing Economic value analysis in pricing Factors influencing value perceptions: Reference price-switching cost effect-price quality effect-framing effect-fairness effect Price sensitivity analysis

Unit 3

Pricing and Competition -Responding to price competition- Skim pricing.
Penetration pricing. Pricing differentiated products Life cycle pricing.

Unit 4

Segmented pricing Segmenting by buyer identification. Segmenting by purchase location. Segmenting by purchase quality Segmenting by product bundling

Unit 5

Applications (including field trips) Consumer goods Hospitals Online retailing Information on goods

Unit 6

Current Streams of Thought: The Faculty will impart the current developments in the subject during the semester to the Students and this component will not be a part of Examinations.

Text Books:

Thomas T. Nagle and Reed K. Holden *The Strategy and Tactics of Pricing a Guide to Profitable Decision Making* (3rd ed.). New Delhi: Pearson Education, 2002.

Supplementary Reading:

Business dailies and Magazines.

Information Rules by Hal Variad. Boston: Harvard Press, 2002.

The Art of Pricing: How to find the Hidden Profits to grow your business by Refi Mohammed. New York : Random House, 2005.

AECOVAC02 - Pricing Strategies For Information Goods

Learning Objectives

- In this course students will
- Learn about the different pricing practices
- Learn how to price for profitability
- Become acquainted with pricing in practice

Course Outcomes

At the end of course, the students will be able to

- Apply Basic Economics Principles to reflect on a range of pricing issues
- Compare and Evaluate alternate perspective on price sensitivity analysis
- Understand the responding to price competition like different types of pricing
- Formulate the segmenting by purchase location and Quality
- Analysis the application of pricing strategies in various field trips

Module 1

1.1 Importance of information in the modern economy

1.2 Properties of information goods

1.3 Information as experience good: implications for pricing

Module 2

2.1 Role of prices in the economy

2.2 Price as willingness to pay, law of demand and supply

2.3 Price elasticity: types and determinants

Module 3

3.1 Price discrimination: rationale for and types of price discrimination

3.2 Cost of producing information, cost leadership

3.3 Market for information goods: product differentiation

Module 4

4.1 The concept of versioning

4.2 Designing a product line

4.3 Choosing number of versions

Module 5

5.1 "Windowing" as price strategy

5.2 Bundling

5.3 "Goldilocks pricing"

Readings:

Carl Shapiro and Hal Varian. *Information Rules: A Strategic Guide to the Network Economy*. Harvard Business School Press, 1999. Available free online

Frank Linde. *Pricing Information Goods in Journal of Product & Brand Management*, August 2009.

DEPARTMENT OF COMMERCE**ACOMVAC01- Artificial Intelligence and Its Applications in Business****Learning Objectives**

- To introduce the concepts of Artificial Intelligence and its applications
- To familiarize the concepts of Knowledge and Reasoning, Planning, Learning and Communication aspects of Artificial Intelligence
- To impart applied knowledge on Artificial Intelligence in Business

Course Outcomes

After successful completion of the course, the students will be able to:

- Understand the concepts of Artificial Intelligence in relation to Business
- Gain the knowledge of reasoning and difference between the human intelligence and machine intelligence.
- Understand Learning and communicating to get the applications of Natural Language Processing.
- Gain knowledge on Robotics and Nanotechnology.
- Understand Artificial Intelligence based applications to enhance business process.

Unit I Introduction

Introduction - Intelligent Agents- Problem Solving

Unit II Knowledge

Knowledge and Reasoning - Knowledge Representation- Knowledge Acquisition

Unit III Planning

Planning – Planning and Acting in the Real World

Unit IV Learning

Learning - Knowledge in Learning- Statistical Learning Methods - Reinforcement Learning

Unit V Communication

Communicating, Perceiving, and Acting - Natural Language Processing Communication- Robotics.

Text Books:

Dhanrajani, S. 2018. *AI and Analytics: Accelerating Business Decisions* (2 ed.). New York: Wiley.

Finlay, S. 2018. *Artificial Intelligence and Machine Learning for Business* (3 ed.): A No-Nonsense Guide to Data Driven Technologies. United Kingdom, Relativistic, 2018.

Prabhat Kumar . 2019. *Artificial Intelligence: Reshaping Life and Business* (1 ed.).New Delhi: BPB Publications.

Supplementary Readings:

John Medicine, 2019. *Artificial Intelligence Business Applications* (1 ed.). New Delhi.

Rose, D. 2018. *Artificial Intelligence for Business* (1 ed.). Chicago Lakeshore Press.

Yao, M., Zhou, A. and Jia , M. 2019. *Applied Artificial Intelligence: A Handbook for Business Leaders* (1 ed.). New York: TOPBOTS.

ACOMVAC02 - CRM in E- Banking

Learning Objectives

- To develop an appreciation about the utility of E-Banking practices
- To understand the quality services of E-banking and various tools of E-banking
- To evaluate the challenges in CRM with E-Banking and security issues of online Banking

Course Outcomes

After successful completion of the course, the students will able to:

- Understand the important concepts in Customer Relationship Management
- Master over e-banking and data base services day today
- Attain knowledge in the e-banking practices
- Have an idea of Understand e-payment system
- Evaluate the security issues in CRM and e-banking

Unit I Introduction to CRM

Definitions – Need and importance of CRM in present scenario – CRM as a strategic marketing tool.

Unit II Significance of CRM in banking today

Meaning and concept of E-Banking – Advantages customer information Database – objectives of E-Banking – Customer facilities through E-Banking tools.

Unit III CRM Practices

Importance of CRM through E-Banking – internal facilities, costs, quality of service and cost of communication

Unit IV E- Payment system

Rupay – Rupay secure – IMPS – National unified USSD platform – (USSD) National Automated Clearing House (NACH) – National Financial Smith (NES) RTGS, NEFT. Innovative banking Payment system.

Unit V Security Issues in CRM and E- Banking

Security and Privacy, Transactional difficulty, Technical issues and Level of Customer awareness.

Text Books:

Abhijeet Singh and Brijesh Kumar, 2011, *Customer Relationship Management Tools: An Overview*. Marketing Mastermind, Vol 11, pp 24.

Alok Kumar and Chhabi Sinha, 2008, *Customer relationship management concepts and application*, 1st Ed, Sudha offset press.

Mahmood Shah and Steve Clarke, 2009, *E-Banking management: Issues, Solutions and Strategies*. USA: Information Science Reference.

Supplementary Readings:

Alan Smith, 2006. *CRM and customer service: Strategic asset or Corporate over-head*, Handbook of Business Strategy, Vol 7, pp.87 – 93.

Himani Sharma, 2011. *Bankers Perspectives on E-Banking and Its Challenges, Evidence from North India*. The IUP Journal of Bank Management.

Jayaram Kondabagil, 2012. *Risk Management in Electronic banking: Concepts and Best Practices*. John Wiley and Sons (Asia) Pte Ltd.

ACOMVAC03 - Asset Value Assessment Methods

Learning Objectives

- Learn the conceptual understanding valuation and valuation of assets
- Acquire knowledge on various methods of valuation of Tangible Assets
- Conceptual understanding on various approaches to assessment of intangible Assets

Course Outcomes

After successful completion of the course, the students will able to:

- Understand the basic concepts of assets valuation
- Apply various approaches to assets valuation
- Understand various measures for valuation of fixed and current assets
- Recognize various approaches to assess the value of intangible assets
- Comprehend the various approaches for valuation and assessment of brands

Unit I Assets Valuation Basics

Meaning of value, Valuation, Asset valuation and Business Valuation – Principles of Valuation – Valuation Bias – Types of Values - Role of Asset valuation in Corporate Finance

Unit II Valuation Approaches

Valuation Approaches - Discounted Cash Flows (DCF) – Importance – Limitations – Application of DCF Valuation – Steps in DCF Valuation – Relative Valuation – Steps in Relative Valuation – Advantages and Disadvantages

Unit III Fixed and Current Asset Valuation

Book Value – Measuring Asset Value – Factors in Asset Valuation – Tangible Assets – Factors in Fixed Asset Valuation –Current Assets -Valuation of Inventories – FIFO – LIFO- Weighted Average

Units IV Valuation and Assessment of Intangible Assets

Intangible Assets – Meaning - Criteria for the identification of intangible assets – cost of Intangible assets –Valuation of Goodwill, Patents and Copyrights - Intellectual Property – Definition and Classification – Components – Valuation of Intellectual Capital – Intellectual Capital Measures and Models

Unit V Valuation and Assessment of Brands

Brands – Meaning - Assessment of Value of Brands – Need for valuation of Brands – Approaches to Brand Valuation – Research Based brand Equity Valuation – Financially driven Approaches – Steps in Valuation of a Brand

Text Books:

Bhalla V.K., 2018. *Investment and Portfolio Management*, S. Chand & Co., New Delhi

Pandian Punithavathy, 2018. *Security Analysis and Portfolio Management*, Vikas Publishing Company, New Delhi.

Pretti Singh, 2019. *Investment Management*, Himalaya Publications, Mumbai

Supplementary Readings:

Chandra Prasanna, 2018. *Investment Analysis and Portfolio Management*, Tata McGraw Hill, New Delhi.

Clark and James Fransis, 2016. *Investment- Analysis and Management*, McGraw Hill , International Edition.

Dalton and John, M. 2017. *How the Stock Markets Works*, Prentice Hall, Delhi.

Damodaran Asath, 2018. *Investment Valuation: Tool and Techniques for Determining the value of any Asset*, Wiley Finance., New Delhi

Gitman and Joehnk, 2017. *Fundamentals of Investing*, Pearson Publications, New Delhi.

ACOMVAC04 - Insurance Regulatory Practices**Learning Objectives**

- Acquire the conceptual understanding on insurance and its regulatory framework
- Attain knowledge on life insurance practices and its procedure in India
- Achieve understanding on general insurance practices and its procedure in India

Course Outcomes

After successful completion of the course, the students will able to:

- Know the basic concepts of Insurance
- Comprehend the features of Insurance Contracts and role of Agents and Brokers
- Understand the Insurance regulatory environment in India
- Appreciate the Life Insurance Practices and procedures
- Apprehend the General Insurance Practices and procedures

Unit I Concepts of Insurance

The Concept of Insurance and its Evolution –The Business of Insurance - The Insurance Market - Insurance Customers- The Insurance Contract- Life Assurance products; General Insurance Products.

Unit II Insurance Contract and Role of Agents and Brokers

Essential Features of Insurance Contract – Personal contract - Warranties and Representation and Misrepresentations - Fraud - Impersonation – Insurance Agents - Surveyors & Loss Assessors - Types of Agents - Role of an Agent - Insurance Brokers - Role of Brokers

Unit III Insurance Regulatory Environment

Need for Insurance Regulations – Insurance Act of 1938 - Constitution of Insurance Regulatory and Development Authority - Powers / Functions of IRDA – IRDAI Licensing Functions – Policy Holders Rights – Nomination and Transfer – Protection of Policy Holders interest

Unit IV Life Insurance – Practices and Procedure:

Life Insurance Organization; Premiums and Bonuses; Plans of Life insurance; Annuities; Group Insurance; Linked Life Insurance Policies; Applications and Acceptance; Policy Documents; Premium payment, Policy Lapse and Revival; Assignment, Nomination and Surrender of policy; Policy Claims.

Unit V General Insurance - Practices and Procedures:

Introduction to General Insurance- Application of Principles in General Insurance Contracts – Structure of the Policy – Policy Documents and forms -Claims Procedure – underinsurance – Conditional of Average – Recovery-Salvage.

Text Books:

- Gupta, P.K. 2016. *Insurance and Risk Management* Himalaya Publishing House, Gorgon, Mumbai.
- Mishra, M.N. and S.B.Mishra, 2018. *Insurance Principles and Practice*, S.Chand and Company Pvt. Ltd, Ram Nagar, New Delhi
- Murthy, A. 2017. *Principles and Practices of Insurance*, Margham Publication, Chennai

Supplementary Readings:

- Corporate Agent*, 2018 (IC-38), Insurance Institute of India, Mumbai
- Practice of General Insurance*, 2018(IC-11), Insurance Institute of India, Mumbai
- Practice of Life Insurance*, 2018 (IC-02), Insurance Institute of India, Mumbai
- Principles of Insurance*, 2018 (IC-01), Insurance Institute of India, Mumbai

ACOMVAC05 - E-Filing in Business

Learning Objectives

- Learn the conceptual understanding about filling of returns and e-filing
- Acquire knowledge about Income Tax and filling of different tax Returns, TDS
- Understand GST and its mechanism, different GST Returns and due dates of filing the returns

Course Outcomes

After successful completion of the course, the students will able to:

- Understand the e-filing system and its process
- Identify the different heads of income, ITRs and its applicability
- Skilfully understand e-filing registration India
- Know types of Forms for filling TDS Returns
- Become expert in GST and different GSTRs and their due dates.

Unit I Conceptual Framework

Meaning of e-filing – Features of e-filing- Difference between e-filing and regular filing - Benefits and Limitations of e-filing – Types of e-filing

Unit II Income Tax and E-filing

Introduction to Income Tax – Basic terminology – Types of Assesses – Income Taxable under difference Heads – Basics of Computation of Total Income and Tax Liability – Deductions available from Gross Total Income – PAN — Introduction to Income Tax Portal

Unit III Income Tax and e-filing of ITRs

Income Tax e-filing registration – Registration Process – Individuals – Other than Individuals- Meaning of Income Tax Returns (ITRs) -Types of ITRs- - Who should file which ITR: ITR-1; ITR-2; ITR-3; ITR-4;ITR-5; ITR-6 - Due date for filling of Income Tax Returns

Unit IV TDS and E-filing of TDS Returns

Introduction to the concept of TDS – Provisions regarding Returns of TDS – Types of Forms for filling TDS Returns

Unit V E-filing of GST Returns

Introduction to GST – GSTN Portal – Input-Tax Credit – e-way bills- Benefits of GST – Online GST Registration– Types of GST Returns – Monthly, Quarterly Annual and Final. - Input Tax Credit-Invoices, Credit/Debit Notes - Payment of Tax - Types of e-filing Due Date for filing of GSTRs

Text Books:

Mehrotra and Goyal Sahitya, 2020. *Income Tax Law and Accounts*, Sahitya Bhavan, Publications Agra.

Sarangi, G 2020. *Goods and Services Tax*, Centax Publications Pvt. Limited ,New Delhi

Srinivasan, T., 2020. *Income Tax Law and Practice*, Vijay Nicloe Imprints Limited, Chennai.

Supplementary Readings:

Ahuja, G. & Gupta, R. 2020. *Simplified Approach to GST and Customs Law*, Flair Publications, New Delhi

Gaur, V.P. and D.B. Narang, 2020. *Income Tax Law and Practice*, Kalyani Publishers, Ludhiana

Singhania, V. 2020. *Students Guide to E>Returns with CD* Taxmann Publications, New Delhi

Singhania, V 2020. *students Guide to GST and Customs Law*, Taxmann Publications Pvt. Ltd, New Delhi

Vinod K. Singhania 2020. *Students Guide to Income Tax*, Taxmann Publications Pvt. Ltd, New Delhi.

ACOMVAC06 - Investment and Portfolio Management**Learning Objectives**

- To enable the students to grasp the basic knowledge in Investments
- To enable the students for taking important investment Decisions in Security analysis and its valuation
- To educate the students with the knowledge of Portfolio Management

Course Outcomes

After successful completion of the course, the students will able to:

- Know various types of financial securities available in the stock market
- Skillfully understand various factors favourable for investment
- Identify how to make a fruitful investment Decisions
- Understand the approaches to security analysis and its Valuation
- Gain the knowledge about the portfolio theory and measurement of Risk Return

Unit I Conceptual Framework

Unit I: Introduction to Investment Management

Meaning – Features – Objectives of Investment – Types of Financial Securities - Risk Classification

Unit II Nature and Scope of Investment Management

Nature and Scope of Investment Management – Types of Investment – Features of Investment Programme – Factors Favourable for Investment – Speculation – Gambling.

Unit III Investment Decision

Investment Decision – Guidelines for Base Level Investments and Fixed Income Investments – Guidelines for Equity investments –Guidelines for Aggressive Equity investors – Guidelines for Conservative Equity Investors.

Unit IV Security Analysis and its Valuation

Approaches to Security Analysis – Fundamental – Technical – Random Walk approaches-Valuation – Models for Equity, Preference and Debt Securities.

Unit V Portfolio Theory

Portfolio risk and return measurement – Diversification -Simple – Markowitz – Efficient frontier

Text Books:

Bhalla,V.K., 2017. *Investment Management*. Publications S. Chand and Co., New Delhi

Prasanna Chandra, 2018. *Investment Analysis and Portfolio Management*, McGraw Hill, New Delhi

Punithavathy Pandian, 2017. *Security analysis and Portfolio Management*, Vikas Publishing House, New Delhi

Supplementary Readings:

Avadhani, V.A. 2018. *Security Analysis and Portfolio Management*, Himalaya Publishing House, Mumbai.

Fisher and Jordan, 2017. *Security Analysis and Portfolio Management*, Prentice Hall, New Delhi

Jayabal, G. and S. Nagarajan, 2019. *Security Analysis and Port Folio Management*, New Age Publications, Mumbai.

Pretti Singh, 2018. *Investment Management*, Himalaya Pub. Mumbai

William F. Sharpe, 2018. *Investment*, Prentice Hall of India, New Delhi

DEPARTMENT OF SOCIOLOGY AND SOCIAL WORK**ASOCVAC01: MEDICAL AND PSYCHIATRIC SOCIAL WORK****Learning Objectives**

- To expose the students to the knowledge and skills of psychiatric social work
- To make the students understand the psychiatric disorders of child, youth and women
- To enable the students aware of coping strategies for psychiatric problems.

Course Outcomes

Upon completion of the course the students will

- know the history, scope and changing perspectives of psychiatric problems.
- understand the various types of psychiatric problems and their treatment
- gain knowledge on modern treatment for psychiatric disorders.
- comprehend the role of psychosomatic disorder in mental illness.
- infer specific psychiatric disorders affecting women, youth and aged.

Unit – I

Psychiatric Social Work: Basic concepts, scope, management and treatment for psychiatric disorders.

Unit – II

Major Psychiatric and Psychotic disorders –Schizophrenia - Its types - Mood Disorder – Other Bipolar Disorders.

Unit – III

Minor Psychiatric disorders – Anxiety disorder – Panic disorder – Phobias – Post Traumatic Stress.

Unit – IV

Other Psychiatric Disorders – Personality Disorders – Sleep disorder – Speech disorder - Psychosomatic disorder – Suicide.

Unit – V

Childhood Psychiatric disorders – Mental Retardation – Learning disorders – Developmental disorders - Autism – Attention Deficit Hyper activity. Psychiatric disorder affecting Women, Youth and aged – Elimination of disorders.

Text Books:

Mane, F. and Gandevia, K., *Mental Health in Indian Issues and Concerns* (eds.), Mumbai, Tata Institute of Social Sciences, 1993.

Sonia Austrian, *Mental Disorders, Medications and Clinical Social Work*, Columbia: Columbia University Press, 2005.

Supplementary Readings:

American Psychiatric ASSN, Diagnostic Criterion from DSM-IV American Psychiatric ASSN, 1994.

Berrios, G.E. and Dawson, J.H. *Treatment and Management in Adult*, Bailliere Tindal, London, 1983.

Nina Rovinelli Heller. *Mental Health and Social Problems*, New Delhi: Rutledge, 2010.

Kappur, M. Sheppard, Ralph and Renate, *Child Mental Health-Proceedings of the Indo-US Symposium*, eds, NIMHANS and ADAMHA, 1993.

World Health Organisation, Geneva, The ICD 10 classification of Mental and Behavioural Disorders, Clinical Description and Diagnostic Guidelines, New Delhi: Oxford University Press, 1992.

ASOCVAC02: SOCIAL CRIMINOLOGY**Learning Objectives**

- To enable the students to understand the increasing trend in crime rates
- To make the students to comprehend various crimes occurring in society
- To impart the knowledge of causation, control and prevention of crime.

Learning Outcomes

upon completion of the course the students will

- understand the recent trends of crime and its causation,
- have the knowledge of types and modalities of crimes and develop awareness on control and prevention of crimes.
- acquire skills of dealing with cyber-crimes.
- know about the importance of rehabilitation of offenders.
- interpret the extent of white-collar crimes in modern society.

Unit-I

Social Criminology: Concepts, Nature and importance. Social disorganization. - Individual, Family and Society.

Unit-II

Crime: Causation and Types - Crimes against women and children, Media and Crimes, Property crimes – Cyber Crimes.

Unit-III

Punishment – Objectives and evolution. Rehabilitation of offenders, Rights of Victims.

Unit-IV

Changing Profile of Crime and Criminals – Criminalization of politics, White collar Crimes, Corruption and Scandals.

Unit-V

Treatment and Prevention – Meaning and Types: Prison based, Community based, open prison, educational, vocational, psychiatric, meditation and recreation.

Text Books:

Ram Ahuja, Criminology, New Delhi: Rawat Publications, 2014.

Pamela Davies, and et.al., Victims, Crime and Society, New York: Sage Publications. Publications, 2015.

Supplementary Readings:

Bedi, Kiran. *It is Always Possible*. New Delhi: Sterling Publications, 1998.

Gill, S.S. *The Pathology of Corruption*. New Delhi: Harper Colins Publishers, 1998.

Kelly Frailing and Dee Wood Harper, *Fundamentals of Criminology: New Dimensions*, 2nd Edn., Durham, N.C: Carolina Academic Press, 2016.

Merton, R.K. *Social Theory and Social Structure*. New Delhi: Emerald Publishing Co., 1972.

Ross Coomber and et.al. *Key Concepts in Crime and Society*, New York: Sage Publications, 2015.

DEPARTMENT OF POPULATION STUDIES**APOPVAC01- NGO's Management and Development****Learning Objectives**

The students will be able

- To understand the evolution of the non-profit sector into the fastest growing sector of our economy
- To provide managerial training and most relevant skills.
- To develop an understanding of management techniques and leadership skills for enhancing the effectiveness of non-profit organizations.

Course Outcomes

After completion of the course, the students will be enable to

- Understand the procedures for registration of NGOs
- Enhance the knowledge on the fundamentals of accounting
- Gain perspectives on the management, financial, leadership

Unit 1

Concept and Structure of NGOs, Importance of NGOs, Registration of NGOs, Bye –Laws /Memorandum of Associations and Registrations, Sources of funding for Management of NGOs.

Unit 2

National, International Government and Non-Governmental Agencies, Role of NGOs: Education, Women Empowerment, Development, Family Planning, Population Activities, Health, Reproductive and Child Health Programme and AIDS.

Unit 3

Project Preparation: Guidelines for drafting a Project. Planning: nature, purpose, steps, types, merits and demerits .Organizations and Staffing.

Unit 4

Book Keeping: Definition, objectives and systems; Types of Account; Accounting for Non-Profit Organizations: Receipts and Payments of Accounts, Income and Expenditure Account; Balance Sheet; Maintenance of Project Accounts

Unit 5

Monitoring: Formulation of objectives; Designing a monitoring systems; Participatory monitoring process; Reporting: ongoing and the completed project. Evaluation of Projects: types, procedures and processes; Participatory evaluations. Evaluation and reporting of an ongoing/ completed project; Participatory Rapid Appraisal (PRA) ; Management Information System (MIS).

Text books:

Allen Fowler and ChikkuMalunga, 2010. *NGO Management*, The Earthscan Companion, New Delhi

David Lewis, 2014. *NGO Management and Development*, Roulledge, New Delhi

Michael J. Worth, 2008. *Non profit Management. Principles and Practice*, Sage Publications, Inc.

Suggested Readings:

Pandey and Devandra Prasad. 2009. *Development and Management of NGOs*. Adayayan Publishers Private Limited, New Delhi.

DEPARTMENT OF BUSINESS ADMINISTRATION**ABUSVAC01- Small Business Management****Learning Objectives**

The objectives of this course is

- To impart knowledge in project management tools and techniques practiced in a project.
- To provide exposure in the methods adopted in identifying a new project and to know the difference between pre-feasibility and feasibility study.
- To understand the role of entrepreneur in the Indian context and to expose to the importance of small scale industry.

Course Outcomes

Upon completion of the course, students will be able to

- Generate new methods to identify a project.
- Analyse the project organization structure.
- Critically evaluate the reasons for the sickness in small scale industry

Unit I Project Planning

Definition of project – Classifications of projects – Importance – Scope – Project Identification – Idea generation and Screening – Project selection and Planning – Project Formulation – Project life cycle – Project Organisation – Roles and Responsibilities of project manager – Managing project team.

Unit II Project Feasibility and Project Finance and Evaluation

Pre-feasibility study – Market and Demand analysis – Feasibility Study: Technical – Commercial – Environmental – Socio economic – Managerial and Financial analysis – Detailed Project Report – Resource Survey – Selection of plant location – Project contracts – Insurance for projects – Project Implementation.

Estimating project time and cost – Cost of capital – Source of finance – Cost control – Project Scheduling and Monitoring – Project Information System and Documents – Project Report – Social Cost Benefit Analysis – Project Evaluation and Performance Review Techniques.

Unit III Introduction to Entrepreneur Definition – Concept – Classification and types of entrepreneurs – Entrepreneurial Traits – Need and Important – Roles and Responsibilities of Entrepreneurs in Indian business context – Entrepreneurial Motivation – Entrepreneurial Development Programme: Role and objectives of the programme – Contents – Institutions aiding Entrepreneurs – Central and State level Institutions.

Unit IV Entrepreneurship Environment and Challenges

Entrepreneurship environment: Social – Cultural – Political – Natural – Geographic – Technological – Economic Environment and its impact on Entrepreneurship – Factors affecting entrepreneurial growth – Globalization and its challenges – Steps to face global challenges – Strategies for the development of women entrepreneurs.

Unit V Small Business Management

Small Enterprises – Definition – Classification – Characteristics – Ownership Structures – Steps involved in setting up a small business – Identifying and selecting a good Business opportunity – Market potential analysis – Marketing methods: Pricing and Distribution methods. Sickness in small Business: Concept – Magnitude – Causes and Consequences – Corrective Measures – Government Policy on Small Scale Enterprises – Growth Strategies in small industry: Expansion – Diversification – Joint Venture – Merger and Sub Contracting.

Text Books:

Clifford, F. Gray and E.W.Larson. *Project management*, Tata Mcgraw hill, New Delhi, 2007.

Khanka, S. S. *Entrepreneurial Development*, S.Chand and company, New Delhi, 2008.

Nagarajan, K. *Project Management*, New Age International publishers, New Delhi, 2007.

ABUSVAC02 - Introduction to Business Analytics

Learning Objectives

Studies core statistical techniques; data retrieval, analysis and mining; Decision modeling to effectively persuade in the project-oriented world of data-driven decisions.

- To understand the purpose of using business analysis tools within an organization, dataset for making a business decisions and R studio for data analysis.

Course Outcomes

Upon completion of this course, the student will have the ability to

- Critically analyze the business problems especially solves business problems.
- Recognize, understand and apply the language, theory and models of the field of business analytics
- Students can able to understand the applications of business analytics.
- They have get ideas on data visualization and time series analysis.
- Compare the application of using R statistics

Unit I Introduction to Business Analytics and Big Data

Business Analytics – Definition - Need – Scope - A categorization of Analytical Methods – Analytics in action – Big data – Business analytics in practice – types of data – modifying data in excel – creating Distributions from data– measures of location

Unit II Application of Business Analytics

Machine Learning - Introduction and Concepts - Differentiating algorithmic and model based frameworks, Decision analytics. Descriptive analytics - Predictive analytics - Prescriptive analytics.

Unit III Decision support and Data Visualisation

DSS- Executive and enterprise support- Automated decision support - Web analytics- Data mining -Applied artificial intelligence - Visual analysis: Data concepts – Data Dashboards - Data exploration & visualization - Scorecards

Unit IV Time Series and Forecasting

Time series pattern – forecasting accuracy – moving averages and exponential smoothing - using regression analysis for forecasting – determining the best forecasting model to use - building good spreadsheet model – What-If analysis – some useful excel functions for modeling – auditing spreadsheet model – a simple maximization problem.

Unit V Data Analysis using R

R Studio: Introduction – R data types and objects, reading and writing data - Data structures in R - R programming fundamentals - Advantages and disadvantages of using R.

Text Books:

Bernard Marr, *Big Data: Using Smart Big Data, Analytics and Metrics to Make Better Decisions and Improve Performance*, Wiley, 2015

Camm, J. D., J. James., Cochran., Michael., J. Fry., Jeffrey, W., Ohlmann., David R. and Anderson. *Essentials of Business Analytics*, Cengage Learning, 2015

Majid Nabavi, and D. L. Olson. *Introduction to Business Analytics*, Business Expert Press, 2018

Sandhya Kuruganti. *Business Analytics: Applications to Consumer Marketing*, McGraw Hill, 2015

Supplementary Readings:

Hodeghatta, U.R. and Umesha Nayak. *Business Analytics Using R - A Practical Approach*- Apress, 2017.

ABUSVAC03-E-Governance and Cyber Law

Learning Objectives

The objective of the course is

- To introduce the cyber world and cyber law in general
- To explain about the various facets of cyber crimes
- To enhance the understanding of problems arising out of online transactions and provoke them to find solutions
- To clarify the Intellectual Property issues in the cyber space and the growth and development of the law in this regard
- To educate about the regulation of cyber space at national and international level.

Course Outcomes

After completing the course, students will be familiar with

- Understanding concepts related to cyber world and cyber law in general
- Develop competitive edge on various facets of cyber crimes
- Problems arising out of online transactions and provoke them to find solutions
- Intellectual property issues in the cyber space and the growth and development of the law
- Regulation of cyber space at national and international level.
- Upholding ethical standards in cyber laws and intellectual property issues

Unit 1 Introduction to Web Technology

Introduction, Computers and its Impact in Society, Overview of Computer and Web Technology, Need for Cyber Law, Cyber Jurisprudence at International and Indian Level –

Introduction to e-governance, techniques, e-governance in India, Challenges faced, Indian theory of Public administration

Unit 2 International Cyber Law

Cyber Law - International Perspectives, UN & International Telecommunication Union (ITU) Initiatives, Council of Europe - Budapest Convention on Cybercrime, Asia-Pacific Economic Cooperation (APEC), Organization for Economic Co-operation and Development (OECD), World Bank, Commonwealth of Nations

Unit 3 Cyber Crimes & Legal Framework

Concepts of Cyber Crimes & Legal Framework, Cyber Crimes against Individuals, Institution and State, Hacking, Digital Forgery, Cyber Stalking/Harassment, Cyber Pornography, Identity Theft & Fraud, Cyber terrorism, Cyber Defamation, Different offences under IT Act, 2000

Unit 4 Dispute in Cyberspace

Dispute Resolution in Cyberspace 1. Concept of Jurisdiction 2. Indian Context of Jurisdiction and IT Act, 2000. 3. International Law and Jurisdictional Issues in Cyberspace. 4. Dispute Resolutions

Unit 5 Ethics and Business

Moral & ethical dilemmas. Ethics and Business: A sense of business ethics. Ethics and International Business: Ethics Issues beyond borders. "Current Streams of Thought".

Text Books:

Bhansali, *Information Technology Act*, 2000, University Book House Pvt. Ltd., Jaipur. 2003.
Satyanarayana.J, *E Government: The Science of the Possible*, PHI Learning Pvt. Ltd., 2012.
SudhirNaib, *The Information Technology Act, 2005: A Handbook*, OUP, New York, 2011.

Supplementary Readings:

Vasu Deva, *Cyber Crimes and Law Enforcement*, Commonwealth Publishers, New Delhi, 2003.
Verma S, K. and Mittal Raman. *Legal Dimensions of Cyber Space*, Indian Law Institute, New Delhi, 2004.

ABUSVAC04- Machine Learning

Learning Objectives

The objective of the course is:

- To understand the basic theory underlying machine learning.
- To be able to formulate machine learning problems corresponding to different applications.
- To understand a range of machine learning algorithms along with their strengths and weaknesses.
- To be able to apply machine learning algorithms to solve problems of moderate complexity.
- To apply the algorithms to a real-world problem, optimize the models learned and report on the expected accuracy that can be achieved by applying the models.

Course Outcomes

After completing this course, the student will be able to

- Appreciate the importance of visualization in the data analytics solution
- Apply structured thinking to unstructured problems
- Understand a very broad collection of machine learning algorithms and problems
- Learn algorithmic topics of machine learning and mathematically deep enough to introduce the required theory
- Develop an appreciation for what is involved in learning from data.

Unit 1 Introduction

Learning Problems – Perspectives and Issues – Concept Learning – Version Spaces and Candidate Eliminations – Inductive bias – Decision Tree learning – Representation – Algorithm – Heuristic Space Search.

Unit 2 Neural Networks and Genetic Algorithms

Neural Network Representation – Problems – Perceptrons – Multilayer Networks and Back Propagation Algorithms – Advanced Topics – Genetic Algorithms – Hypothesis Space Search – Genetic Programming – Models of Evaluation and Learning.

Unit 3 Bayesian and Computational Learning

Bayes Theorem – Concept Learning – Maximum Likelihood – Minimum Description Length Principle – Bayes Optimal Classifier – Gibbs Algorithm – Naïve Bayes Classifier – Bayesian Belief Network – EM Algorithm – Probability Learning – Sample Complexity – Finite and Infinite Hypothesis Spaces – Mistake Bound Model.

Unit 4 Instant Based Learning

K- Nearest Neighbour Learning – Locally weighted Regression – Radial Bases Functions – Case Based Learning.

Unit 5 Advanced Learning

Learning Sets of Rules – Sequential Covering Algorithm – Learning Rule Set – First Order Rules – Sets of First Order Rules – Induction on Inverted Deduction – Inverting Resolution – Analytical Learning – Perfect Domain Theories – Explanation Base Learning – FOCL Algorithm – Reinforcement Learning – Task – Q-Learning – Temporal Difference Learning. “Current Streams of Thought”.

Text Books:

Marco Gori, *Machine Learning: A Constraint-Based Approach*, Morgan Kaufmann. 2017.

Ethem Alpaydin, *Machine Learning: The New AI*, MIT Press, 2016.

Supplementary Readings:

Ryszard, S., Michalski, J. G. Carbonell and Tom M. Mitchell, *Machine Learning: An Artificial Intelligence Approach*, Volume 1, Elsevier. 2014.

Stephen Marsland, Taylor & Francis 2009. *Machine Learning: An Algorithmic Perspective*.

ABUSVAC05 - Block Chain Technology

Learning Objectives

The Objective of this course is

- To assess blockchain applications in a structured manner.
- To impart knowledge in block chain techniques and able to present the concepts clearly and structured.
- To get familiarity with future currencies and to create own crypto token.

Course Outcomes

Upon completion of this course the students will be able to

- Understand the various technologies and its business use.
- Analyse the block chain applications in a structure manner.
- Explain the modern concepts of block chain technology systematically.
- Handle the cryptocurrency.
- Understand the modern currencies and its market usage

Unit I Basic Concepts

Introduction - Decentralized society - Disturbed Database, Byzantine General problem - Fault tolerance, Hadoop Distributed File System, Distributed Hash Table, ASIC resistance, Turing Complete - P2P network - Private key - Public key - Cryptography - Hash Function - Digital Signature - ECDSA - Memory Hard Algorithm - Zero Knowledge Proof.

Unit II Block Chain

Introduction - Advantage over conventional distributed database - Network and protocols - Block chain network - Mining - Mechanism - Life Cycle of Block chain - Distributed consensus - Merkle Patricia Tree - Gas Limit -

Transactions and Fee - Anonymity - Reward - Chain policy- Life of Block chain applications -Soft and Hard Fork - Private and Public blockchain.

Unit III Distributed Consensus

Nakamoto consensus - Proof of work - Proof of Stake - Proof of Burn - Difficulty level - Sybil Attack - Energy Utilization and alternate - Fabric model - SDKs - Components of Fabric Model - Architecture of Hyperledger fabric.

Unit IV Cryptocurrency

History - Distributed ledger - Bitcoin protocols - Mining strategy and rewards - Ethereum - construction - Truffle - DAO - dApps - Smart Contract - Boot strapping - GHOST Vulnerability - Attacks - Sidechain - Namecoin.

Unit V Cryptocurrency Regulations

Stakeholders - Roots and Bitcoin - Legal Aspects - Crypto currency exchange - Black market and Global economy. Applications : IoT - Medical Record Management system - Domain Name Service and future of Blockchain - Business applications and assessing blockchain projects.

Text Books:

Daniel Drescher, *Block chain basics A non-technical introduction in 25 steps*, Apress, 2017.

Paul Vigna and Michael J. Casey. *The Age of Cryptocurrency*, Picador, 2016.

Supplementary Readings:

Antonopoulos, *Mastering Bitcoin : Unlocking Digital Crypto currencies*. OReilley Meid Inc., CA, 2015.

Imran Bashir. *Mastering Blockchain* Second edition. Packt, 2018.

Nakamoto, Satoshi. *Bitcoin: A Peer-to-Peer Electronic Cash System*. Cryptography Mailing list at <https://metzdowd.com>., 2009.

ABUSVAC06 - Sustainable Development

Learning Objectives

The objective of this course is to

- Understand the basic concept of sustainable management the environmental, social and economic dimensions.
- Know the history of the sustainable development idea.
- Be able to discuss the conflicts which are involved in the SD concept on the national as well as on the global scale.
- Be familiar with potential strategic options for SD (efficiency, sufficiency).
- Be able to discuss the (dis-) advantages of instruments for SD.
- Understand the SD challenge for companies their responsibility and their potentials for action.

Course Outcomes

Upon completion of the course students will be able to

- Further develop the ability of students to integrate and make autonomous use of their knowledge to sustain the environment.
- Develop the students ability to deal with complex phenomena, issues and situations of sustainable development.
- Develop the students potential towards, sustain the environment for professional activities that demand considerable autonomy or for research and development work.
- Develop the ability of students to integrate various management concepts and procedures to sustain the environment with minimum cost.

- Understand the role of corporate in environment sustainability.
- Understand the role of various national and international organisation in sustainable development.

Unit I Introduction Fundamentals of Environment

Status of environment - Environmental, social and economical issues - Need for sustainability - Nine ways to achieve sustainability - Linkage between population, resources, development and environment.

Unit II Sustainable Concept

Concept of sustainability - factors governing sustainable development- linkages among sustainable development - Environment and poverty - Determinants of sustainable development.

Unit III Sustainable Development Goals

UN sustainable development goals -causes and potential consequences of climate change and their relationship to SDG. Environmental finance - Eco marketing - green advertisement - organic products - issues in marketing of organic products - Eco -tourism - Natural resource conservation and management.

Unit IV Organisational Social Responsibility

Corporate / Organisation Social Responsibility - sustainability strategy development - management tools for sustainable development - sustainable / ethical investment accounts - sustainable product development and design - conflict between farming and the environment.

Unit V Organisations in SD

Environmental impact assessment - participants in environmental management - approaches to environmental management - approaches to environmental management - emerging environmental issues - Role of international organisations, national and local governments, environmental organisation industry and commerce and non-government organisation.

Text Books:

Jean Yves Grosclaude and Rajendra K. Pachauri. *Innovation for Sustainable Development*, Sultan Chand & Sons, New Delhi, 2011.

Tracey Strange and Anne Bayley. *Sustainable Development: Linking Economy, Society, Environment*, Himalaya Publication, Mumbai, 2004.

Supplementary Readings:

Bradley Striebi, *Engineering Applications in Sustainable Design and Development*, New Delhi, Prentice Hall of India, 2003.

Ramakrishnan. *Ecology and Sustainable Development*, Sultan Chand and Sons, New Delhi, 2013.

Sushma Goel. *Management of Resources for Sustainable Development*. PHI Learning, New Delhi, 2008.

CENTRE FOR RURAL DEVELOPMENT**AURDVAC01- Sustainable Rural Livelihoods And Adaptations To Climate Change (SLACC)****Learning Objectives**

The students will be able

- Understand climate change
- Adaptation for Sustainable rural livelihoods
- Earth Sciences and Natural Resource
- Climate Change and Adaptation Planning

Course Outcomes

After completion of the course, the students will be enable to

- will be able to work in Climate Change related Projects
- can get the complete information on natural Resources

Unit I Sustainable Rural Livelihoods

Concept of Sustainable Rural Livelihoods (SRL) –Objectives – Strategies –Issues-Natural Resources conservation and SRL – Sustainable Crop Production – Indigenous Animals Breeding – Health & Nutrition – Income generation.

Unit II Climate Change(15 Hours)

Climate Change – Components – Natural Resources Management(NRM) – Water Resources – Land Resources – Forest Conservation – Joint Forest Management (JFM) – Watershed Management – Eco-environmental Sustainability – Conservation of Local Water Bodies – Kudimaramathu System – Rainwater Harvesting – Indigenous Methods & Techniques.

Unit III Earth Sciences and Natural Resources

Earth Sciences and Natural Resources – Water Table – Ground Water Recharging Structures – Natural Vegetation – Geospatial technology – GIS – Geo-informatics – Geo-morphology – ISRO and Rural Development – RESPOND Projects – Remote sensing – Resource Mapping – Types, Methods & Techniques.

Unit IV Adaptation Techniques

Adaptation Techniques – Concepts – Weather Crop Advisory Services (WCAS) – Livestock Advisory – Vermicompost – Soil Resources Development – Tree Based Nursery & Cropping – Organic – fertilizers & Pesticides:- Production & Usage Zero Tillage – Direct Seeded Rice – Crop Intensification – Solar pumped Irrigation.

Unit V Climate Change and Adaptation Planning

Climate Change Adaptation Planning – Technology & Knowledge Management – Village Tool Bank – Community Managed crop Production & Resource Conservation: Approaches and adaptation package – Exposure Visit and Observation - Applications and Present Trends- Thoughts- Ideas Sharing – Community based Initiatives- Results and Impact.

Text Books:

Ajoy (2016) *Environment and Biodiversity*, Mittal Publications

Gangopadhyay (2018) *Plant Biodiversity*, Sage Publications

Regina et.al, (2019) *The Global Environment: Institutions, Law and Policy*, Sage Publications

Supplementary Readings:

Dan Egan, 2018. *The Death and Life of the Great Lakes*. Texas: W.W. Norton & Company.

Security, Washington: *Food and Environment Program*

Sumita Sarkar, 2011. *Globalization and Gender*, London. Longman

Todd Miller, 2019. *Storming the Wall*, Climate Change, Migration, and Homeland. City Light Books, CA.

Department of Philosophy
APHIVAC01 RESEARCH ETHICS

Learning Objectives:

- To make the students aware of the emerging ethical issues in modern research.
- To enable the students to understand the role and responsibilities of Research Ethics Committees.
- To make the students aware of the necessity of honesty & integrity while doing research.

Course Outcomes:

At the end of the Course, students will be able to:

- Understand the importance of Research Ethics in present day scenario
- Analyse the various ethical issues in modern research
- Comprehend the legal issues in research and various measures taken to overcome those issues
- Apply the honesty and integrity while doing research
- Realize that the research is meant for welfare of all human beings and society at large

Unit – I Introduction

Research Ethics: Meaning – Nature & Importance – Need of the study in Theoretical, Applied and Experimental Research.

Unit – II Ethical Issues in Research

Research Misconduct – Fabrication, Falsification & Plagiarism (FFP) – Researcher-Participant (Subject) relationship – Confidentiality and Disclosure.

Unit – III Research Ethics Committees

Legal issues in Research – National and International level guidelines, procedures & practices issued by Government & other Organizations/Agencies to conduct research – Institutional Animal Ethics Committee – UGC-CARE.

Unit – IV Honesty and Integrity in research

Responsible conduct of research at Individual and Group level –

Authorship – Research Integrity – Good experimental practice.

Unit – V Justice in research

Exploitation of Research Subjects (Participants) – Exclusion of particular group from research – Distributive Justice – Welfare of all human beings and Society.

Text Books:

Deni Elliott and Judy E. Stern, *Research Ethics-A Reader*, University Press of New England, Hanover, 2007.

Gary Comstock, *Research Ethics: A Philosophical Guide to the Responsible conduct of Research*, Cambridge University Press, UK, 2013.

Sana Loue, *Research Ethics-Theory and Practice*, Kluwer Academic Publishers, New York, 2012.

Supplementary Readings:

David Koepsell, *Scientific Integrity and Research Ethics*, Springer International Publisher, Mexico, 2017.

Helen Kara, *Research Ethics in the real world*, Policy Press, University of Bristol, UK, 2018.

Mark Israel and Iain Hay, *Research Ethics for Social Scientists*, Sage Publication Ltd., London, 2006.

Mark Israel, *Research Ethics and Integrity for Social Scientists*, Sage Publication Ltd., London, 2014.

Paul Oliver, *The Student's Guide to Research Ethics*, Open University Press, McGraw-Hill Education, England, 2010.

FACULTY OF SCIENCE**DEPARTMENT OF MATHEMATICS****SMATVAC01 Mathematics for Competitive Examinations****Learning Objective**

To introduce concepts of mathematics with emphasis on analytical ability and computational skill needed in competitive examinations.

Course Outcome

- By the end of the course, students will be able to face the Mathematics part of competitive examinations easily.

Unit I Problems on General Arithmetic

Problems of ages – Ratio and proportions -Inverse ratio-properties (Addendo, subtrahendo, componendo & dividendo) -ratio of four numbers -increasing and decreasing order of fractions.

Unit II

Percentages - Gain and loss percent's - Partnership problems.

Unit III Time, Distance and Work

Time and work – Time and distance.

Unit IV Commercial Arithmetic

Simple interest - Compound interest – Stocks and Shares.

Unit V Data Interpretation

Tabulation – Bar graphs and Pie charts – Line Graphs.

Text Book:

R.S. Agarwal, Content and treatment as in the book Quantitative Aptitude, S. Chand & Co, New Delhi, 2015.

Unit – I Sections 1.8 and 1.12

Unit – II Sections 1.10, 1.11 and 1.13

Unit – III Sections 1.15 and 1.17

Unit – IV Sections 1.21, 1.22 and 1.29

Unit – V Sections 2.36 to 2.38

Supplementary Readings:

Abhijit Guha, *Quantitative Aptitude for Competitive Examinations* IV Edition,
Tata McGraw Hill Pub. Co. Ltd. New Delhi, 2011.

Edgar Thorpe, *Course in Mental Abilities and Quantitative Aptitude for
Competitive Examinations*, II Edition, Tata McGraw Hill Pub. Co. Ltd.
New Delhi, 2008.

RSN Pillai and A. Bagavathi, *Statistic*, S. 7th Revised Edition, Chand and
Co., 2008.

DEPARTMENT OF STATISTICS**SSTAVAC01- Statistical Methods FOR Data Analysis****Learning Objectives**

Enright the students to acquire skills for adopting statistical tools and techniques of data analysis.

Course Outcomes

At the end of the course, the student will be able to

- Understand the various concepts of statistical tests and to apply large sample tests.
- Apply the exact tests for research problems.
- Apply the various chi-square tests.
- Apply the multiple regression analysis and multivariate tests for real life problems
- Apply the non-parametric tests for sample data.

Unit I

Tests of significance- population and sample; parameter and statistic standard error and sampling distribution of a statistic; Utility of Standard error; Steps involved in any test of significance; Basic concepts; Large sample tests- Tests for mean and difference of means; single proportion and equality of proportions; difference of standard deviations ; testing the correlation coefficient; equality of two correlation coefficients.

Unit II

Exact tests- Test for mean; equality of means and for paired samples; observed partial and multiple correlation and regression coefficients; test for one population variance and test for equality of two population variances; test for observed sample correlation ratio.

Unit III

Chi-square test for goodness of fit- contingency tables; test for independence of attributes; Yate's correction for contingency table; Bartlett's test for homogeneity of several population variances; test for homogeneity of several population proportions.

Unit IV

Multiple regressions- interpretation of R^2 ; interpretation of partial regression coefficients; test for linearity of regression; test for intercept in a regression. Application of Multivariate tests- Test for population mean vector (for covariance matrix known and unknown). Test for equality of two population mean vectors when the covariance matrices are equal; (known and unknown) Mahalanobis D^2 test.

Unit V

Non parametric methods; Advantages and disadvantages over parametric methods. Sign test for medians, Median test for two populations, Wald-Wolfwitz run test, Kruskal-Wallis Rank sum Test (H-Test), Mann-Whitney-Wilcoxon rank sum test, U-test, Kolmogorov – Smirnov, Test for goodness of fit, Test for comparing two populations, Test for randomness, Friedman's test.

Book for Study and Reference:

- Catelcult. R. 1982. *Statistics in Research and Development*, Chapman and Hall.
- Croxton, E. F. and Cowden, D. J. 1985. *Statistics Practical Business Statistics*, Prentice Hall.
- Gupta S. C. and V. K. Kapoor 2007. *Fundamentals of Mathematical Statistics*, Sultan Chand & Sons.
- Medhi. J. 1992. *Statistical methods*, Wiley Eastern Ltd.
- Norma Gilbert, 1981. *Statistics*, Saunders College publishing.
- Ostle. B. and Mensing R. W. 1975. *Statistics in Research*, Third Edition, Oxford & IBH Publishers Co.,
- Rajagopalan V. 2006. *Selected Statistical Tests*, New Age International Publishers (P) Ltd., New Delhi.

DEPARTMENT OF PHYSICS**SPHYVAC01 - Maintenance of Minor Equipment's (Entry Level)****Learning Objectives**

- To identify and categorize the most common household equipments
- To understand the basic principles of domestic equipments
- To predict the goodness or age estimation of domestic equipments
- To perform layman checks and rectify minor defects
- To familiarize the maintenance of household equipments

Course Outcomes

By the end of the course, the students will be able to

- Able to categorize the fault in the domestic equipment.
- Adopt proper handling procedures of the domestic equipment.
- Do layman checks and identify the problems in the domestic equipment.
- Familiarize and understand the maintenance of household equipment's.

Unit I Types of Household equipments – Mechanical, Thermal, Acoustical, Optical, Electrical, Electronics, Embedded Systems, - Simple & sophisticated appliances

Unit II General maintenance procedures of various appliances – Specific caution and care

Unit III Most common defects – other possible defects

Unit IV Layman checks - Simple testing tools for each category

Unit V Analyzing the condition — Confirming the goodness of the equipment

Practice

Hands-on practice of Tools & Procedures of above listed equipment's

List of Equipment's (includes but not limited to);

Mechanical Doors and Windows; Taps and Pipes, Cots, Tables and other Furniture, Scrubbers and Powders

Thermal Gas stoves & cylinders, Geyser, Cooking Utensils, Pressure Cooker,

Electrical Lights, Fan, AC, Coolers, Inverter, Battery, etc

Electronics Mobile, TV, DVD, etc

Embedded Washing Machines, Induction Stoves, Computers, etc

Text Books:

Complete Guide to Home Appliance Repair – Evan Powel, Better Homes & Garden Books Pubn, (Amazon online purchase) 2019.

The Hindu Speaks on Scientific Facts – General Volume, The Hindu Publication, Chennai, 2006.

Yen, Yetharku, Yeppadi (Tamil) – Sujatha, Vikadan Pirasuram, Chennai. 2005.

References:

Hand Book on Home Appliances 1st Edition – L. Palaniappan, S.P. Publications, Chidambaram, TN, , 2019.

Troubleshooting and Repairing Major Appliances – Eric Keinert, McGraw-Hill Professional Publishers, New Delhi 2014.

SPHYVAC02 - Maintenance of Minor Equipment's (ADVANCED LEVEL)**Learning Objectives**

- To understand the various principles of domestic equipment's
- To predict the goodness or age estimation of domestic equipment's
- To perform layman checks and rectify minor defects
- To troubleshoot the defects of the most common household equipment's
- To understand the techniques involved in advanced repairing of household equipment's

Course Outcomes

By the end of the course, the students will be able to

- Able to suggest & do remedial measures in the domestic equipment
- Do technical checks with relevant tools and solve the problems
- Provide useful tips to users for prolonged usage.
- Understand the techniques involved in advanced repairing of household equipment's

Unit I

Household equipment's – Various types – General Maintenance

Unit II

Effect of external world on the condition of the equipment's – Influence of gravity, humidity, moisture, climate,

Unit III

Ageing of the equipment's – Wear and tear – Prolonging the condition

Unit IV

Technical checks - Specific testing tools for each category - Multi-tester, multimeter, Logic Probe, CRO

Unit V

Troubleshooting procedures - software debugging, Active & Passive devices replacement

Practice

Hands-on practice of Tools & Technical procedures of above listed equipment's

List of Equipment's (includes but not limited to)

Mechanical Doors and Windows; Taps and Pipes, Cots, Tables and other Furniture, Scrubbers and Powders

Thermal Gas stoves & cylinders, Geyser, Cooking Utensils, Pressure Cooker,

Electrical Lights, Fan, AC, Coolers, Inverter, Battery, etc

Electronics Mobile, TV, DVD, etc

Embedded Washing Machines, Induction Stoves, Computers, etc

Text Books:

Complete Guide to Home Appliance Repair – Evan Powel, Better Homes and Garden Books Pubn, (Amazon online purchase) 2019.

The Hindu Speaks on Scientific Facts – General Volume, The Hindu Publication, Chennai 2006.

Yen, Yetharku, Yeppadi (Tamil) – Sujatha, Vikadan Pirasuram, Chennai 2005.

References:

Hand Book on Home Appliances – L.Palaniappan, S.P. Publications, Chidambaram, TN. 1st Edition, 2019.

Troubleshooting and Repairing Major Appliances – Eric Keinert, McGraw-Hill Professional Publishers, New Delhi. 2014.

DEPARTMENT OF CHEMISTRY**SCHEVAC01 - Phytochemistry and Biological Activities of Medicinal Plants****Learning objectives**

- To learn about phytochemistry and biological activities of medicinal plants

Course Outcomes

After completion of the course, student will

- Understand the concepts of phytochemistry
- Able to appreciate the medicinal values of plants
- Know the various techniques involved in the phytochemistry
- Familiarize the bio-active components present in the plants

Unit I

Extraction – purification of bio-active compounds from plants – cold & hot extraction – Soxhlet extraction – crude extracts purification by various solvents.

Unit II

Isolation of bioactive compounds – chromatographic techniques – thin layer chromatography – liquid chromatography – HPLC and UPLC.

Unit III

Structural analysis of bioactive compounds – IR spectroscopy – Mass spectrometry – NMR spectroscopy.

Unit IV

Herbal medicine – History of herbal medicine – different types of herbal medicine – Ayurveda, Siddha and Unani – Pharmacological action – clinical research and traditional uses of Indian medicinal plants – *Eclipta alba*, *Gymnema Sylvestre*, *Ocimum sanctum*, *Curcuma longa*.

Unit V

Phytopharmaceuticals and their health benefits – anthocyanins, carotenoids, lycopene, isoflavones, polyphenols, omega 3 - fatty acids, biological effects of resveratrol.

Text books:

Godte V.M. 2000. *Ayurvedic pharmacology and therapeutic uses of medicinal plants*, Bharathiya Vidya Bhavan, Mumbai.

Grewal, R.C. 2000. *Medicinal Plants*, Campus Books International, New Delhi.

Harbone, J.B. 1998. *Phytochemical Methods A guide to modern techniques of plant analysis*, 3rd Edition. Springer (India) Private Limited, New Delhi.

Majumdar, A. 2000. *Home remedies in Ayurveda*, Amar Granth Publications, New Delhi.

Silverstein, R.M. and F. X. Webster.1998. *Spectroscopic identification of organic compounds*, John-Wiley.

Willard, H.H., L. L. Merrit and J.A. Dean, 1987. *Instrumental Methods of analysis*. Wadsworth Publishing, Belmont, California.

DEPARTMENT OF BIOCHEMISTRY & BIOTECHNOLOGY**SBIOVAC01 - Clinical Laboratory Techniques****Learning Objectives**

- To demonstrate the basic requirements of clinical laboratory, external quality assurance and internal quality assurance.
- To impart skills on sampling, laboratory analysis and disposal of wastes.
- To impart knowledge on standards and interpretation of diagnostic values.

Course Outcomes

At the end of this course, students will be able to:

- Understand the basic concepts of specimen collection, transportation and disposal of specimens.
- Comprehend the methods of blood grouping, determination of protein, glucose, cholesterol, triglycerides and lipoproteins.
- Apprehend the examination of body fluids such as ascitic fluid, pleural fluid, synovial fluid, CSF etc.
- Interpret the presence of abnormal constituents in urine, detection of occult blood and semen analysis.

Unit-1

Specimen collection and handling, transportation of specimens, disposal of specimen after laboratory use. Composition of blood. Methods of estimation of Haemoglobin, PCV, total and differential count of WBC, platelet count, clotting, bleeding and prothrombin time.

Unit-2

Blood Group - methods of grouping and Rh factor. Determination of proteins in serum and plasma. Determination of glucose, glycated hemoglobin, triglycerides, cholesterol, lipoproteins.

Unit-3

Examination of body fluids - ascitic fluid, pleural fluid, synovial fluid, pericardial fluid, CSF and amniotic fluid.

Unit-4

Urine analysis, abnormal constituents. Faecal specimen - Macroscopic and microscopic examinations - detection of occult blood, Semen analysis.

Unit-5

Functional components of clinical laboratories. Basic requirements of clinical laboratory technician. Maintenance of glassware and equipments. Quality assurance in clinical laboratory. External QC and internal QC – Assessment - Corrective and preventive actions.

Text Books

Baker, F.J., R.E. Silvertown, Butterworth - Heinemann. *Introduction to Medical Laboratory Technology*. Butterworth- Heinemann. 2014.

Harold Varley. *Practical clinical biochemistry*. CBS Publisher. 6th ed. 2002.

Mayne. *Clinical Chemistry in Diagnosis and Treatment*. ELBS. 6th ed. 1994.

Praful. B. Godkar, Darshan. P. Godkar. *Text book of Medical Laboratory Technology*. Bhalani Publishing House. 2014

Todd & Stanford. *Clinical Diagnosis and Management by Laboratory Methods*. 16th ed. 2016.

DEPARTMENT OF BOTANY**SBOTVAC01 Impact of Medicinal Plants on Society****Learning Objectives**

- To acquire knowledge on medicinal and aromatic plants

Course Outcomes

On the successful completion of this course the students will be able to

- Understand the drug Extraction methods
- Gain knowledge on the various chemical components present in the plants
- Understand the post-harvest technology of herbs

Unit I

Medicinal Plants – Importance and Scope. Classification of medicinal plants. Cultivation of medicinal plants – Processing and utilization. Chemical nature of crude drugs - Extraction, Preparation and preservation of crude drugs. Ayurveda, Siddha and Unani systems of herbal medicine.

Unit II

Traditional herbal teas. Herbs for woman, Babies and children. Concepts of Herbal garden– Home, School Herbal gardens.

Unit III

Classification and Estimation of primary metabolites- Carbohydrates, fatty acids, aminoacids and Proteins. Secondary Metabolites - Classification , General characters, Chemical nature, Extraction and Estimation methods for Glycosides, Tannins, Volatile oils, Resinous substances, Terpenoids – Phenolic compounds and Alkaloids.

Unit IV

Plants defense mechanism – Antioxidants – Reactive Oxygen Species- enzymatic and non-enzymatic antioxidants - Role of antioxidants -

Estimation of antioxidants – Ascorbic acid, Alpha Tocopherol. Antioxidant enzymes – peroxidase, SOD and catalase. Free radical, Types of Free radicals – Production of free radicals.

Unit V

Post-harvest technology in medicinal plants scope and importance. Importance of herbal marketing -Future prospects and constraints of the herbal drug industry - Regulatory status of herbal medicine in India. Adulteration with reference to plant drug, types of adulterants and methods of adulteration.

Practicals:

1. Estimation of Carbohydrates
2. Estimation of Proteins
3. Estimation of fatty acids
4. Estimation of Phenols
5. Estimation of Flavonoids
6. Preparation of crude extracts
7. Herbarium preparation
8. Estimation of Ascorbic acid and α – Tocopherol.

Text Books:

- Farooqi, A. A. and B. S. Sreeramu, 2004. *Cultivation of medicinal and aromatic crops*. Revised edition, Universities Press (India) Private Limited, Hyderabad.
- Harbone, J. B. 1998. *Phytochemical Methods: A guide to modern techniques of plant analysis*. 3rd Edn., Springer (India) Private Limited, New Delhi.

Supplementary Readings:

- WHO, 2002. *Quality control methods for medicinal plant materials*, World Health Organization, Geneva, A.I.T.B.S., Publishers and Distributors, New Delhi.
- Halliwall, B. and J. M. Gutteridge. 1985. *Free radicals in Biology and medicine*. Oxford University press.

DEPARTMENT OF ZOOLOGY**SZOOVAC01 - Bio- Medical Instrumentation****Learning Objectives**

- To understand the basic structural and functional elements of human body
- To learn separation technique for biomolecules
- To learn bio-electric and bio-potential
- To learn imaging instruments

Course outcomes

At the end of the semester students will be able to

- Understand the structure and physiological functioning of various organ systems of human body
- Master the common bio-separation techniques used for clinical applications
- Operate various medical equipment's working on the principles of bio-electric potentials
- Understand the basic principles and operations of various imaging equipment's used
- in the clinical field
- Take up jobs in various clinical labs, hospitals and related institutions

Unit I Basic Elements of human Body

Cell Structure and organelles – Functions of each component in the cell. Cell membrane- transport across membrane – origin of cell membrane potential – Action potential. Human physiological systems of the body –Structure of heart – properties of Cardiac muscle-Conducting system of heart –Cardiac cycle- Structure of a Neuron – Types of Neuron –Synapses and types-conduction of action potential in neuron – Respiratory system – Components of respiratory system –Respiratory Mechanism- Types of respiration – Oxygen and carbon dioxide transport and acid base regulation – problems encountered in biomedical measurements.

Unit II Separation techniques for Bio-molecules

Electrophoresis Principles, methods and application of paper, Cellulose and immune electrophoresis, Poly Acrylamide. Gel Electrophoresis. Chromatography Principles, methods and application of paper chromatography, thin layer chromatography (TLC), Gas chromatography (GC) Gas liquid chromatography (GLC), High performance liquid chromatography (HPLC), Ion-Exchange chromatography.

Unit III Bio-Electric Potentials

Resting and action potentials – Propagation of action potentials – Bioelectric potentials – Electrocardiogram (ECG) – Electroencephalogram (EEG) – Electromyogram (EMG) Electroretinography (ERG) – Electrooculography (EOG).

Unit IV Bio- Potential Electrodes

Biopotential Electrodes – Types of Electrodes- Microelectrodes – Body surface electrodes – Depth and Needle electrodes –Chemical electrodes – Distortion in measured bioelectric signals using electrodes – Electrode paste.

Unit V Imaging Equipment's

Ultrasonic imaging – Reflection –Scattering-A mode display-B mode display – T-M mode display-Ultrasonic imaging instrumentation – Biomedical applications. Magnetic Resonance imaging (MRI)- Principles – Instrumentation – Advantages of MRI over other medical imaging techniques – Thermography- Endoscopy.

Text Books and References:

Rajlakshmi, T. *Biomedical Instrumentation*, First Edition, 2008.

Penelope Allsiy, Roberts, Jerry R. Villiams, *Saunders Farr's Physics for Medical imaging*, Elsevier, Second Edition, 2008.

Khandpur, R.S. *Handbook of biomedical instrumentation*, 2007.

Ramesh Chandra. *Nuclear Medicine physics*, 5th Edition, Lea and Febiger, 1998.

Fiaz M. Khan. *The physics of Radiation Therapy*, 5th Edn., Wolters Kluwer, 2014.

DEPARTMENT OF EARTH SCIENCES**SEARVAC01 – Water Resource Management****Learning Objectives**

- To know and understand the importance of water
- Treat to water resources
- Management of water resources

Course Outcomes

- Students will gain knowledge over the water resources
- They know about different harvesting system.

Unit I

Introduction – Scope and advantages of Groundwater- Aquifer- Infiltration - Water table – forms of water

Unit II

Hydrologic cycle- sources of Groundwater- Origin and occurrence of groundwater. Water conservation

Unit III

Water harvesting - Rainwater harvesting - Groundwater harvesting- methods of harvesting-Rural and Urban. Drip irrigation. Water-wise habits

Unit IV

Water Quality – standards of water for different uses- Drinking purposes- Irrigation purposes- Industrial purposes

Unit V

Water Pollution- Introduction- Types of pollution- controlling methods

Books for study:

Arul, P.2000. *A text book of Ground water* 2nd Ed, Dhanam Agency, Virudhachalam.

Raghunath, H. M. 2015. *Hydrology* 3rd ed. New Age International publisher.

Todd, D. K. 1980. *Groundwater Hydrology*, 2nd Ed. John Wiley and Sons.

DEPARTMENT OF MICROBIOLOGY**SMICVAC01– Advanced Techniques in Clinical Microbiology****Learning Objectives**

To learn the basic and advanced techniques in clinical Laboratory.

Course Outcomes

At the end of this course, students will be able to,

- Understand laboratory safety methods.
- Understand pathological analysis of clinical specimens.
- Gain knowledge about automated techniques in Clinical Laboratory Technology.

Unit I Laboratory Safety

Organization of laboratory and safety precautions in laboratory – Personal hygiene and care – General health care – Vaccination Schedule for technicians – Laboratory care and cautions – Do's and Dont's – lab accidents – Cuts and wounds – Fire Accidents (Chemical Gas, Flammable Chemicals, Electrical , Spirit Lamp, Gas) – Chemical burns.

Unit II Sample Analysis

Sample collection, processing, preservation and transportation of various clinical pathology samples. Pathological Analysis of clinical specimens.

Unit III Microscopic Analysis

Microscopic analysis of clinical specimens – Urine, Stool, Sputum, Pus, Blood, CSF and other body fluids.

Unit IV Culture Methods

Culture methods – Culturing and isolation of pathogens from clinical specimens. Culture media – General purpose media – special media – selective media – differential media – transport media.

Unit V Advanced Techniques & Automation

ELISA – PCR- Fluorescence Microscopy – Automated culture systems – automated Blood culture – Automated Urine culture – Automated Antibiotic Sensitivity testing.

Text Books:

Anantha narayanan. R. and Paniker C. K. J. *Text Book of Microbiology*, 9th Edition Orient Longman, 2013.

Chakraborty, A *Text Book of Microbiology* 3rd Edn, New Central book Agency (P) Ltd, Kolkata, India, 2005.

James cappuccino, Natalie Sherman. *Microbiology A Laboratory manual*. 7th Edition. 2004.

Praful Godkar, Darsan, *Text book of Medical Laboratory Technology* Vol I & II, Bhalani Publishing House. 2014.

DEPARTMENT OF COMPUTER & INFORMATION SCIENCE**SCISVAC01 - Web Development****Learning Objectives**

- To learn about HTML, DHTML concepts.
- To implement a variety of presentation effects in HTML.
- To know about appropriate client-side applications.
- To gain the Knowledge of XML and its applications.
- To know about java scripts and create adaptive web pages.

Course Outcomes

On successful completion of the course, the students will be able to,

- Develop a dynamic webpage by the use of java script and DHTML.
- Create web pages using DHTML and Cascading Styles sheets.
- Build dynamic web pages using JavaScript (client side programming)
- Write a well formed / valid XML document.

Unit I HTML

History of the Internet and World Wide Web – HTTP, SMTP, POP3, MIME, Understanding roles of Web Browsers and Web Servers. Structure of HTML, Text formatting, Text styles, hyper link, image, and tables.

Unit II Frames, Forms and CSS

Frames, Forms and controls, Embedding audio, video and animated files in HTML, CSS –Understanding CSS, Internal CSS, External CSS, Font Properties, Text Properties, Color and Background properties, Table properties, Numbering and List Properties.

Unit III JavaScript

Data types and literals, operators, conditional statements, loop constructs, reserved words; core Objects Array Object, Date Object; Functions passing value to JavaScript functions, user defined functions, Handling old browsers , java script events, formatting cookie, retrieving cookie value from the cookie file, removing a cookie , animations using events.

Unit IV ASP & XML

ASP – Working of ASP – Request and Response Objects – File System Objects – Session tracking and cookies – ADO – Access a Database from ASP – XML – Structure in Data – Name spaces – DTD – Vocabularies – Accessing Web servers – IIS – Apache web server.

Unit V PHP & MySQL

Why PHP and MySQL - Server-Side Web Scripting - Getting Started with PHP - Adding PHP to HTML -Syntax and Variables - Control and Functions - Passing Information between Pages - Strings - Arrays and Array Functions - Numbers - MySQL Database Administration - PHP/MySQL Functions -Displaying Queries in Tables - Building Forms from Queries.

Text Books:

Kris Jamsa, Konrad King and Andy Anderson, *HTML & Web Design Tips and Techniques*, Tata McGraw-Hill, First Edition, 2002.

Powell T.A. *HTML Complete Reference*, Tata McGraw-Hill, Fifth Edition, 2010.

Reference Books:

Deitel & Deitel, Goldberg, *Internet and World Wide Web – How to Program*, Third Edition, Pearson Education Asia, 2005.

Elizabeth Naramore, Jason Gerner, Yann Le Scouarnec, Jeremy Stolz, and Michael K. Glass, *Beginning PHP5, Apache, and MySQL Web Development*, First Edition, Wrox publications, 2005.

Rajkamal, *Web Technology*, First Edition, Tata McGraw-Hill, 2001.

Tim Converse, *Joyce Park and Clark Morgan*, PHP5 and MySQL Bible, Wiley Publishing, Inc. 2004.

SCISVAC02 - Fundamentals of Computing

Unit I Document Creation in MS-WORD

Creating new Documents –Document template – Typing Text – Editing Text – Insert Text – Go to, Find, and Replace text or word- Formatting of Text – Format painter – Cut and Paste utility.

Unit II Table Creation in Ms-Word

Creating tables – Working with table – Merging cells – Splitting a cell – Splitting a table -using auto correct.

Unit III Ms-PowerPoint

Create Slide Presentation – Design Theme – Add Text – Editing Techniques – Slide Master – Format Slide.-Transition and Animation.

Unit IV Ms-Excel

The typical worksheet or spread sheet – cell and their properties – formatting cell – text, numbers, currency, accounting, date, time, percentage, scientific – formats.

Formula using arithmetic and relational operators in a worksheet -Advanced Formulas sum, count, Average, Max, Min, Product.

Unit V Graphs and Charts

Bar diagrams, pie charts, Area, - Building Line Diagrams, Histograms, Scatter plots -Frequency Graphs.Introduction to Flash.

Text Book:

Torben Lage Frandsen, *Microsoft Office Word 2007*, Bookboon, India.

Reference Book:

Stephen Moffat, *Microsoft Word 2010*, Bookboon, India.

SCISVAC03 - Advanced Web Development

Learning Objectives

- Explore the backbone of web page creation by developing .NET skill.
- Enrich knowledge about HTML control and web control classes
- Provide depth knowledge about ADO.NET
- Understand the need of usability, evaluation methods for web services

Course Outcomes

On the successful completion of this course, Students will be able to

- Design a web page with Web form fundamentals and web control classes.
- Recognize the importance of validation control, cookies and session.
- Apply the knowledge of ASP.NET object, ADO.NET data access and SQL to develop a client server model.
- Recognize the difference between Data list and Data grid controls in accessing data.

Unit I Overview of ASP.NET

The .NET framework – Learning the .NET languages Data types – Declaring variables- Scope and Accessibility- Variable operations- Object Based manipulation- Conditional Structures- Loop Structures- Functions and Subroutines. Types, Objects and Namespaces The Basics about Classes- Value types and Reference types- Advanced class programming- Understanding name spaces and assemblies. Setting Up ASP.NET and IIS

Unit II Developing ASP.NET Applications

ASP.NET Applications ASP.NET applications– Code behind- The Global.asax application file- Understanding ASP.NET Classes- ASP.NET Configuration. Web Form fundamentals A simple page applet- Improving the currency converter- HTML control classes- The page class- Accessing HTML server

controls. Web controls Web Control Classes – AutoPostBack and Web Control events- Accessing web controls. Using Visual Studio.NET Starting a Visual Studio.NET Project- Web form Designer- Writing code- Visual studio.NET debugging. Validation and Rich Controls Validation- A simple Validation example- Understanding regular expressions- A validated customer form. State management - Tracing, Logging, and Error Handling.

Unit III Working with Data

Overview of ADO.NET - ADO.NET and data management- Characteristics of ADO.NET-ADO.NET object model. ADO.NET data access SQL basics– Select , Update, Insert, Delete statements- Accessing data- Creating a connection- Using a command with a Data Reader - Accessing Disconnected data - Selecting multiple tables – Updating Disconnected data. Data binding Single value Data Binding- Repeated value data binding- Data binding with data bases. Data list – Data grid – Repeater – Files, Streams and Email – Using XML

Unit IV Web Services

Web services Architecture Internet programming then and now- WSDL– SOAP- Communicating with a web service-Web service discovery and UDDI. Creating Web services Web service basics- The StockQuote web service – Documenting the web service- Testing the web service- Web service Data types- ASP.NET intrinsic objects. Using web services Consuming a web service- Using the proxy class- An example with TerraService.

Unit V Advanced ASP.NET

Component Based Programming Creating a simple component – Properties and state- Database components- Using COM components. Custom controls User Controls- Deriving Custom controls. Caching and Performance Tuning Designing and scalability– Profiling- Catching- Output catching- Data catching. Implementing security Determining security requirements- The ASP.NET security model- Forms authentication- Windows authentication.

Text Book:

Mathew Mac Donald, *ASP.NET Complete Reference*, TMH, 2005.

Reference Books:

Crouch Matt, J. *ASP.NET and VB.NET Web Programming*, Addison Wesley
2002.

Liberty, J. and D. Hurwitz, *Programming ASP.NET*, Third Edition, O'REILLY,
2006.

SCISVAC04 - Internet and its Applications

Unit I Internet concepts

Introduction – Internet Connection Concepts – Connecting to Dial-up Internet Accounts – High Speed Connections ISDN, ADSL, and Cable Modes – Intranets Connecting LAN to the Internet.

Unit II E-mail concept

E-mail Concepts – E-mail Addressing – E-mail Basic Commands – Sending and Receiving Files by e-mail – Controlling e-mail Volume – Sending and Receiving secure e-mail.

Unit III Internet services

Conferencing Concepts – E-mail Mailing Lists – Usenet Newsgroup Concepts – Reading Usenet Newsgroups – Video Conferencing.

Unit IV Web concepts and Browsers

World-Wide-Web Concepts – Elements of Web – Clients and Servers – URL and –Web Browsers – Netscape Navigator and Communicator-Microsoft Internet Explorer.

Unit V Social Media

Online Chatting – Whatsapp –Telegram- Instagram – Facebook – Twitter.

Text Book:

Alexis Leon and Mathews Leon, 2012. *Internet for everyone*, Leon Techworld, Chennai, India.

Reference Book:

Kamlesh N. Agarwal & Prateek A. Agarwal. *An introduction to Wireless application protocol*, McMillan India Ltd., 2001.

FACULTY OF MARINE SCIENCES**DEPARTMENT OF MARINE BIOLOGY****CMABVAC01 - Seafood Processing Technology****UNIT I**

Preservation and Processing Importance of preservation and processing of sea foods criteria for assessing freshness handling of fresh materials – on board handling, chilling methods, phenomena of rigor mortis, spoilage changes – causative factors (other than microbial).

UNIT II

Drying and irradiation Drying and dehydration – conventional and modern methods, relative merits and demerits. Quality changes during drying and storage – functional properties, sensory quality, nutritional value, quality indices, storage life. Salt curing, picking and smoking – methods, merits and demerits – quality changes during processing and storage life – quality standards. Irradiation – source of radiation, methods, merits and demerits, quality changes during processing and storage - quality standards , minimal processing technologies.

UNIT III

Freezing Freezing and cold storage – process of freezing, types, quality changes during processing and storage. Canning – procedures, quality changes during processing and storage – quality standards. Role of preservatives in processing.

UNIT IV

Packing Packing – function of packaging, special needs in food packaging, packaging materials, types -1 handling fresh fish, retail packing, whole sale packaging, Block frozen packs, IQF, layered and shatter packs, modified atmospheric packaging, vacuum packaging, boil and bag type, cans and containers, air freight packaging, packaging standards for wet shipment and irradiated foods. Food contact substances – limits. Labeling – information to be included, labeling regulation.

UNIT V

Fishery by – products Fishery by – products of commerce – surimi, fish protein concentrate, meal and oil production, hydrolysis of fish protein. Cannery waste processing of fish stick water. Animal feeds, fish silage, fish liver preservation, fish gelatin, fish glue, leather from fish skin, chitin and chitosan, pearl essence, use of shells, fertilizer from fishery by products.

Reference books:

- Anon, 1979. *Handling, Processing and Marketing of Tropical fish*, Tropical Products Institute, London.
- Carison, V.R. and R.H Graves, 1996, *Aseptic Processing and Packing of Food: A Food Industry Perspective*, CRC Press.
- Chandran, K. K., 2000. *Post Harvest Technology of Fish and Fishery Products*, Daya Publishing House, New Delhi.
- Clucas, J and A.R. Ward., 1996. *Post Harvest Fisheries Development; A guide to Handling preservation, processing and Quality*. Publishing Manager Natural Resources Institute, Central Avenue, United Kingdom.
- Gopakumar, K., 1977. *Tropical Fishery Products*. Oxford & IBH Publication.
- Kreuzer R., 1974. *Fishery Products*, FAO Fishing News (Books) Ltd., England.
- Miller, M.D., 1990. *Ciguatera Seafood Toxins*, CRC Press.
- Oliveira, F. A. R. and J.C Oliveira, 1999. *Processing Foods: Quality Optimization and Process Assessment*, CRC Press.
- Sikorski, Z. E., 1990. *Seafood: Resource, Nutritional Composition, Preservation*, CRC Press.
- Sikorski, Z. E., 1990. *Seafood: Resource, Nutritional Composition, Preservation*, CRC Press.

CMABVAC02 Aquaculture

Unit I

Overview importance's of coastal and freshwater aquaculture, global scenario, present status in India - prospects and scope.

Unit II

Selection of site: topography, water availability, soil conditions, design and layout, structure and construction. Preparation of ponds – different methods for the eradication of weed fishes, predators, aquatic insects and aquatic weeds.

Unit III

Selection of cultivable Species- Finfishes, Shellfishes and Seaweeds. Seed selection protocol and seed availability – wild source, hatchery source. Live feed culture – artemia, rotifer and microalgae. Water Quality Management.

Unit IV

Stocking of seed and culture techniques - traditional, extensive, semi-intensive and intensive; mono sexculture, monoculture, polyculture - pond, raceway, cages, pens, raft and rope culture. Feed management – selection of feed, types of feed, feeding schedule and nutritional value. FCR.

Unit V

Diseases diagnosis and treatment. Probiotics and immunostimulants. Harvesting and cost benefit analysis. Coastal zone management – legal issues – Government policies – role of Coastal Aquaculture Authority of India (CAA).

Text Books:

Bardach, John E. 1997. *Sustainable Aquaculture*. John Wiley and Sons.

Chapman, V.J., 1980. *Seaweeds and their uses*. Chapman and Hall, London.

Joachim W., Hertrampf and F.P Pascal, 2000. *Handbook on Ingredients for Aquaculture feeds*. Kluwer Academic Publishers, London.

- Pillay, T.V.R .1990. *Aquaculture Principles & Practices*. Fishing News (Books) Limited, London.
- Santhanam R. N. Ramanathan and G. Jegatheesan 1990. *Coastal Aquaculture in India*, CBS Publishers and Distributors.
- Stickney, 1995. *Principles of Aquaculture*, John Wiley & Sons.
- Wheaton, F.W. 1977. *Aquaculture Engineering*. John Wiley and Sons, New York.

FACULTY OF INDIAN LANGUAGES**LLINVAC01 Intercultural Communication****Learning Objectives**

- This course introduces you to the fundamental principles and issues of intercultural communication from an interdisciplinary perspective. It proposes to develop a perception of and appreciation for different cultural perspectives and values.

Unit I

Language and Culture - studying culture and communication - Various Definitions of Culture - basic approaches to the concept of culture - Communication and Culture - Intercultural communication: Interaction in a Diverse World - historic overview of the field - the academic field of intercultural communication - “Culture” in the Field of Intercultural Communication - Three Principles of Interculturalism- DMIS: Denial – Defense – Minimization.

Unit II

Identity- Racial identity - Ethnic identity - Cultural identity; Plurality of Identity; Properties of Cultural Identity- Individual- relational and communal identity; Social and Cultural Identities- Gender identities- Age identities- Spiritual identity- Class identityNational identity- Regional identity- Personal identity; Stereotypes - Cultural Diversity in Perception: Alternative Views of Reality.

Unit III

Verbal and nonverbal communication (including conversation styles, politeness, and expectations related to time and space) - low and high context communication processing - communication styles - cultural speaking rules Politeness - perception, interpretation and evaluation; nonverbal Communication; Proxemics - Contact/low contact – Kinesics.

Gestures, facial expressions, body language, eye contact; artifacts Clothing, artifacts, living environments.

Unit IV

Cultural values and communication- Cross-cultural Studies - Individualism and collectivism- Hierarchy and power distance; Intercultural Studies – Intercultural encounters and adaptation- Encounters and emotions -Culture Shock -Intercultural adaptation - U-curve model- honeymoon period- crisis period - adjustment period - ANNAMALAI UNIVERSITY biculturalism period- W-curve model - Stress-Adaptation-Growth- emigrant assignment cycle.

Unit V

Intercultural competence - Intercultural Competent Person- intercultural sensitivityMilton Bennett's developmental model of intercultural sensitivity - Acceptance, Adaptation and Integration Measurement of Intercultural Sensitivity; Theory to practice - Cultural influences on context – the business setting, the educational setting and the health care setting.

References:

- Bennett, M. J. 1998. *Basic Concepts of Intercultural Communication*, selected readings. Yarmouth, Maine: Intercultural Press, Inc.
- Bennett, M.J. 1986. *A developmental approach to training for intercultural sensitivity*. International Journal of Intercultural Relations, 10 (2), 179-196.
- Bennett, M.J. 1993. *Towards ethno relativism: A developmental model of intercultural sensitivity*. In: R.M. Paige (ed.), Education for the intercultural experience. Yarmouth, ME: Intercultural Press. 21-71.
- Bennett, M.J. 1998. *Inter cultural Development Inventory Manual*. Portland: The Intercultural Communication Institute.
- Bhawuk, D. P. S. & H.C. Triandis. 1996. The role of culture theory in the study of culture and intercultural training.
- Brown, P., & S.C. Levinson. 1978. *Politeness: Some Universals in Language Usage*. Cambridge: University Press.

- Carbaugh, D. 1996. *Situating selves: The communication of social identities in American scenes*. Albany, NY: State University of New York Press.
- Chen, G. & W. Starosta 1998. *Foundations of inter cultural communication*.
- Chomsky, N. 1975. *Reflections on language*. New York : Pantheon Books.
- Fong, M. & R. Chuang (eds). 2004. *Communicating Ethnic & Cultural Identity*. USA: Rowman & Littlefield, Inc.
- Hall, E.T. 1989. *Beyond culture*. New York: Anchor Books.Hammer.
- Hymes, D. 1972. *Language in society*. Cambridge University Press. Hymes, D. 1974. *Foundations in sociolinguistics: An ethnographic approach*. Philadelphia: University of Pennsylvania Press.
- Kim, Y. Y., 2001. *Becoming Intercultural. An Intergrative Theory of Communication and Cross-Cultural Adaptation*. Thousand Oaks, CA: Sage Publications, Inc.
- Landis & R.S. Bhagat (eds.). *Handbook of Intercultural Training*. Thousand Oaks, CA: Sage Publications.
- Landis, D. Bennett, J.M. & Bennett, M.J. (eds.) 2004. *Handbook of Intercultural Training* 3rd edition. Thousand Oaks: Sage.
- Larry A. Samovar & Richard E. Porter. 2003. *Intercultural Communication – A Reader*. 10th Edition, Wadsworth, Australia.
- Schwartz, S.H. 1994. *Beyond Individualism-Collectivism: New cultural dimensions of values*. In K. Uichol, C. Kagitcibasi, H.C. Triandis & G. Yoon (eds.). *Individualism and Collectivism*. Newbury Park: Sage. 85-119.
- Schwartz, S.H. 2003. *Values and behavior: Strength and structure of relations. Personality and social psychology bulletin*. Thousand Oaks, CA: Sage Publ. Bd. 29, 10. 1207-1220.
- Tracy Novinger, 2001. *Intercultural Communication – A Practical Guide*. University of Texas press, Austin.

LLINVAC02 Intercultural Communication (Advanced Level)**Learning Objectives**

- This course introduces you to the fundamental principles and issues of intercultural communication from an interdisciplinary perspective. It proposes to develop a perception of and appreciation for different cultural perspectives and values.

Unit I

Inter-Cultural communication- definition- process- philosophical and functional dimensions. Theoretical backdrop of Intercultural Communication: Inter-region Migration; World Capitalistic System; Clash of Civilizations; Culture shock; Melting pot; Composite culture; East-West parallelism; Indian diversity .

Unit II

Concepts and Definitions: Culture and Civilization- Communication as a concept in western and eastern cultures- Dvaita, Advaita- Vishishtadvaita- Chinese- Dao Tsu and Confucius- Shinto Buddhism and Sufism- Modern mass media as vehicles of inter-cultural communication- barriers in inter-cultural communication- religious, political and economic pressures.

Unit III

Language and grammar as a medium of cultural communication. Linguistic aspects of inter cultural communication. Human Communication, Socio-linguistic exchange, Ethos and Values; impact of new technology on culture; globalization effects on culture and communication.

Unit IV

Cultural negotiations; understanding similarities and differences in cultures: Experiencing with empathy, Cultural Acquisition and Blending, Skills of adaptation, communication and folk media- character, content and functions-- dance and music as instruments of inter-cultural communication

Unit V

UN efforts in the promotion of intercultural communication- other organizations- code of ethics. UNESCO activities, Colonialism, Great Literature, Business pressures and interests Restricting Forces: Civilizational and Ethnic Clashes, Identity preservation, Fundamentalism, Food culture.

Readings:

- Martin, J., T. Nakayama and L. Flores. 2002 *Readings in Intercultural Communication*. Experiences and contexts, McGraw- Hill.
- Tisdell, C.1 989, "Global News Flow; Dependency and Neo-imperialism," Comparative Political Studies, Vol. 22(3); 243-264.
- Edwin R. et al. 2014 Specifications of Intercultural Communication: A Reader, Cengage Learning.
- Fred. E. Janet, 2004 *An Introduction to Intellectual Communication*, Sage Pub. India Pvt New Delhi.
- Harasim Linda M. 2003. Global Networks; Computers and International Communication, New York, Longman.
- Hutington, S. 1997. *The Clash of Civilizations and the Remaking of World Order*, Penguin.
- James W. Carey.1989. *Communication as Culture: Essays on Media and Society*, Psychology Press.
- Martin, J.N. & Nakayama, T.K. 2009. *Intercultural Communication in Contexts* 5th Edition, McGraw Hill.
- Meyer; William H.1998. *Transnational Media and Third World Development; The Structure and Impact of Imperialism*, New York; Greenwood Press.
- Mohammad, Ali, 1998. *International Communication and Globalization*. California; Sage Pub. India Pvt New Delhi.
- Nordenstreng, Kaarle & Herbert I. Schiller, 1993. *Beyond National Sovereignty; International Communication the 1990s*. Norwood, NJ; Ablex Publishing Co.
- Rantanen, Terhi. 2004. *The Media and Globalization*. London; Sage.

- Samovar, Porter, 2009. *Understanding Intercultural Communication: The Working Principles*.
- Thombre, A, Ramesh N. Rao. 2015. *Specifications of Intercultural Communication : The Indian Context*. Sage Pub. India Pvt., New Delhi
- Thussu, Daya Kishan, 2000. *International Communication: An introduction*. New York; Oxford University Press.
- Willam Gudy Kunstella Mody, 2002. *Handbook of International & Intercultural Communication*, Sage Pub. India Pvt., New Delhi.

LLHINVAC01- Spoken and Written Hindi**Learning Objectives**

- To equip the learners with effective speaking and listening skills in Hindi.
- To enable the students to learn fundamental of language and its usage in different life situations.
- To make them realize the communication potential of Hindi Language.
- To train them to use Hindi language effectively to face interviews, group discussion and public speaking
- To enable the students to know about the structure of language

Course Outcomes

- Enable to make simple conversation in Hindi
- Able to read and write Hindi sentences
- Knowledge in Basic Hindi
- Increases confidence to move on North India (interview purposes)
- Generates interest to learn the hindi language further

Unit I Introduction

Alphabets- vowels, consonants, making two letters, three letters.

Unit II Names and Numbers

Names of flowers-fruits, vegetables, birds, days, months, Directions

Unit III Grammar

Noun-pronoun- verb-adjectives, adverb ,tenses-gender

Unit IV Relationship

Greetings-Terminology for kinship

Unit V Conversation

Conversation in various situation-daily routine-market- train, hotel

References:

Hindi subodini- Dakshin Bharat hindi Prachar Sabha, Chennai 17

Saral Hindi Parichya. –Dakshin Bharat hindi Prachar Sabha. Chennai 17.

FACULTY OF ENGINEERING & TECHNOLOGY**DEPARTMENT OF MECHANICAL ENGINEERING****EMECVAC01 - Renewable Energy and IOT****Unit I Solar Energy**

Basic concepts, Solar radiation – Measurement– Flat plate and concentrating collectors - Solar heating and cooling techniques – Solar desalination – Solar Pond - Solar cooker - Solar dryers-Solar furnaces - Solar thermal electric power plant – Solar photo voltaic conversion – Solar cells – PV applications.

Unit II Biomass Energy

Biomass – usable forms- composition- fuel properties – applications, Biomass resources, Biomass conversion technologies - pyrolysis – gasification -anaerobic digestion - Energy farming, Biogas technology-Family biogas plants, Community and institutional biogas plants.

Unit III Other Renewable Energy Sources

Tidal energy – Wave energy – Open and closed OTEC Cycles – wind energy-- Wind power plants-Geothermal energy– Social and environmental aspects.- Fuel cell technology – types.

Unit IV Internet of Things (IoT)

Definition -, Characteristics, Physical design, Logical design, Functional blocks of IoT, Communication models & APIs, Machine to Machine, Difference between IoT and M2M, Software defined Network (SDN). Applications of IoT: Home automation, Industry, Surveillance, other IoT applications. Raspberry Pi Interfaces -Programming Raspberry Pi with Python. Application of IoT on Energy gadgets.

Unit V Performance study of solar systems

Study and performance test on solar air heater -Study and performance test on water heater -Study and Performance test on solar still -Study of solar refrigeration.

Text Books:

Twidell J.W. & Weir, A. *Renewable Energy Sources*, EFN Spon Ltd., UK, 1986.

Tiwari G. N. *Solar Energy – Fundamentals Design, Modelling and applications*, Narosa Publishing House, NewDelhi, 2002.

Vijay Madisetti, Arshdeep Bahga. *Internet of Things: A Hands-On Approach*, Orient Blackswan Pvt. Ltd., New Delhi, 2015.

References:

Godfrey Boyle. *Renewable Energy. Power for a Sustainable Future*, Oxford University Press, U.K, 1996.

Shibu, K.V. *Introduction to Embedded System*, Tata McGraw Hill, 2009.

EMECVAC02 - Energy Auditing and Modelling

Unit I Energy Management

Energy management- various approaches, cost effectiveness, benchmarking, optimization of

energy requirement and maximization of system efficiencies. Fuels and energy substitution.

Unit II Energy Audit

Energy audit – need, preliminary audit, detailed audit, methodology and approach. Instruments for audit, monitoring energy and energy savings.

Unit III Assessment and Reporting

Evaluation of saving opportunities – determining the savings in INR, non-economic factors, Conservation opportunities, estimating cost of implementation- - the plant energy study report, importance, effective organization, report writing and presentation.

Unit IV Energy Audit Instruments

Basic measurements – Electrical measurements, Light, Pressure, Temperature and heat flux, Velocity and Flow rate, Vibrations, etc. Instruments Used in Energy systems: Load and power factor measuring equipments, Wattmeter, flue gas analysis, Temperature and thermal loss measurements, air quality analysis etc. Mathematical, statistical modelling and analysis.

Unit V Computer laboratory

Introduction to MS-Excel, Working with Spread Sheet, Power Point- Introduction to Power Point, Creating a Presentation/Slide, Adding Animation in Slide, Running a Slide Show. Statistical modelling tools

Presentation and Visualization – graphs, charts, 2D, 3D

Preliminary Auto CAD 2 D drawing exercise

Preliminary C and C++ Programming exercises

Text Books:

Energy Management Audit & Conservation by Barun Kumar De Publisher: Vrinda Publications 2007

Hamies, Energy Auditing and Conservation: Methods, Measurements, Management & Case Study, Hemisphere, Washington, 1980.

References:

Murphy, W.R., G. Mckay. *Energy Management. Butterworth and Company* (Publishers) Ltd., 2009.

Smith, C. B., K.E. Parmenter. 2013. *Energy Management Principle*, Pergamon Press Inc., Maxwell. House, Fairview Park, NewYork

Dryden, I. G. C. 2013. *Efficient Use of Energy*. Butterworth and Company (Publishers) Ltd.

Desai, A.V. *Energy Economics* -A.V.Desai (Wiley Eastern)

Energy conservation guidelines. Published by Bureau of Energy Efficiency New Delhi, India.

DEPARTMENT OF MANUFACTURING ENGINEERING**EMANVAC01- Industry 4.0****Unit I Introduction to Industry 4.0**

Evolution: Industry 1.0, Industry 2.0, Industry 3.0, Industry 4.0 - Definition of Industry 4.0 - Components - Difference between conventional automation and Industry 4.0 -Definition of a smart factory - Technological pillars of Industry 4.0

Unit II Industrial Internet of Things

Concept, Advanced Analytics, Peer (M2M)Communication, IT Tools and Methodologies, Role of Identification, Sensing, Actuation& Control, Challenges;

Cyber-Physical Systems: Concept, Features, Components, Impact on to Manufacturing; Fundamentals of Cloud Manufacturing

Unit III Artificial Intelligence

Concept, Basics of Heuristics, Markov Decision Process, Artificial Neural Networks and Machine Learning, Applications

*Smart Sensors:*Components, Industrial Sensors, Actuators, Transducers, SCADA

Unit IV Case Studies

Case Studies in Adaptive Machines, Smart Factories, Additive Manufacturing, Additive Manufacturing and Nanotechnology

Unit V Laboratory

Simple Experiments in Mechatronics laboratory -IoT laboratory - Machine Learning laboratory - Virtual reality laboratory - Robotics laboratory

Text Books

Alasdair Gilchrist, Industry 4.0: *The Industrial Internet of Things*, A Press, 2017.

Kevin Knight, Elaine Rich and Shiv Nair, *Artificial Intelligence*, Hill Education, 2017.

Patranabis, *Sensors and Transducers*, , PHI India, 2003.

Rajeev Alur, *Principles of Cyber-physical Systems*, MIT Press, 2015.

Schwab, *The Fourth Industrial Revolution*, Crown Business, 2017.

EMANVAC02- Business Analytics

Unit I Introduction

Introduction to Probability Theory: Classical, empirical and subjective probabilities. Introduction to statistics and data – Types of data – Features of data distributions – Center, Spread, Shape, Symmetry, Skewness and Kurtosis – Frequency Distributions, Dot plot, Bar chart, Pie chart, Histogram, Stem and Leaf diagrams- Measures of Center – Mean, Median, Mode – Measures of Spread – Range, Variance, Standard Deviation; -Measures of Relative Position: z- score, coefficient of variation- simple linear regression and correlation.

Unit II Probability distributions –Sampling distribution and Hypothesis testing

Distribution and functions: Random Variables, Discrete Random Variables, Probability Distributions and Probability Mass Functions, Mean and Variance of a Discrete Random Variable. Continuous Random Variables, Probability Distributions and Probability Density Functions, Mean and Variance of a Continuous Random Variable – Normal Distribution.

Statistical Inference: Sampling Distribution, Central Limit Theorem– t distribution. Testing of Hypothesis: Introduction to hypothesis testing – one sample test for means.

Unit III Forecasting

Forecasting – Components of demand –Qualitative and Quantitative methods –Naïve method –Single moving average method – Simple linear regression model –Measures of accuracy.

Unit IV Monte Carlo simulation

Introduction to simulation – Types of simulation –Advantages and disadvantages of simulation – Introduction to Monte Carlo simulation – Applications of Monte Carlo simulation for queuing and demand problems.

Unit V Laboratory: Exercises using Minitab:

Getting Started with MINITAB

ORGANIZING DATA - Graphing Data Using MINITAB – Dot plot - Frequency distribution - Bar chart – Pie chart - Histograms –Pareto chart

Describing data using numerical measures – Measures for central tendency, variation and relative position

HYPOTHESIS TESTING - Testing a Single Population Mean

Text Books:

Dinesh Kumar U., *Business Analytics: The science of data driven decision making* Wiley India, 2017.

Prem S Mann., *Introductory Statistics*, 9th Edition, Wiley India, 2016.

Sharma J.K., *Operations research: Theory and applications*, 6th Edition, Trinity Press, 2016.

References:

David F. Groebner., Patrick W. Shannon and Philip C. Fry., *Business statistics: A decision making approach*, 10th Edition, Pearson Education, 2018.

James R Evans., *Business Analytics- Methods, Models and Decisions* Pearson Education, 2nd Edition, 2017.

Jeffrey D. Camm., James J. Cochran., Michael J. Fry., Jeffrey W. Ohlmann., David R. Anderson., Dennis J. Sweeney and Thomas A. Williams *Essentials of Business Analytics Cengage learning*, 3rd edition, 2019.

DEPARTMENT OF ELECTRICAL ENGINEERING**EEEEVAC01- Testing of Electrical Apparatus****Unit 1 Installation of Electrical Apparatus**

Inspection of Electrical Equipment at site, Storage Electrical Equipment at site, Foundation of Electrical Equipment at site, Alignment of Electrical Machines, Tools / Instruments necessary for installation.

Unit 2 Installation and Commissioning of Rotating Electrical Machines

Degree of protection, cooling system, enclosures, rating of industrial rotating electric machine, installation, commissioning and protection of induction motor and rotating electric machine, dying out of electric rotating machine, insulation resistance measurement, site testing and checking, care, services and maintenance of motors.

Unit 3 Testing of Transformers

Routine and special tests, Measurement of winding resistance; Measurement of voltage ratio and check of voltage vector relationship; Measurement of impedance voltage/short-circuit impedance and load loss; Measurement of no-load loss and current; Measurement of insulation resistance; Dielectric tests; Temperature-rise, Insulation and HV test, dielectric absorption, switching impulse test. Testing of current transformer and voltage transformer, power transformer, distribution transformer.

Unit 4 Switch gear and protective devices

Standards, Classification, specifications, rating and duties of CB, installation, commissioning tests, Maintenance schedule and routine tests.

Unit 5 Safety Management during Operation and Maintenance

Clearance and Creepages, electric shock, need of earthing, different methods of earthing, factors affecting the Earth Resistance, methods of measuring the earth resistance, equipment earthing and system grounding.

Experiments:

1. Measure insulation resistance of a winding / cables / wiring installation.
2. Perform various tests on insulating oil.
3. To carry out routine tests on a given contactor used in the 3-phase supply.
4. To find out Phase shift in a transformer.

References:

- Paul Gill, *Electrical power equipment maintenance and testing*, CRC Press, Boca Raton 2008. (e-book: 2016)
- Rao, Testing, commissioning, operation and maintenance of electrical equipment, 6/E., Khanna Publishers, New Delhi, 1991.
- Singh Tarlok, Installation, commissioning and maintenance of Electrical equipment, S.K. Kataria and Sons, New Delhi, 1998.

EEEEVAC02 - Solar PV System Design

Unit 1 Basics of Solar Photovoltaics

Solar Technologies: Crystalline technology, thin film technology, Bi-facial technology, Comparison between PV module technologies. Solar PV Module: Rating of Solar PV Module, PV Module Parameters and Efficiency of PV Module. Solar photovoltaic system configuration: Grid Connected solar Power Plant, Grid interactive solar power plant, Off-Grid / Hybrid solar power plant, Schemes of solar power plant.

Unit 2 Components of a Solar PV System

Solar panels: Connection of PV Module in Series and Parallel, Estimation and Measurement of PV Module Power, Selection of PV Module. Inverters: Types of solar inverter, Selection of string / central / off grid inverter, Selection of power conditioning unit (PCU), Sizing of solar inverter for roof top and grid connected projects. Batteries: Battery function, Types of Batteries, Battery parameters, Selection of Battery, Charge Controllers: Functions, PWM charge controllers, MPPT charge controllers.

Unit 3 Design Guide for Solar PV System

Introduction: Energy calculations of a system, Preliminary Planning, Calculating the Energy Yield for a PV Grid-Connected System, Specific Yield. Load calculations: Sizing of Module / Array, Sizing of Storage Battery, Sizing of Charge Controller, Sizing of Wire/ Cable, Sizing of Inverter, Sizing of DC-DC Converter.

Unit 4 Computer Simulations

Simulation of Solar PV system: Modelling of solar PV energy conversion system using MATLAB/Simulink, Solar PV Characteristics, Maximum power point tracking. Case Study: Design of 100kW, 500kW and 1MW solar power plant, economic calculations, performance measurements.

Unit 5 Experimentation

Off grid solar PV system: Demonstration, irradiance and temperature measurement, plotting of characteristics Curves, performance analysis,

Maximum power point tracking, Determination of characteristics Curves using solar array simulator, Cost Estimation of a Solar PV Energy Conversion System.

References:

Chetansingh Solanki, *Solar Photovoltaic*, PHI Learning Private Ltd., New Delhi, 2018.

Kothari and K.C. Signal, *Renewable Energy Sources and Emerging Technologies*, Second Edition, PHI, New Delhi, 2011.

Rai, *Non-conventional Sources of Energy*, Khanna Publishers, Delhi, 2008.

Sukhatme and J K Nayak, *Solar Energy*, 4th Edition, McGraw Hill, New Delhi, 2017

Tiwari, *Fundamentals Design, Modeling and Application*, GN Solar Energy, Narosa Publishers, New Delhi, 2015.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**EECEVAC01- MATLAB for Image Processing****Unit I Introduction to MATLAB**

Brief Introduction-Installation of MATLAB – History-Use of MATLAB- Key features-MATLAB window-Command window – Workspace-Basic commands-Assigning variables - Operations with variables

Unit II MATLAB Software

Data files and Data types - Character and string-Arrays and vectors-Arithmetic operations-Logical operators-Solving arithmetic equations-Matrix operations-M files Working with script tools - Writing Script file - Executing script files - The MATLAB Editor - Saving m files – Plots, Plot labeling, curve labeling and editing - Figure Windows - Displaying Multiple Plots in One Figure – Subplots - Introduction Of Graphical User Interface

Unit III MATLAB Programming

Automating commands with scripts - Writing programs with logic and flow control - Writing functions - Control statement Programming-Conditional Statement Programming, Examples-Control Flow Conditional Control if, else, switch- Loop Control for, while, continue, break- Program Termination return- Functions - Writing user defined functions- Built in Function-Function calling- Return Value - Types of Functions- Global Variables

Unit IV MATLAB Simulink

Introduction of Simulink - Simulink Environment & Interface - Study of Library - Circuit Oriented Design - Equation Oriented Design – Model - Subsystem Design - Connect Call back to subsystem - Application

Unit V Image Processing with MATLAB

Introduction - Working with Images in MATLAB–MATLAB Commands for Image Enhancement Techniques - Filtering Images - Image Restoration Techniques - Feature Extraction Using Segmentation and Edge Detection - Image Registration and Image Reconstruction

References:

Gonzalez, R.E. Woods, and S.L. Eddins. *Digital Image Processing using Matlab*, Prentice Hall, 2004.

Holly Moore, MATLAB for Engineers Third Edition – Pearson Publications

Stephen J. Chapman, *MATLAB Programming for Engineers* Fourth Edition.

EECEVAC02- Antenna Design Using HFSS

Unit I Fundamentals of Antenna

Fundamental Theory of antenna: Reciprocity theorem, antenna equivalent circuit, Classification of antennas, Special types of antennas for different frequency bands.

Antenna Parameters: Radiation Impedance, Radiation Pattern, Antenna Impedance, Bandwidth, Directivity, Gain, Antenna efficiency, Radiation Efficiency, Antenna Polarization, Antenna Apertures, Antenna temperature, near-field and far-field concepts, and radiation mechanism.

Unit II Antenna Arrays

Two-Element Array N-Element Linear Array: Uniform Amplitude and Spacing N Element Linear Array: Directivity Design Procedure, N Element Linear Array: Three-Dimensional Characteristics, Rectangular-to-Polar Graphical Solution, N-Element Linear Array: Uniform Spacing, Non uniform, Binomial Array Amplitude, Planar and Circular Arrays.

Unit III Introduction to HFSS

The mathematical method used by HFSS, The adaptive solution process and its importance to HFSS, The Six general steps in HFSS simulation, The three solution types in HFSS, available boundaries with in HFSS, Excitation in HFSS, HFSS Solution setup, HFSS Post Processing.

Unit IV Design of Microstrip Antennas using HFSS

Feeding methods, Method of analysis, Rectangular and Circular Patch, Quality Factor, Bandwidth, and Efficiency, Input Impedance, Coupling, Circular Polarization, Arrays and Feed Networks, Multi Band, Recent advances in fractal antenna and patch array.

Unit V Fabrication and Testing

Method of Fabrication-Chemical Etching, Photo Lithography and Computer controlled coordinatograph. Testing of Antenna-Network Analyzer: Scalar Network Analyzer (SNA), Vector Network Analyzer (VNA) and Large Signal Network Analyzer (LSNA).

References:

Balanis C.A, *Antenna Theory*, 2nd Edition, Wiley, 2003.

Kyohei Fujimoto, Koichi Ito, *Antennas for Small Mobile Terminals*, Artech House, 2018.

<https://www.ansys.com/products/electronics/ansys-hfss>.

DEPARTMENT OF ELECTRONICS AND INSTRUMENTATION ENGINEERING

EEIEVAC01- Industrial Automation

Unit I Introduction to Automation

Automation overview – requirement of automation systems – architecture of industrial automation system – Levels of Automation-basic elements of an automated system – industrial bus systems :modbus and profibus.

Unit II Automation Components

Sensors for temperature, pressure, flow and level measurements.

Smart sensor: -Definition –classification- General architecture – Block level design consideration - Importance and adoption of smart

sensor-Types of smart sensors-compensation. Actuators – process control valves – power electronic drives DIAC- TRIAC – power MOSFET – IGBT. Introduction to DC and AC servo drives for control-Smart actuators.

Unit III Programmable Logic Controllers

PLC Hardware – PLC programming – ladder diagram – sequential flow chart – PLC communication and networking – PLC selection – PLC installation – Advantages – Application of PLC to process control industries.

Unit IV Distributed Control System (DCS) and SCADA

Overview of DCS – DCS hardware – DCS software configuration – DCS communication – DCS supervisory computer tasks – DCS integration with PLC and Computers-Features and Advantages.

Introduction to Supervisory Control and Data Acquisition Systems (SCADA) – SCADA HMI Essentials – SCADA Components – SCADA Configuration and Software – HMI hardware and software

Unit V Hands on Training

Simple experiments on sensors, Actuators, PLCs, DCS and SCADA.

Text Books:

Industrial Instrumentation, Control and Automation,
S. Mukhopadhyay, S. Sen and A.K. Deb, Jaico Publishing House, 2013.
Principles of Industrial Instrumentation, Patranabis, McGraw Hill, **2010**

References:

Krishnan, R. *Electric Motor Drives, Modelling, Analysis and Control*,
Prentice Hall India, 2002
Biswanath Paul, *Industrial Electronics and Control Including Programmable
Logic Controller*, PHI, 2014.
Krishna Kant, *Computer Based Industrial Control Second edition*, Prentice
Hall of India, New Delhi, 2010.
Lukcas, *Distributed Control Systems*, Van Nostrand Reinhold Co., 1986.
Programmable Logic Controllers: Principles and Applications, John W Webb,
Pearson, 2015.

EEIEVAC02- Basics of Measuring Instruments

Unit I Basic measurement concepts

Definition of measurement-Methods of measurement- Types of measurement- Definition of instrument- Types of instruments- Classification of instruments- Functional classification of instruments- Functional elements of instruments- Units and Standards of measurement-performance characteristics of instruments: Static and Dynamic characteristics- Errors in measurement.

Unit II Measuring instruments for Non electrical quantities

Instruments to measure mass, volume and area- Instruments to measure weight, force and torque- Instrument to measure atmospheric pressure (Barometer), altitude (Altimeter), intensity of sound (Audiometer), radiation (Bolometer), quantity of heat (Calorimeter), concentration of substance (Spectrophotometer), specific gravity of liquid (Hydrometer), Intensity of earthquake shocks (Seismograph).

Unit III Measuring instruments for Electrical quantities

Analog indicating instruments- Moving coil and moving iron instruments- Instruments for measuring current and voltage: ammeter and voltmeter - Principle of instruments to measure electrical power and energy: Wattmeter and energy meter- Measurement of electrical resistance: Ohm meter, Megger, LCR meter for coil resistance -capacitance and inductance measurement.

Unit IV Industrial measuring instruments

Temperature measuring instruments- Pressure, Differential pressure measuring instrument- Instrument to measure level of liquid- Flow measuring instrument- Instruments to measure density, viscosity, moisture, humidity, conductivity and pH.

Unit V Principle of medical instruments

Introduction to principle of sphygmomanometer- principle of Stethoscope- Endoscope- Principle of ECG, EMG, EEG, and ERG- Introduction to application of CT scan, MRI scan and ultrasound scan.

References:

- Gnanavadivel et al., *Measurements and Instrumentation*, Anuradha Publications, Chennai, 2010.
- Kalsi, *Electronic Instrumentation and Measurements*, Tata McGraw Hill Publishing Company Ltd., New Delhi, 4th edition, 2019.
- Leslie Cromewell et al., *Biomedical Instrumentation and Measurements*, Prentice Hall of India Private Ltd., 1997.
- Thomas G. Beckwith et al, *Mechanical Measurements*, Addison Wesley Longman Inc., 6th edition, 2007.

EIEVAC03-Basics of Robotics

Unit I Automation

Mechanization and Automation - History of Automation - Reasons for automation - Merits and limitations - Automation systems - Types of Automation: Fixed, Flexible and Programmable Automation - Intelligent Industrial Automation - Automation and Robotics.

Unit II Fundamentals of Robots

Definition - Historical background - Various generations of robots - Robot Anatomy - Robot configuration: Polar, Cylindrical, Cartesian coordinate, Joint-arm configuration - Degree of freedom - Work volume and Dead zone - Dynamic performance: Speed of response and Stability - Precision of movement: Spatial Resolution, Accuracy, Repeatability and Compliance.

Robot Drive System: Hydraulic, Electric and Pneumatic.

Unit III Introduction to Robot End Effectors, Sensors and Control System

End Effectors: Characteristic features - Types: Mechanical grippers, Magnetic grippers, Vacuum cups, Adhesive gripper, Hooks and Scoops - Tools as end effectors - Robot / End-effectors interface - Consideration in Gripper selection and Design

Sensors: Transducers and Sensors - Sensors in Robotics: Tactile, Proximity and Range Sensors, Miscellaneous sensors and sensor based systems - Robot Vision System.

Control System: Lead-through Programming, Walk-through Programming, Use of Teach pendants - Capabilities and limitations.

Unit-IV Robot Programming and Applications

Robot Programming: Textural Programming: requirements of robot programming language, problems pertaining to robot programming languages, Common languages/Software used- - Robot program as a path in

space .

Applications: Factors influencing the selection of Robots - Robots for Materials handling, Assembly, Agriculture and Chemical Plants - Advanced applications.

Intelligent Robots - Introduction to Mobile Robots, Legged Robots and Remote Controlled Robots, Automated Guided Robots, Micro Robots - Control and Safety Issues

Unit V Lab work

Experiments on various sensors and drive system in connection with Robotic system.

Text Books:

Groover, M.P., Automation, *Production Systems, and Computer-Integrated Manufacturing*, Prentice-Hall of India Private Limited, New Delhi, 2007.

Groover, M.P., Weiss, M., Nagel, R.N., Odrey, N.G., Industrial Robots: Technology, *Programming and Applications*, McGraw-Hill Book Company, 2012.

Reference Books:

Deb, Robotics Technology and Flexible Automation, Tata McGraw Hill, 1994.

Saeed B. Niku, *An Introduction to Robotics- Analysis, Systems, Applications*, Second Edition, John Wiley & Sons Inc., 2010.

Wesley, E. Sryda, Industrial Robots: Computer interfacing and Control. PHI, 1985.

Yoran Koren, *Robotics for Engineers*, McGraw Hill, 1980.

DEPARTMENT OF INFORMATION TECHNOLOGY**EINTVAC01- Web Development****Unit I Introduction**

Concept of WWW, Internet and WWW, HTTP Protocol : Request and Response, Web browser and Web servers, Features of latest version of Web.

Web Design : Concepts of effective web design, Web design issues including Browser, Bandwidth and Cache, Display resolution, Look and Feel of the Website, Page Layout and linking, User centric design, Sitemap, Planning and publishing website, Designing effective navigation.

Unit II HTML

Basics of HTML, formatting and fonts, commenting code, color, hyperlink, lists, tables, images, forms, XHTML, Meta tags, Character entities, frames and frame sets, Browser architecture and Web site structure. Overview and features of latest version of HTML.

Style sheets : Need for CSS, introduction to CSS, basic syntax and structure, using CSS, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, positioning using CSS, CSS2, Overview and features of of latest version of CSS.

Unit III JavaScript

Client side scripting with JavaScript, variables, functions, conditions, loops and repetition, Pop up boxes, Advance JavaScript: Javascript and objects, JavaScript own objects, the DOM and web browser environments, Manipulation using DOM, forms and validations, DHTML : Combining HTML, CSS and Javascript, Events and buttons.

Unit IV XML

Introduction to XML, uses of XML, simple XML, XML key components, DTD and Schemas, Using XML with application. Transforming XML using XSL and XSLT.

PHP : Introduction and basic syntax of PHP, decision and looping with examples, PHP and HTML, Arrays, Functions, Browser control and detection, string, Form processing, Files, Advance Features: Cookies and Sessions

Unit V PHP and MySQL

Basic commands with PHP examples, Connection to server, creating database, selecting a database, listing database, listing table names, creating a table, inserting data, altering tables, queries, deleting database, deleting data and tables, PHP myadmin and database bugs.

Text Books:

Ralph Moseley and M. T. Savaliya, *Developing Web Applications*, Wiley-India Private Limited, 2011.

Robert W. Sebesta, *Programming the World Wide Web*, 7th edition, Pearson Education, 2013.

References:

Harwani, *Developing Web Applications in PHP and AJAX*, Tata McGraw-Hill, 2010.

Internet and World Wide Web How to program, Paul J. Deitel, Harvey M. Deitel, and Abbey Deitel, 5th Edition, Pearson Education, 2011.

Joel Sklar, *Principles of Web Design*, Cengage Learning, 6th Edition, 2015.

Kogent Learning Solutions Inc., *Web Technologies Black Book*, Dreamtech Press, 2009.

EINTVAC02- Mobile Applications and Services

Unit I Introduction

Introduction to mobile devices and mobile platforms, Development environments, Mobile OS architectures of android, iOS and Windows, Setting up the mobile app development environment along with an emulator

Unit II Mobile App development using android

Mobile App development using android: interface design – Layout, UI elements, Draw-able, Menu, Activity- states and life cycle, Interaction among activity, Services- states and life cycle, Notifications, Broadcast receivers, Telephony, SMS APIs, Native data handling- on device file I/O, Shared preferences

Unit III Database Connectivity

Working with mobile database (SQLite), Interacting with database via internet/intranet., Graphics and animations- custom views, Canvas, Animation APIs, location awareness, Multimedia- audio/video playback and record, Native hardware access.

Unit IV Testing

Testing Mobile Application, Debugging mobile application, White box testing, Black box testing, Test automation of mobile apps using JUnit for android, Robotium, MonkeyTalk.

Unit V Market Distribution

Versioning mobile apps, Signing mobile apps, Packaging mobile apps, Distributing apps on market place. Designing an App using various services provided by android.

Text Books:

Anubhav Pradhan, Anil V. Deshpande, Composing Mobile Apps: Learn – Explore – Apply using Android, Wiley India.

Carmen Delessio, Shane Conder, Lauren Darcey, *Android application Development in 24 Hours: SAMS Teach Yourself* 3rd Edition, Pearson Education,.

Wei-Meng Lee, *Beginning Android 4 Application Development*, Wiley India.

References:

Charlie Collins, Michael Galpin, Matthias Kappler, *Android in Practice*, Dreamtech Press, 2012.

Michael Burton, Donn Felker, *Android Application Development for Dummies* 2nd Edition, Wiley India,.

Pradeep Kothari, *Android Application Development (with KITKAT support)*, Black Book, Dreamtech Press. 2012.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**ECSEVAC01 MACHINE LEARNING WITH PYTHON****Course Outcomes**

At the end of this course, the students will be able to

- Understand the fundamental concepts of machine learning and data preprocessing.
- Analyze and Implement the classification, clustering and regression based machine learning algorithms.
- Solve problems using deep neural network, SVM and decision tree using MNIST database with Python.
- Evaluate PCA, k-means clustering, CART, RF and AANN techniques for solving problems.
- Develop pre-trained convolutional neural network (CNN) architectures and implementation of 1D CNN and 2D CNN in keras for solving real world problems.

Unit I

Introduction to Machine Learning: Supervised learning, unsupervised learning, self-supervised learning, reinforcement learning. Evaluating machine learning models: Training, validation and test sets. Data preprocessing, feature engineering and feature learning. Overfitting and underfitting.

Unit II

Machine perception - feature extraction - classification, clustering, linear and logistic regression - Types of learning - Bayesian decision theory - classifiers, discriminant functions - univariate and multivariate normal densities - Bayesian belief networks – Implementation of Regression with Python.

Unit III

Perceptron and backpropagation training algorithm- Deep neural network (DNN): Architecture and training - Implementation of DNN for MNIST database with Python - k-nearest-neighbor rule. Support vector machine (SVM).

Unit IV

Principal component analysis (PCA) - k-means clustering - Decision tree: Classification and Regression Tree (CART) - Random Forest (RF) - Autoassociative neural network (AANN).

Unit V

One dimensional convolutional neural network (1D CNN): convolution layer - pooling layer - fully connected layer- ReLu - softmax- training - implementation with keras. Applications of 1D CNN. Introduction to Two dimensional convolutional neural network (2D CNN) - Standard 2D CNN architectures: VGG16, VGG19, GoogleNet, ResNet- Applications of 2D CNN.

Text Books:

Duda, R. O., E. Hart, and D.G. Stork, *Pattern classification*, Second edition, John Wiley & Sons, Singapore, 2012.

Francois Chollet, *Deep Learning with Python*, Manning Publications, Shelter Island, New York, 2018.

References:

Lovelyn, S., Rose, L. Ashok kumar, D. Karthika Renuka, *Deep Learning using Python*, Wiley India Pvt. Ltd., First Edition, 2019.

Ethem Alpaydin, *Introduction to Machine Learning*, 3rd Edition, MIT Press, 2014.

Kevin P. Murphy, *Machine Learning: A Probabilistic Perspective*, MIT Press, 2012.

Navin Kumar Manaswi, *Deep Learning with Applications using Python*, Apress, New York, 2018.

ECSEVAC02 DATA ANALYTICS WITH PYTHON

Course Outcomes

At the end of this course, the students will be able to:

- Apply data cleansing, transformation techniques and obtain descriptive statistics on data.
- Analyse datasets and Create simple visualization plots of data.
- Compare the machine learning techniques.
- Develop machine learning models for chosen problems of classification and prediction.
- Create machine learning models for generating recommendations and clustering data.

Unit I

Handling Raw Data using Numpy and Pandas: Arrays and operations on Arrays using NumPy – Data structure of Pandas – Essential functionality – Summarizing and Computing Descriptive Statistics – Handling Missing Data - Inserting and Exporting data from CSV, XLS, JSON, database files – Data cleansing – Data Operations – Aggregation and Join operations– Data transformation: Removing duplicates – Transformation of data using function or mapping – Discretization and Binning – Renaming Axis indexes - detecting and filtering outliers – Permutation and Random Sampling.

Unit II

Data Visualization: Data mining – Presenting an analysis – Studying the Titanic dataset - Data Visualization - Charts – Multiple plots – Playing with text – Styling plots – Box plots – Heatmaps – Scatter plots with histograms – Area Plots – Bubble charts.

Unit III

Machine Learning: Types of machine learning – Decision trees – Linear regression – Logistic regression – Naïve Bayes Classifier – K means Clustering – Hierarchical clustering.

Unit IV

Case Studies: Performing predictions with a linear regression – Estimating the likelihood of events with Logistic regression.

Unit V

Case Studies: Generating recommendations with Collaborative Filtering – Applying Segmentation with k-means Clustering.

Text Books:

Samir Madhavan, *Mastering Python for Data Science*, PACKT Publishing, 2015.

Wes McKinney, *Python for Data Analysis*, O'Reilly, 2013.

References:

Alberto Boschetti, Luca Massaron, *Python Data Science Essentials*, PACKT Publishing, Third Edition, 2018.

Gopi Subramanian, *Python Data Science Cookbook*, PACKT Publishing, 2015.

Jake VanderPlas, *Python Data Science Handbook*, O'Reilly, 2017.

Joel Grus, *Data Science from Scratch*, O'Reilly, 2015.

ECSEVAC03 DATA ANALYTICS WITH R**Course Outcomes**

At the end of this course, the students will be able to:

- Develop simple applications and perform data visualisation in R.
- Solve the problems on regression and time series using R.
- Utilize R programming to perform text mining and parallel computing.
- Apply machine learning algorithms on real-time data analytics problems in R.

Unit I

Introduction to R : Introduction - Data Types in R - Few Commands for Data Exploration. Loading and Handling Data in R : Challenges of Analytical Data Processing - Expression, Variables and Functions - Missing Values Treatment - Vectors - Matrices - Factors - List - Common Analytical Tasks - Methods for Reading Data - Comparison of R GUIs for Data Input - Using R with Databases. Exploring Data in R : Data Frames - Load Data Frames - Exploring Data - Data Summary - Finding the Missing Values - Invalid Values and Outliers - Descriptive Statistics - Spotting Problems in Data with Visualization.

Unit II

Linear Regression using R : Regression - Model Fitting - Linear Regression - Assumptions of Linear Regression - Validating Linear Assumption. Logistic Regression : Introduction to Generalised Linear Models - Logistic Regression - Binary Logistic Regression - Diagnosing Logistic Regression - Multinomial Logistic Regression Models. Time Series in R : Time Series Data – Reading, Plotting and Decomposing Time Series Data - Forecasts Using Exponential Smoothing - ARIMA Models.

Unit III

Decision Tree : Introduction - Decision Tree Representation in R - Appropriate Problems for Decision Tree Learning - Basic Decision Tree Learning Algorithm - Measuring Features - Issues in Decision Tree Learning. Clustering : Basic Concepts in Clustering - Hierarchical Clustering - k-means Algorithm - CURE Algorithm. Association Rules : Frequent Itemset - Mining Algorithm Interfaces - Auxiliary Functions - Sampling from Transaction - Generating Synthetic Transaction Data - Additional Measures of Interestingness.

Unit IV

Text Mining : Few Challenges - Text Mining in R - General Architecture of Text Mining Systems - Pre-processing of Documents in R - Core Text Mining Operations - Text Mining Query Languages - Mining Frequent Patterns, Associations, and Correlations - Frequent Itemsets, Closed Itemsets and Association Rules - Mining Methods - Pattern Evaluation Methods - Sentiment Analysis. Parallel Computing with R : Introduction of R Tool Libraries - Opportunities in HPC to Empower R - Support for Parallelism in R - Comparison of Parallel Packages in R.

Unit V

Case Study : Log Analysis - Recommendation Engines - Audience/Customer Insights Analysis - In-store Customer Traffic Prediction - Insurance Fraud Detection - Personalised Product Recommendations - Making User-generated Content Valuable - Credit Card Spending by Customer Groups can be Identified by using Business Needs - Sales Forecasting.

Text Books:

Bharti Motwani, *Data Analytics with R*, Wiley India Private Limited, 2019.
Seema Acharya, *Data Analytics Using R*, McGraw Hill Education (India) Private Limited, 2018.

References:

Eric Mayor, *Learning Predictive Analytics with R*, Packt Publishing Limited, 2015.

Simon Walkowiak, *Big Data Analytics with R*, Packt Publishing Limited, 2016.

Umesh R. Hodeghatta and Umesha Nayak, *Business Analytics Using R - A Practical Approach*, Apress, 2017.

Viswa Viswanathan, *Data Analytics with R: A Hands-on Approach*, Infivista Inc., 2nd edition, 2015.

FACULTY OF EDUCATION**DEPARTMENT OF EDUCATION****UEDUVAC01 - Modern Pedagogical Techniques****Learning Objectives**

The student teacher

- Acquires the knowledge of the concept of Teaching, characteristics of Teaching and Variables in Teaching
- Understands the Need and Importance of Programmed Learning, Computer Assisted Learning Internet and its applications
- Understands the different teaching method
- Acquires the knowledge of Educational E-Resources and Cloud computing

Course Outline**Unit I Concept of Teaching**

Meaning and definition of Teaching – Nature and characteristics of Teaching – Variables in Teaching – Relationship between Teaching and Learning.

Unit II Individualised Instruction and ICT

Need and Importance – Characteristics – Principles – Programmed Learning – Computer Assisted Learning (CAL) Advantages and Disadvantages – Information and Communication Technology – Definition – Meaning – Importance and Scope – ICT in Education

Unit III Group Instruction and ICT

Dynamic method – Group discussion, Tutorial, Seminar, Symposium and Brain – storming – Problem solving – Project method – Laboratory – Supervised study – Source method – Dalton Plan – Panel discussion – Workshop – Team Teaching.

Unit IV Educational E-Resources

Meaning – Need and Importance – Classification of E-Resources – offline resources: CD Rom based E-Resources, E-Books, E-dictionaries – MS Office

applications (Power point presentation) E-Resources on mobile devices - Online Resources: E-Journals, E-Libraries, E-Forums, Search engines ,Swayam.

Unit V Cloud computing in Teaching and Learning

Need and Importance of Cloud Computing in ICT mediated teaching and Learning – Facilities provided by cloud Computing in Teaching and Learning.

Fast Track Learners

Exploring Apps – Kahoot, ClassDojo, Edmodo, Google Classroom

Course Outcomes

The students should be able to

- develop modern pedagogical techniques
- make use of individualized instruction in ICT
- follow various group instructional strategies
- find out various educational e – resources
- demonstrate cloud computing in teaching and learning

References:

- Armstrong, Jenny R. 1973. *A sourcebook for the evaluation of instructional materials and Media*. Special Education Instructional Materials centre, University of Wisconsin, Madison, WI.ED 107 050
- Brown, A.H., & Green T.D. 2015. *The essentials of instructional design: Connecting fundamental principles with process and practice*. Routledge. media. Special Education Instructional Materials Center,
- Buchholz Andrea & Zerfass Ansgar. 2005. *E-Content in Europe: Dimensions of an Emerging Field*. MFG Baden- Wiirttemberg Germany.
- Dave R.H., 1975. *Developing and Writing Behavioral Objectives* - Educational Innovators Press.
- <https://developer.android.com/reference/packages>.
- Ian Reece and Stephen Walker, 1997. *Teaching, Training and Learning* - Business Education Publishers.

UEDUVAC02 - Essentials of Educational Technology

Learning Objectives

The student teacher

- Enables the student to understand the meaning, nature, scope and significance of educational technology and its important components in terms of Hardware and Software.
- Enables the student to acquire knowledge of the concept of communication and Interaction analysis.
- Enables the student to understand the psychology of using teaching aids.
- Enables the student to develop skills in designing text materials for multimedia presentation.
- Acquaints the student with emerging trends in Educational Technology.

Unit I Educational Technology

- Concept of Educational Technology
- Meaning, Nature, Scope and Significance of Educational Technology
- Components of Educational Technology – Software and Hardware.
- Educational Technology and Instructional Technology

Unit II Learning and Educational Technology

Learning objectives – Lessons from Learning Theories – Multi Sensory approach. Psychology of using Teaching Aids – Integrated use of Teaching Aids – Dale's Cone of Experience – Domains of Learning - Maxims of Teaching.

Unit III Communication and Interaction

Concept of Communication – Communication Cycle – Types of Communication – Factors Affecting Communication- Interaction Analysis – Classroom Interaction Technique – Flander's system of Interaction Analysis – Micro Teaching and Classification of Teaching skills –.

Unit IV Audio Visual Aids

Multimedia and Instructional Development – Techniques in using Multimedia – Uses and Abuses of Multimedia. Systems Approach – Steps in the Systems approach – Advantages of Systems Approach.

Unit V Emerging Trends in Educational Technology

Emerging Trends in Educational Technology – use of Educational Technology in Individualized Instruction – Role of the teacher in Educational Technology. Frontiers in Educational Technology – Interactive Video – Teleconferencing – Internet

For Fast Track Learners

Exploring Apps – Khan Academy, Class Dojo, Edmodo, TED

Course Outcomes

The students should be able to

- Follow the components of micro teaching
- Explain the use of various audio visual aids
- Administer multimedia and instructional software
- Make use of various communication and interaction techniques
- Find out the emerging trends in educational technology

References:

- Dececon, John, P. (Ed.) 1964. *Educational Technology*. New York, Holt
- Denis, Kim, Sen and Morin 2000, *Information Technology – The breaking Wave*, Tata McGraw – Hill Publishing Company Limited, New Delhi.
- Kulkarni, S.S. 1986. *Introduction to Educational Technology*, New Delhi: Oxford & IBH.
- Kumar. K.L. 1997. *Educational Technology*. New Delhi: New Age International (P) Ltd.
- Rinebert Winston, Skinner, B.T. 1968. *The Technology of Teaching*. New York: Applenton, Century Crofts.
- Sharma, R. A. 2001. *Technological Foundations of Education*, Meerut: R. Lal Book Depot.

UEDUVAC03 - Advanced Teaching Technology

Learning Objectives

The student teacher

- Acquires knowledge of the concept and principles of teaching technology.
- Develops understanding of the concepts and its implications in education.
- Applies the knowledge of teaching technology in the analysis of present day educational system.
- Develops interest in learning teaching technology.

Unit I Higher Education

Historical perspectives – objectives of Higher Education- role of higher education. Social focus curriculum focus and administrative focus- need for teaching methodology- learning and teaching.

Unit II Learning Higher Education

Learning- Meaning- definition- concept, learning hierarchy- information processing learning events- Learning outcomes- Motivation.

Unit III Teaching Technology Designs

Technology- Teaching Technology instructional and Educational Technology- Instructional designs, objective based, skill based, competency based, learning style based and model based.

Unit IV Teaching Methods

Lecture methods – dramatization –mind mapping - enquiry based learning – co-operative learning- Interactive electronic white board- Programmed Instruction, Computer assisted Instruction.

Unit V Class Room Management Media

Microteaching- Teaching Skills- Demonstration - Criticism-Computer Skills
-Computer Assistant Instruction(CIA)- Smart boards - Classroom
Interactional Analysis (CIA)-Classroom management.

For Fast Track Learners

Inquiry based Learning- QR codes- Project based Learning- Wisely managed
classroom Technology-JIGSAWS.

References:

- Dash. B.N. 2004. *Trends and issues in India Education*, Dominant Publishers and Distributors, New Delhi.
- Khanna. S.D. 1993. *current problems of India Education*, Doaba House, New Delhi-110006.
- Kocchar, S.K. 2000. *School Administration and Organization* – Sterling Publishers Pvt., Ltd. New Delhi.
- Kochhar, S.K., 1981. *Pivotal issues in India Education*, Sterling Publishers Pvt., Ltd. New Delhi.
- Kumar.K.L. 1997. *Educational Technology*, New Delhi: New Ageinternal (P) Ltd.
- Sharma . R.A. 2001. *Technological foundation of Education*, Meerut: R. Lal book Depot.

UEDUVAC04 - Educational Institution Management

Learning Objective (LO)

The student teacher

- Acquires the concepts, meaning, need and importance of educational management and administration.
- Understands the structure, principles, and various functions of educational management and administration.
- Applies the principles and policies of educational management and administration.
- Develops professional skills as educational administrators, principals and teachers
- Develops managerial skills required to solve the issues and problems in education.
- Develops the qualities for educational administration.

Unit I Management

Meaning – Definition – Objectives of Management – Difference between Administration and Management – Functions of Management – PODSCORB – Planning Organization, Direction, Staffing, Co-ordinations, Reporting, Budgeting – Modern Functions: Planning, Organizing, Leading, Controlling Management Skills, Conceptual Skills, Human Skills, Technical Skills.

Unit II Areas of Educational Management

Administration and Management of Education – Maintenance and Developmental Management – Scope Human, Material, Time- Basic concepts of Management at different levels: Institutional Management, Financial Management, Instructional Management, Personal Management, Material Management and Examination Management.

Unit III Educational Planning and Organization

Educational Planning – Perspective, Long term and Short term – Institutional Planning – Academic: Curricular and Co Curricular activities –

Time table assignment of work to teachers organization – Principles – Organizational structures Administrative structure at Central and State levels.

Unit IV Management of Resources

Management of Resources – Human and Material – Head Master and Teacher: duties and responsibilities – Leadership – Meaning – styles – organizational commitments – Academic Freedom – Professional development.

Classroom Management – Management of School building – equipment – Library – records and registers – Hostel.

Unit V Management of Conflicts in Educational Institutions

Meaning and Nature – sources and dynamics of conflicts – Types of Conflicts – Managing conflicts – Role of teachers in conflict management- Supervision and Inspection.

For Fast Track Learners

Prepare the list of skills required to become the Educational Administrator. Prepare the list of resources required to organise an educational training program.

References:

- Careteller S. Williams, 1962. *Administering the School Personnel Programme*, The Macmillan Company, New York.
- Hemalatha Telesra, Satya Paul Ruhela, NL. Nagda , 1997. *Educational Management*, Innovative Global Patterns, Regency Publications, New Delhi.
- Jagannath Mohanty, *Educational Administration Supervision and School Management* Deep and Deep Publications, New Delhi.
- Prem Latha Sharma, *World Educational Reform*, Swarup and Sons, New Delhi, 2004.
- Shukla, P.D., *Administration of Education in India*. Vikas Publishing House Pvt. Ltd., New Delhi, 1986.
- Singh, H.M. *Fundamentals of Educational Management*, Vikas Publishing House Pvt. Ltd., New Delhi.

DEPARTMENT OF PSYCHOLOGY
UPSYVAC01 - Health and Well-Being

Unit I

Introduction to Health Psychology: components of health, relationship between health and psychology, mind and body relationship, goals of health psychology.

Unit II

Well-being : Components of well-being: life satisfaction, affect.

Unit III

Stress, illness and pain : causes, consequences and coping with stress, pain and illness

Unit IV

Health enhancing behaviours: Implications for well-being: psychology factors: resilience, hope, optimism; exercise, safety, nutrition.

Unit V

Environment and Health, Communicable and Non-communicable Diseases, Role of Genetics in Health and Disease, Major nutritional problems , National Health Programmes in India.

Suggested Readings:

DiMatteo, M.R. and Martin, L.R. 2002. *Health psychology*. New Delhi: Pearson.

Sarafino, E.P. 2002. *Health psychology: Bio psychosocial interactions* (4th ed.).NY: Wiley.

Snyder, C.R & Lopez,S.J. 2007. *Positive psychology :The scientific and practical explorations of human strengths*. Thousand Oaks, CA: Sage.

Taylor, S.E. 2006. *Health Psychology (6th ed.)*. New York: Tata McGraw Hill.

UPSYVAC02 - Counselling Skills

Unit I Introduction

Counselling Psychology: Meaning. Goals and Stages Relationship between Counselling and Psychotherapy, Counsellor Effectiveness, Ethics in Counselling.

Unit II Approaches

Overview of Approaches to Counselling. Psychodynamic, Behavioral, Person-Centered, Cognitive-Behavioral approach, E-Counselling.

Unit III Counselling Process

Counselling Process: Concept, Negotiating Expectations, Assessment. Establishing a Working Alliance. Ending Counselling, Middle Part of Counselling: Assimilation of Problematic experiences, Change Events, Using Structured Exercises and Interventions.

Unit IV Applications

Family Counselling, School Counselling, Career Counselling, Counselling with economically Disadvantaged People. HIV-AIDS counseling

Unit V Ethics in Counselling

Need for Ethical Standards , Ethical Codes and Guidelines Rights of Clients, Dimensions of Confidentiality, Dual Relationships in Counselling Practices ,The Counsellor's Ethical and Legal Responsibilities , Ethical Issues in the Assessment Process.

Suggested Readings:

Cladding, S.T. 2012. *Counseling: A Comprehensive Profession*. (7th edn.). Pearson.

Mc Lead. J_ 2011. *An Introduction to Counselling*. (3rd edn.), Mc Craw Hill Education.

UPSYVAC03 - Introduction to Life Skills

Unit I Introduction

Definition and Importance of Life Skills- Livelihood Skills, Survival Skills and Life Skills- Life Skills Education, Life Skills Approach, Life Skills Based Education - Life Skills Training - Implementation Models.

Unit II Evolution of the Concept of Life Skills

Genesis of the Concept - UN Inter-Agency Meeting - Hamburg Declaration - Quality Education and Life Skills: Dakar Framework - Life Skills Education in the Indian Context

Unit III Learning

Learning and Performance, Learning and Cognitive Development, Learning and Maturation - Adult Learning - Approaches to Learning: Behaviouristic and Cognitive Approaches - Theory of Social Learning: Albert Bandura - Bloom's Taxonomy of Learning Outcomes - Rogers Situated Learning

Unit IV Pillars of Education and Life Skills

The Four Pillars of Education - Learning to Know - Learning to Do - Learning to Live Together - Learning to Be Learning Throughout Life.

Unit V Practicum

Analyze the Life Skills Approach in School Curriculum.

References:

- Dakar Framework for Action, 2000. *Education for All: Meeting our Collective Commitments*, Dakar, Senegal.
- Life Skills Resource Manual*, Schools Total Health Program, 2006. Health Education and Promotion International Inc., Chennai.

UPSYVAC04 - Personality Development

Unit I Introduction

Defining Personality - Personality Development - Stability of Personality - Personality Change.

Unit II Theories of Personality

Psychoanalytical Theory of Personality- Humanistic Theory of Personality- Trait Theory of Personality- Social Cognitive Theories- Behaviorism and Learning Approaches to Personality- Eastern Theory: Thriguna Theory (SRT)

Unit III Determinants of Personality

Cognitive Determinants - Intellectual Development and Intellectual Capacities - Deviant Intelligence - Major areas of adjustment affected by Intelligence Socio-cultural Determinants - Family and Educational Determinants - Social Determinants Emotional Determinants - Dominant Emotions, Emotional Expressions - Emotional Balance and Emotional Deprivation - Emotional Catharsis and Emotional Stress.

Unit IV Personality Enrichment

Motivation and its Process Life Skills for Personality Development.

Unit V Managing Self

Emotions, Ego, Pride, Stress, Achievements, Confidence improvement, Recognition of one's own limitations and deficiencies , Interpersonal Skills, Communication Skills, Commitment , making decisions, handling your and other people's stress, empowering, motivating and inspiring others.

References:

- Ciccarelli . K. Saundra, Meyer. E. Glenn, 2007. *Psychology*, Pearson Prentice Hall, New Delhi.
- Hilgard, E., Atkinson R. C & Atkinson R. L. 1976. *Introduction to Psychology* (6th Edn.), Oxward & IBH Publishing Co. Pvt Ltd, New Delhi.
- Nair V. Rajasenan, 2010. *Life Skills, Personality and Leadership*, Rajiv Gandhi National Institute of Youth Development, TamilNadu.

FACULTY OF FINE ARTS**DEPARTMENT OF MUSIC****FMUSVAC01 Introduction to South Indian Music - VOCAL****Learning Objective**

- To understand the basic lessons and instruments of south Indian Music and to enable the student to sing or play the exercises and compositions

Unit I

Details of the following: Nadham, Sruti, Swarasthanas, Sthayi, Arohanam and Avarohanam

Unit II

Exercises: Swaravali, Janta, Thatu and Tharasthayi

Unit III

Talas – Angas – Varieties of tala – sapta tala alankaras

Unit IV

Musical forms: Giham Swarajathi and jathiswaram – Examples

Unit V

Merits of Music – Details of Musical instruments: Tambura, Veenai, Violin and Mridangam.

Reference Books:

Chelladurai P.T. 2000. *Splendour of South Indian Music*. Vaigarai Publications.

Sambamoorthy.P. 1952. *South Indian Music (Volume – III & IV)*. Indian Publishing House.

Sambamoorthy.P. 1952. *Dictionary of South Indian Music*. Indian Publishing House.

FMUSVAC02 Theory of Rhythm (Mridangam)**Learning Objective**

- To learn the fundamentals of rhythm (Tala), theory and practice of the instrument Mridangam

Unit I

Origin of tala – layam – marga talas

Unit II

Seven basic talas – structure – angas – aksharas

Unit III

Five jathis and varieties – derivation of 35 talas

Unit IV

Tala dasa pranams: Kalam, Margam, Kriyai, angam, kalai, yathi, prastharam etc.,

Unit V

Desadhi – madhyadhi talas – chapu talas

Reference Books:

Sundaram. V. P. K. 1988. *Art of drumming, Inst. Of Asian Studies*

Sambamurthy.P 1999. *South Indian Music* Vol. I. Indian Music Publishing House, Chennai.

Pakkirisamy Bharathi.K, *Isai karuvoolam*

FMUSVAC03 Theory of Music (VOCAL)**Learning Objective**

- To understand the basic theory of South Indian Music system and Musical Forms.

Unit I

Classification of Panns- Panns of Thevaram and equivalent ragas – 72 melakartha system.

Unit II

Classification of Janya ragas: Upangam, Bhashangam, Varjam, Vakram, Audavam, Shadavam, Sampurnam, Swarantharam.

Unit III

Musical forms: Jathiswaram, Varnam, Padham, Kirthanai

Unit IV

Important Festivals of India and Music

Unit V

The role of Music in the Social life of Tamils – Musical forms in folk music.

Reference Books:

Chelladurai P.T. *Splendour of South Indian Music* Vaigai Publishers – Dindukal, 1991.

Sambamurthy, *South India Music* (Volume I and II) The Indian Music Publishing House, Chennai, 1999.

FMUSVAC04 Theory and Application of Tala (MRIDANGAM)**Learning Objective**

- To learn the concept and theory of talam (rhythm) with reference to South Indian percussion instrument – Mridangam.

Unit I

The Concept and Theory of Tala

Unit II

35 talas, their symbols and aksharas

Unit III

Adi tala Korvais -2

Unit IV

Chapu talas and their Varieties.

Unit V

Pattern of alankaras – anga talas – 108 talas

Reference Books:

Pakkirisamy Bharathi K., *Isai Karuvoolam (Tamil)* –The Indian Music Publishing House, Chennai, 1982.

Sambamurthy.P, *South Indian Music* Volume I & II - Fine offset print – Chennai, 1990.

Sundaram V.P.K., *Art of Drumming* – Dr. III- 11th Edition Fine offset prints Chennai,1998.

FACULTY OF AGRICULTURE**DEPARTMENT OF MICROBIOLOGY****GMICVAC01 Microbial Inoculant Production Technology****Learning Objective**

- To study the basic principles and application methodologies of different microbial inoculants in order to improve the soil fertility and productivity.

Unit I

Concepts of microbial inoculants Biofertilizers – Definition - types, importance of biofertilizers in agriculture – Rhizobium - characters and classification – Rhizobium - legume symbiosis - nodule formation - Factors affecting nodulation and nitrogen fixation.

Unit II

Nitrogen fixing biofertilizer Characteristics and classification of Azospirillum, Azotobacter, Gluconacetobacter.- Actinorhizal plants (Frankia) and Algal biofertilizers - Blue green algae – Azolla.

Unit III

Phosphate solubilizing/mobilizing biofertilizer Problems of phosphorus uptake - fixation of phosphorus - microbial transformation of phosphorus- Phosphate solubilizing microorganisms, K, Zn and silicate solubilizing microorganisms – factors affecting phosphate solubilization– AM fungi – characteristics and types of mycorrhizae - Plant Growth Promoting Rhizobacteria (PGPR) – Pseudomonas.

Unit IV

Formulations of biofertilizer Different formulations of biofertilizers – Types and characters - carrier – beads – pellets and liquid formulation – preservatives and additives-shelf life of different formulations- quality control of different formulations - BIS.

Unit V

Production technology Mass Production technology of bacterial biofertilizers, Azolla , Algal biofertilizers and AM fungi – problem and constraints in production- method of application – Marketing and monitoring field performance-Economics of microbial inoculants.

References Books:

- Bhattacharyya, P and Tandon H.L. S. 2002. *Dictionary of Biofertilizers and Organic Fertilizers*. Fertilizer Development and Consultation Organization, New Delhi.
- Borkar, S.G., .2015. *Microbes as Bio- fertilizers and their Production Technology*. Wood head publisher. New Delhi.
- Gianinazzi, Hannes Schüepp, J.M. Barea, K. Haselwandter. 2012. *Mycorrhizal Technology in Agriculture: From Genes to Bioproducts*. Birkhäuser publisher.
- Hyma. 2017. *Biofertilizers: Commercial production Technology and quality control*. Random publishers. New Delhi.
- Motsore, M. R., P. Bhattacharyya and Beena Srivastava, 2001. *Biofertilizer Technology, Marketing and usage – A source Book – cum – glossary – FDCO*, New Delhi.
- Umesh Chandra Mishra.2015. *Facts for Liquid Biofertiliser*. Partridge Publishing, Singapore.

DEPARTMENT OF HORTICULTURE**GHORVAC01 - Principle of Plant Propagation****Learning Objectives**

To make the students learn different methods of plant propagation.

- To impart knowledge on nursery management of various horticultural crops.
- To make them familiarize with the tools and implements essential for all horticultural operations.

Unit I Plant growth and development

Botany of horticultural plants – life cycle – habit – basic physiological functions – role of nutrients – plant growth regulators – factors affecting growth and development – classification of Horticultural crops .

Unit II Propagation techniques -I

Collection of seeds- methods of extraction of seeds – methods of seed storage – advantages and disadvantages of seed propagation – seed germination – types of seed germination – seedling growth – dormancy – methods to overcome dormancy – seed viability- seed longevity – seed testing- types of nursery – methods of raising nursery.

Unit III Propagation techniques -II

Media for propagation – potting mixture preparation- containers – potting – depotting – repotting- tools and implements – vegetative propagation – types of vegetative propagation- advantages and disadvantages of vegetative propagation- types of cuttings – types of layering – hormonal treatments for rooting.

Unit IV Propagation techniques –III

Grafting – root stock – scion – raising of root stocks – pre-curing of scion – methods of grafting – budding – bud wood – propagation by specialized plant parts – tissue culture techniques – hardening – propagation structures – mist chamber – shade house

Unit V Nursery Management

Water quality – methods of irrigation – advantages –nutrition of nursery plants –deshooting, disbudding, pinching, staking, raking – major pests and diseases and control measures.

References:

- Adams, C.R., K.M. Bandford and M.P. Early. 1996. *Principles of Horticulture*. CBS Publishes and Distributors 4596/1 – A, Daryaganj, New Delhi-110 002.
- Bose, T.K., S.K. Mitra, M.K. Sadhu and B. Mitra. 1991. *Propagation of Tropical and subtropical Horticultural Crops*. Naya Prakash 206, Bidhan Sarani, Calcutta, Six. India.
- Hartmann, H.T., D.E. Kester, F.T. Davies and R.L. Greneve. 1997. *Plant propagation – Principles and Practices*. Prentice Hall of India Private Ltd., New Delhi.
- Peter, K.V. S. Rajan and Baby Lissy Markose. 2007. *Propagation of Horticultural Crops*. New India Publishing Agency, New Delhi.
- Reddy, Y.T.N., T. Janakiram and D. Satyanarayana Reddy. 2001. *Scientific Nursery Management*. The House of Sarpan (Media), Bangalore.

FACULTY OF MEDICINE**DEPARTMENT OF MEDICINE****MPMRVAC01- First Aid and Emergency Care****Learning objective**

The objective of this course is student will be able to acquire knowledge and demonstrate skill in providing First Aid treatment in emergencies that may be met in any settings.

The following are the objectives of course

- Understand the scope of First Aid and role of First Aid
- Comprehend the ways to manage and incident
- Demonstrate the techniques of assessing a casualty
- Describe the life saving measures for an unconscious casualty
- Explain First Aid management for respiratory problems
- Describe First Aid measures for wounds and circulation problems
- Identify a bone joint and muscle injuries and provide appropriate First Aid measures
- Describe First Aid process for the effects of heat and cold
- Provide First Aid measures for foreign objects, poisoning bits and stings
- Provide First Aid for emergency conditions
- Identify and give First Aid treatment in community emergencies and natural disorders
- Describe the techniques and equipment's for First Aid

Unit 1

Becoming a First Aider, What is a first aider?, How to prepare yourself, Protection from infection, Dealing with a casualty, Requesting help, The use of medication, Remember your own needs. Managing an incident Action at an emergency, Traffic accidents, Fires, Electrical incidents, Water incidents,

Major incident/Mass casualties Assessing a Casualty Assessing the sick or injured, Mechanisms of injury, Primary survey, Secondary survey, Head-to-toe examination, Monitoring vital signs. The Unconscious Casualty Breathing and circulation, Life-saving priorities, Unconscious adult, Unconscious child, Unconscious infant, How to use an AED

Unit II

Respiratory problems The respiratory system, Hypoxia, Airway obstruction, Choking adult, Choking infant, Choking child, Hanging and strangulation, Inhalation of fumes, Drowning, Hyperventilation, Asthma, Croup, Penetrating chest wound. Wounds and circulation The heart and blood vessels, Bleeding and types of wound, Shock, Severe external bleeding, Impalement, Amputation, Crush injury, Cuts and scrapes, Bruising, Blisters, Infected wound, Foreign object in a wound, Scalp and head wounds, Eye wound, Bleeding from the ear, Nosebleed, Knocked-out adult tooth, Bleeding from the mouth, Finger wound, Wound to the palm, Wound at a joint crease, Abdominal wound, Vaginal bleeding, Bleeding varicose vein

Unit III

Bone, Joint and muscle injuries The skeleton, Bones, muscles and joints, Fractures, Dislocated joint, Strains and Sprains, The nervous system, Head injury, Facial injury, Lower jaw injury, Cheekbone and nose injury, Collarbone injury, Shoulder injury, Upper arm injury, Elbow injury, Forearm and wrist injuries, Hand and finger injuries, Rib injury, Fractured pelvis, Back pain, Spain injury, Hip and thigh injuries, Lower leg injuries, Knee injury, Ankle injury, Foot and toe injuries, Cramps Effects of heat and cold The skin, Assessing a burn, Severe burns and scalds, Minor burns and scalds, Burns to the airway, Electrical burn, Chemical burn, Chemical burn to the eye, Flash burn to the eye, Incapacitant spray exposure, Dehydration, Sunburn, Heat exhaustion, Heatstroke, Hypothermia, Frostbite

Unit IV

Foreign objects, poisoning, bites & stings The sensory organs, Splinter, Embedded fishhook, Swallowed foreign object, Foreign object in the eye, Foreign object in the ear, Foreign object in the nose, How poisons affect the body, Types of poisons, Swallowed poisons, Drug poisoning, Alcohol

poisoning, Animal and human bites, Insect sting, Tick bite Other bites and stings, Snake bite, Stings from sea creatures, Marine puncture wound. Medical conditions Angina, Heart attack, Stroke, Diabetes mellitus, Hyperglycemia, Hypoglycemia, Seizures in adults, Seizures in children, Fever meningitis, Fainting, Allergy, Anaphylactic shock, Headache, Migraine, Sore throat, Earache and toothache, Abdominal pain, Vomiting and diarrhea, Childbirth, Emergency childbirth

Unit V

Techniques and Equipment Removing clothing, Removing headgear, Casualty handling, First aid materials, Dressings, Cold compresses, Principles of bandaging, Roller bandages, Tubular gauze bandages, square knots, hand and foot cover, Arm sling, Elevation sling, improvised slings. Unit - XII - Emergency First Aid Action in an emergency, CPR for an adult, chest compression only CPR, CPR for an infant, child, Community emergencies such as fire explosions, earth quakes, flood and famine

References:

- Jon R. Krohne 2004. *First Aid Manual* 5th Edition. United Kingdom, DK Pub., London.
- Clement, 2013. *Text book on First Aid & Emergency Nursing*, First edition, JP brothers.
- Philip Jevon, 2007. *Emergency care and First Aid for Nurses*, A practical guide, Churchill Living Stone.

DEPARTMENT OF NURSING
MPMRVAC02- Health and fitness

Learning Objective

This course will enable students to understand the modern concept of health and fitness. It aims to develop understanding fitness, role of exercises for enhancing fitness, cardio respiratory function, muscular strength, endurance, flexibility, stress management, nutrition and weight management.

Course outcomes

After completing this course, the students will be able to

- Define health, wellness, and the different dimensions of wellness.
- Understand the modern concepts of anatomy and exercise physiology in the field of fitness.
- Introduce and promote the fundamentals of a well balanced conditioning program emphasizing aerobic and anaerobic workouts.
- Define the goal of physical training and the basic principles of training for health and fitness.
- Describe strategies that can help you maintain a fitness program over the long term.
- Be able to describe the role proper nutrition plays in attaining and keeping a high level of fitness.
- Describe the effect stress has on health and performance.
- Be able to develop personalized plans for cardio respiratory fitness, muscular fitness and flexibility.
- Describe the importance of nutrition and weight management.
- Describe the role of exercise in cardiovascular function for health maintenance.

Unit I Introduction to human anatomy and exercise physiology

Basic introduction to anatomy, Basic terminologies, Anatomical and fundamental position, Anatomical divisions of body, Types and structure of bones, joints & movements, Bony landmarks and identification. Metabolism, anabolism and catabolism, Energy for muscular contractions, ATP-Creatine phosphate, Glycolysis, Lactic acid, Aerobic oxidation, Fat metabolism, Krebs cycle, Immediate cardiac responses to exercise, Heart rate, Stroke volume, Cardiac output, Blood flow and blood pressure, Maximal oxygen conception, Anaerobic threshold, Adaptation to exercise, Neuromuscular changes, Motor unit recruitment and muscle fiber type, DOMS, principles of resistance training program, PRE, Periodisation, Programme variables, choice of equipment, choice of exercise, order of exercise, Reps and sets, Intensity, Hemodynamic response to resistance exercise, Endurance exercises and glycogen supply, Fatigue, Detraining effects, Environmental factors affecting exercise.

Unit- II Total fitness

Physical activity – Concept, Benefits of participation in physical activities with specific reference to health; Components and significance of total fitness. Types of physical activities – Walking, Jogging, Running, Calisthenics, Rope skipping, Cycling, Swimming, Circuit training, Weight training, Adventure sports. Components of physical fitness (Health, skill & Cosmetic fitness). Need and importance of measurement and evaluation of physical fitness. Methods to develop and measure health and skill related components of physical fitness.

Unit III Wellness and Nutrition and Weight management

Wellness – concept, components, significance with reference to positive lifestyle, concepts of quality of life and body image factors affecting wellness, wellness programs. Concepts of nutrients, Balanced diet, Dietary aids, Energy and activity, Calorie intake and expenditure, Energy balance equation, Obesity – concept, causes, assessment, management; Obesity related health problems. Weight management through behavioral modifications.

Unit IV Training effects on anatomical and physiological systems

Effects of exercise on skeletal system, Muscular system, Circulatory system, Respiratory system, Digestive system, Excretory system, Nervous system and Endocrine system. Concepts of warming-up, Conditioning, Cooling-down. Concepts of Fatigue, Cramp, Oxygen debt, Physiological adaptations. Markers for training effects – Maximum heart rate, Vital capacity, Stroke volume, Temperature regulation, Lactate threshold and VO₂ max.

Unit V Fitness for lifestyle diseases

Coronary artery disease, Diabetes mellitus, Hypertension, Osteoporosis, Obesity. First aid and Rehabilitation. Fitness for women, children, elderly and differently abled. Perform the fundamental skills of the chosen activity with proper body mechanics and adherence to health and safety standards. Perform the activity as dictated by the rules and traditional standards, limited only by personal capacities. Continue performing or learning the activity according to personal goals.

References:

- Bates, M. 2008. *Health and Fitness Management*. 2nd Edition. Human Kinetics, USA.
- Corbin, C. B., G. J. Welk., W. R. Corbin. and K. A. Welk. 2008. 14th Edition. *Concepts of Physical Fitness: Active Lifestyle for Wellness*, McGraw Hill, New York.
- Hoeger, W. W. and S. Hoeger. 2004. *Fitness and Wellness* 7th Edition, Published by Thomson Wadsworth, Boston, USA.
- Lumpkin. A. 2017. *Introduction to Physical Education, Exercise Science and Sports Studies*. McGraw-Hill Publishers, New York, USA.
- Melvin, H .W. 1990. *Lifetime Fitness and Wellness*. Brown Publishers, New York.
- Savard, M and Svec, C. 2007. *The body shape solution to weight loss and wellness : The apples & pears approach to losing weight, living longer and feeling healthier*. Atria books publishers, Sydney, Australia.
- Torta, G.J. 2000 *Principles of Anatomy and Physiology*. 15th Edition, John Wiley and Sons, Hoboken, New Jersey.



Annamalai University

GUIDELINES FOR MASSIVE OPEN ONLINE COURSES(MOOCs)

2020-21

Massive Open Online Courses (MOOCs)

It is an innovative initiative of Government of India under National Mission on Education to create synergies between the salient features of anytime-anywhere format of e-Learning and the traditional classroom-based chalk and talk method to develop a unique content delivery mechanism, which is responsive to learners' needs and ensures seamless transfer of knowledge across geographical boundaries through Information Communication Technology (NME-ICT) Programme.

The Ministry of Human Resource Development, Government of India has initiated SWAYAM (Study Web of Active Learning for Young and Aspiring Minds) for hosting MOOCs.

SWAYAM is a programme designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy.

SWAYAM provides an integrated platform and portal for online courses, using Information and Communication Technology (ICT). This platform facilitates hosting of all the courses, taught in classrooms from Class 9 till post-graduation to be accessed by anyone, anywhere at any time. All the courses are interactive, prepared by the best teachers in the country and are available, free of cost to any learner. More than 1,000 specially chosen faculty and teachers from across the country have participated in preparing these courses.

The courses hosted on SWAYAM are in 4 quadrants – (1) video lecture, (2) specially prepared reading material that can be downloaded/printed (3)

self-assessment tests through tests and quizzes and (4) an online discussion forum for clearing the doubts. Steps have been taken to enrich the learning experience by using audio-video and multi-media and state of the art pedagogy / technology.

In order to ensure that best quality content is produced and delivered, nine National Coordinators have been appointed. They are:

AICTE (All India Council for Technical Education) for self-paced and international courses.

NPTEL (National Programme on Technology Enhanced Learning) for Engineering.

UGC (University Grants Commission) for non technical post-graduation education.

CEC (Consortium for Educational Communication) for under-graduate education.

NCERT (National Council of Educational Research and Training) for school education.

NIOS (National Institute of Open Schooling) for school education.

IGNOU (Indira Gandhi National Open University) for out-of-school students.

IIMB (Indian Institute of Management, Bangalore) for management studies.

NITTTR (National Institute of Technical Teachers Training and Research) for Teacher Training programme.

Courses delivered through SWAYAM are available free of cost to the learners, however learners wanting a SWAYAM certificate should register for the final proctored exams that come at a fee and attend in-person at designated centres on specified dates. Eligibility for the certificate will be announced on the course page and learners will get certificates only if this criterion is matched. Universities/colleges approving credit transfer for these

courses can use the marks/certificate obtained in these courses for the same.

Objectives

- ❖ Anyone, anywhere, anytime learning
- ❖ Learning at no cost
- ❖ Equity in access to quality education
- ❖ Lifelong learning instead of Learn, Earn and Retire

SWAYAM–Salient Features

1. One-stop web and mobile based interactive e-content for all courses from High School to University level.
2. High quality learning experience using multimedia on anytime, anywhere basis.
3. State of the art system that allows easy access, monitoring and certification.
4. Peer group interaction and discussion forum to clarify doubts
5. Hybrid model of delivery that adds to the quality of classroom teaching.

‘MOOCs’ Structure

Massive Open Online Courses (MOOCs) are such online courses which are developed with the four Quadrant approach e-learning system that has the following components:

Quadrant-I is e-Tutorial: which shall contain: Video and Audio Content in an organised form, Animation, Simulations, video demonstrations, Virtual Labs, etc.

Quadrant-II is e-Content: which shall contain: PDF, Text, e-Books, illustrations, video demonstrations, documents and Interactive simulations wherever required.

Quadrant-III is Web Resources: which shall contain: Related Links, Wikipedia Development of Course, Open source Content on Internet, Case Studies, books including e-books, research papers & journals, Anecdotal information, Historical development of the subject, Articles, etc.

Quadrant-IV is Self-Assessment: which shall contain: Problems and Solutions, which could be in the form of Multiple Choice Questions, Fill in the blanks, Matching Questions, Short Answer Questions, Long Answer Questions, Quizzes, Assignments and solutions, Discussion forum topics and setting up the FAQs, Clarifications on general misconceptions.

Uses of SWAYAM-MOOCs

- ❖ Changing role of Teacher –Facilitator
- ❖ SWAYAM courses as substitute for some Regular classroom courses
- ❖ Use SWAYAM courses for extra credits
- ❖ Use SWAYAM courses in Blended mode
- ❖ The faculty could blend the SWAYAM course with the classroom course
- ❖ Courses on SWAYAM are permitted for credit transfer

University Guide lines on MOOCs

UGC and AICTE have issued Regulations, 2016 (Credit Framework for Online Learning Courses through SWAYAM), to allow credit transfer up to 20% on the basis of MOOCs on SWAYAM.

In compliance to the directives of MHRD and UGC, the Syndicate of Annamalai University, on the recommendation of Academic Council, has approved on 28.12.2017, the incorporation of MOOCs offered by the SWAYAM portal up to 20% of total credits for all the programmes. In addition, a resolution for exemption from an elective subject in the regular curriculum if a student earns credits through MOOCs, has been approved by the Syndicate on 10.5.2019.

The departmental SWAYAM Mentors shall have the responsibility for spreading the awareness of SWAYAM portal and the different courses available, free for enrolment, to every student in the department. Students shall be encouraged to take up MOOC of their choice to equip themselves with recent knowledge and skills.

Every Mentor shall identify interested students and assist them to enroll for a MOOC course before the due date. The Mentors shall

disseminate the information that every student opting for a course available on SWAYAM platform will have to pay a nominal fee to SWAYAM towards registering for the course to obtain a certificate for successful completion of the course and to earn credits. Course Coordinators/facilitators may be assigned by the Heads of Department to guide the students throughout a selected course and to facilitate practical sessions and examinations.

A student who earns 3 or more credits in a MOOC course through SWAYAM portal shall be exempted from an Elective Course of his/her programme in a subsequent semester.

A student shall also be permitted to undergo one/two credit MOOC courses through SWAYAM portal and the credits earned shall be over and above the total credit requirements prescribed in the Curriculum for the award of the Degree.

However, for getting waiver of an elective course, the MOOC course chosen by a student should not have similar or overlapping contents vis-a-vis the courses offered by the respective BoS.

The Evaluation of the students registered for a MOOC course shall be by the Host Institution and the Principal Investigator offering a MOOC course as per the parameters laid down by the UGC/AICTE (Credit Framework for Online Learning Courses through SWAYAM) Regulation, 2016.

Students seeking credit transfer should submit the details ([**ANNEXURE – V**](#)), through proper channel, regarding online courses taken up by them along with the Certificate issued by the host institution to the Controller of Examinations and Directorate of Academic Affairs one month before the commencement of End Semester Examination. The Controller of Examination, while awarding credit to the courses successfully completed by the students under SWAYAM portal, shall adopt the following conversion. This shall be followed in all Faculties.

SWAYAM / NPTEL Score (%)	Annamalai University Matching Grade
≥ 80	S (90-99%)
70-79	A (80-89%)
60-69	B (70-79%)
40-59	C (60-69%)

The List of students who have registered for MOOCs in each department (**ANNEXURE-VI**) has to be sent through the Departmental SWAYAM mentor and the Head of the Department to University SWAYAM Coordinator (USC), for consolidation and submission to the authorities of Annamalai University as well as to UGC.

Further, a consolidated list of Number of Courses opted for credit transfer, Number of Students enrolled and Number of students registered in each course (**ANNEXURE-VII**) is also to be sent to the USC for onward communication to UGC.

Some Useful Links:

<https://swayam.gov.in/>

https://swayam.gov.in/nc_details/AICTE

https://swayam.gov.in/nc_details/NPTEL

https://swayam.gov.in/nc_details/UGC

https://swayam.gov.in/nc_details/CEC

https://swayam.gov.in/nc_details/NCERT

https://swayam.gov.in/nc_details/NIOS

https://swayam.gov.in/nc_details/IGNOU

https://swayam.gov.in/nc_details/IIMB

https://swayam.gov.in/nc_details/NITTR

<http://ugcmoocs.inflibnet.ac.in/ugcmoocs/>

ANNEXURE I**DEPARTMENT CODES**

FACULTY / DEPARTMENTS	Dept. CODE
FACULTY OF ARTS - A	
English	AENG
History	AHIS
Political Science & Public Administration	APOL
Economics	AECO
Commerce	ACOM
Sociology	ASOC
Population Studies	APOP
Business Administration	ABUS
Library and Information Science	ALIS
Rural Development	ARUR
Philosophy	APHI

FACULTY OF SCIENCE – S	
Mathematics	SMAT
Statistics	SSTA
Physics	SPHY
Chemistry	SCHE
Biochemistry & Biotechnology	SBIO
Botany	SBOT
Zoology	SZOO
Earth Sciences	SEAR
Microbiology	SMIC
Computer & Information Science	SCIS
Sports Sciences	SSPO

FACULTY OF Marine Sciences - C	
CAS Marine Biology	CMAB

FACULTY OF INDIAN LANGUAGES - L	
Tamil	LTAM
Hindi	LHIN
Advanced Studies - Linguistics	LLIN

FACULTY OF ENGINEERING & TECHNOLOGY - E	
Chemical Engineering	ECHE
Civil Engineering	ECIV
Civil & Structural Engineering	ESTR
Computer Science & Engineering	ECSE
Electrical Engineering	EEEE
Electronics & Communication Engineering	EECE
Electronics & Instrumentation Engineering	EEIE
Information Technology	EINT
Mechanical Engineering	EMEC
Manufacturing Engineering	EMAN
Pharmacy	EPHA
Skill Development	ECSD
English Section	EENS
Mathematics Section	EMAS
Physics Section	EPHS
Chemistry Section	ECHS

FACULTY OF EDUCATION - U	
Education	UEDU
Psychology	UPSY
Physical Education	UPED
Lifelong Learning	ULIL
Yoga Studies	UCYS

FACULTY OF FINE ARTS - F	
Music	FMUS

FACULTY OF MEDICINE - M	
RMMCH	MGEN
Anatomy	MOMY
Physiology	MPHY
Biochemistry	MBIO
Pharmacology	MPHA
Pathology	MPAT
Microbiology	MMIC
Forensic Medicine	MFOM
Community Medicine	MCOM
Medicine	MMED
Surgery	MSUR
Cardiology	MCAR
Obstetrics & Gynecology	MOBG
Pediatrics	MPED
TB & Chest Disease	MTBC
Dermatology, Venereal & Leprosy	MDVL
Orthopedics	MORT
Emergency Medicine	MEMM
ENT	MENT
Ophthalmology	MOPH
Psychiatry	MPSY

Radiology	MRAD
Physical Medicine & Rehabilitation / Physiotherapy	MPMR
Anaesthesiology	MANA
Neuro Surgery	MNES
Urology	MURO
Plastic Surgery	MPLS
Nursing	MNUR

FACULTY OF AGRICULTURE - G	
Agriculture Departments	GGEN
Agronomy	GAGR
Soil Science and Agricultural Chemistry	GSSC
Genetics and Plant Breeding	GGPB
Microbiology	GMIC
Plant Pathology	GPAT
Entomology	GENT
Agricultural Economics	GECO
Horticulture	GHOR
Animal Husbandry	GAHS
Agricultural Extension	GEXT

FACULTY OF DENTISTRY - D	
RMDCH	DGEN
Periodontics	DPER
Orthodontics	DORT
Oral Pathology & Microbiology	DOPM
Pedodontics	DPED
Oral Medicine & Radiology	DOMR
Oral & Maxillofacial Surgery	DOMS
Public Health Dentistry	DPHD
Prosthodontics	DPRO
Conservative Dentistry & Endodontics	DEND

ANNEXURE - II

REGISTRATION FORM
VALUE ADDED COURSE
ANNAMALAI UNIVERSITY



Name of the Student :

Register Number :
(Given in the ID-Card)

Name of the Programme :

Year of the Study :
(First year, Second year etc.,)

Semester :
(ODD/EVEN)

Choice of the Value Added Course :

Department and Faculty offering :
the VAC opted

Signature of the Student

Note:

The form has to be filled up by the student and handed over to the Head of the Department within Seven days after the opening of the semester. Option once exercised cannot be changed after forwarding the list to the respective Deans

Office Use Only

Professor and Head
Department of

Dean
Faculty of

ANNEXURE – III



ANNAMALAI UNIVERSITY

CERTIFICATE OF MERRIT

This Certificate is awarded to

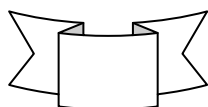
Name (Reg. No. _____)

*Of _____ year, | M.A. /M.Sc. in <Programme
for his/her successful completion of the
Value Added Course*

Conducted by the Department of _____,

Faculty of _____ during < Month and Year> ____.

He/She has secured _____ Grade



Controller of Examinations

ANNEXURE IV**DETAILS OF COMPLETION OF VALUE ADDED COURSE**

Name of the Department & Division :

Name of the Value Added course offered :

Name of the Faculty offered the course :

Name of the co-ordinator :

E- mail :

Contact :

Details of students attended the course:

S.No	Name of the student	Reg.No.	Programme	Semester	Marks	Grade

Signature of the Course Teacher

ANNEXURE-V**ANNAMALAI UNIVERSITY****FACULTY OF** _____**DEPARTMENT OF** _____**SWAYAM – MOOC COURSES****Application for Credit Transfer**

Name of the student :

University Enrollment No.:

University Register No. :

Programme :

Semester :

Title of MOOC Course :

Course Duration (in weeks) and No. of Credits:

Marks Obtained out of 100:

Credit Transfer in-lieu of :

(Name of Elective Course offered by the dept. with course code)

Mobile No. used for SWAYAM:

Email ID used for SWAYAM:

Certified that I have not studied any departmental course with similar/overlapping contents or with similar title

Signature of the student with date

Counter-signed with date**SWAYAM MENTOR****HEAD OF THE DEPARTMENT**

Mobile No.:

ANNEXURE-VI**ANNAMALAI UNIVERSITY****FACULTY OF** _____**DEPARTMENT OF** _____

**List of students Enrolled/registered for SWAYAM – MOOC COURSES
during** _____

S.No	Enrol No.	Reg. No	Name of the student	Programme	Semester	Title of MOOC Course	Whether NPTEL/ UGC	Course Duration (in weeks)	Whether registered for exam (Yes/No)

SWAYAM MENTOR**HEAD OF THE DEPARTMENT**

ANNEXURE-VII**ANNAMALAI UNIVERSITY****FACULTY OF _____****DEPARTMENT OF _____****SWAYAM – MOOC COURSES OPTED**

S.No.	Name of the Course	Whether NPTEL/UGC	No. of students enrolled	No. of students registered for Exam
1				
.				
.				
.				
.				

CONSOLIDATED REPORT FOR _____ SEMESTER OF ACADEMIC YEAR _____ - _____

Total Number of courses:

Total Number of Students enrolled:

Total Number of Students Registered for exams:

SWAYAM MENTOR**HEAD OF THE DEPARTMENT**