



## **MALLA REDDY UNIVERSITY**

Telangana State Private Universities (Establishment and Regulations) (Amendment) Act No.13 of 2020 &  
G.O.No.Ms.14, Higher Education (UE) Department, Telangana State  
Maisammaguda, Kompally, Hyderabad – 500 100

## **BACHELOR OF SCIENCE UNDERGRADUATE PROGRAM**

**ACADEMIC CALENDAR  
(2020-2021)**

**ACADEMIC CALENDAR FOR SCHOOL OF SCIENCES – I YEAR – SEMESTER I****B.Sc I Year- I Semester**

<b>S.No.</b>	<b>Description</b>	<b>Period</b>
1	I Spell of Instructions	09-11-2020 to 26-12-2020
2	I Mid Examinations	28-12-2020 to 31-12-2020
3	Submission of I Mid Exam Marks	09-01-2021
4	II Spell of Instructions	01-01-2021 to 23-02-2021
5	II Mid Examinations	24-02-2021 to 27-02-2021
6	Submission of II Mid Exam Marks	06-03-2021
7	Preparation & Practical Examinations	01-03-2021 to 06-03-2021
8	End Semester Examinations (Regular)	08-03-2021 to 19-03-2021
9	Commencement of Class work for I-Year II-Semester for the Academic Year 2020-2021	22-03-2021

**ACADEMIC CALENDAR FOR SCHOOL OF SCIENCES – I YEAR – SEMESTER II****B.Sc I Year- II Semester**

<b>S.No.</b>	<b>Description</b>	<b>Period</b>
1	I Spell of Instructions	22-03-2021 to 12-05-2021
2	I Mid Examinations	13-05-2021 to 15-05-2021
3	Submission of I Mid Exam Marks	22-05-2021
3	Summer Vacation	17-05-2021 to 05-06-2021
4	II Spell of Instructions	07-06-2021 to 21-07-2021
5	II Mid Examinations	22-07-2021 to 24-07-2021
6	Submission of II Mid Exam Marks	31-07-2021
7	Preparation & Practical Examinations	26-07-2021 to 31-07-2021
8	End Semester Examinations (Regular)	02-08-2021 to 14-08-2021
9	Commencement of Class work for II Year I Semester for the Academic Year 2020-2021	16-08-2021

## MALLA REDDY UNIVERSITY

### Forensic Science

#### COURSE STRUCTURE

##### I Year B. Sc – I Semester

S.No	Subject Code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	MRU-R20CSAE01	English	2	0	0	2	40	60
2	MRU-R20FSCC01	Introduction to forensic Science	4	0	0	4	40	60
3	MRU-R20FSCC02	Crime and Society	4	0	0	4	40	60
4	MRU-R20FSGE01	Forensic Physics	3	1	0	4	40	60
5	MRU-R20A0081	English Language Communication Skills Lab	0	0	2	2	40	60
6	MRU-R20FSCP01	Introduction to Forensic Science Lab	0	0	3	2	40	60
7	MRU-R20FSCP02	Crime and Society Lab	0	0	3	2	40	60
8	MRU-R20FSGP01	Forensic Physics Lab	0	0	2	2	40	60
<b>TOTAL</b>			<b>13</b>	<b>1</b>	<b>10</b>	<b>22</b>	<b>320</b>	<b>480</b>

##### I Year B. Sc – II Semester

S.No	Subject Code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	MRU-R20A0002	Professional English	2	0	0	2	40	60
2	MRU-R20CSAE02	Environmental Science	2	0	0	2	40	60
3	MRU-R20FSCC03	Criminal law	4	0	0	4	40	60
4	MRU-R20FSCC04	Forensic Psychology	4	0	0	4	40	60
5	MRU-R20FSGE02	Computer Application Tools	3	1	0	4	40	60
6	MRU-R20FSCP03	Criminal Law Lab	0	0	3	2	40	60
7	MRU-R20FSCP04	Forensic Psychology Lab	0	0	3	2	40	60
8	MRU-R20FSGP02	Computer Application Tools Lab	0	0	2	2	40	60
<b>TOTAL</b>			<b>15</b>	<b>1</b>	<b>8</b>	<b>22</b>	<b>320</b>	<b>480</b>

## MALLA REDDY UNIVERSITY

I Year B. Sc – I Semester

L/T/P/C

2/-/-/2

## (MRU-R20CSAE01) ENGLISH

**INTRODUCTION**

English is a global language, which is a means to correspond globally. Keeping in account of its vital role in the global market, emphasis is given to train the students to acquire language and communicative skills.

The lectures focus on the communication skills and the selected excerpts support as resources for the teachers to develop the relevant skills in the students. The lessons stimulate discussions and help in comprehending the content effectively. The focus is on skills development, nurturing ideas and practicing the skills.

**COURSE OBJECTIVES:**

1. Familiarize the students with general trends, themes and concerns from medieval to neoclassical age.
2. Equip the student with skills literary textual interpretation, literary analysis and appreciation along with fostering critical thinking skills as applicable to works of literary narratives.
3. Enable learners to communicate in English at a graduate (b1, b2) level.
4. Augment the purview of learning in receptive and productive skills of the language.
5. Develop the communication skills as per the prescribed and desired standards.

**UNIT-1: Reading skills**

Introduction; Definition of Reading; Importance of Reading; What Is Reading; Mechanics of Reading; Reading- An Analysis; Factors Influencing Reading; Types of Reading; Effective Reading; Reading Method; Techniques of Reading; Reading to Learn; Social Factors That Influence Reading; Grammar: Introduction to Grammar: Sentence Construction; Kind of Sentences and Their Functions; Phonetic- Pronunciation; Consonants Sounds; Vowels Sounds; **Vocabulary Enrichment-I:** Sentence Stress; Intonation; Syllable and Syllable Stress; Word Stress.

**UNIT-2: Poem and Literature:****Medieval age- The Miller's Tale (opening lines) - Geoffrey Chaucer: (Poem):**

The Middle English Period; About the Poet; Poem; Glossary; Grammar: Parts of Speech-1: Nouns; Verbs; Adverbs & Adjectives; Singular and Plural; **Vocabulary Enrichment-II:** Synonyms and Antonyms; Associate Words; Punctuation and Capitalization.

**Nehru's last letter to Indira- Jawaharlal Nehru: (Literary Component):**

A Note on the Author; About the Letter; Glossary; Grammar: Parts of Speech-2: Prepositions, Conjunctions & Interjections; **Vocabulary Enrichment-III:** Formation of Words; Phrasal Verbs; Introduction to Microsoft PowerPoint and Microsoft Words.

**UNIT-3: Poem and Literature:****Freedom- Rabindranath Tagore: (Poem):**

About the Poet; Poem; Glossary.

Grammar: Tenses; Subject-Verb-Agreement; **Vocabulary Enrichment-IV:** Common Errors and Correct Usage; Phares and Idioms.

Never-Never Nest- Cedric Mount: (Literary Component: Play):

About the Playwright; Play; Glossary. **Vocabulary Enrichment- V:** Foreign words and Indianisms. Report Writing; Homonyms, Homophones, Homographs.

**UNIT-4: Speaking Skills, Writing and Listening Skills:**

Presentation skills; Roll Play; Making Request, Speaking Permissions; Formal Writing; Informal Writing; Letter Writing; Conversation Skills: Formal and Informal Conversation; JAM Grammar: Commonly Wrong used words.

**UNIT-3: Literature:**

1. **Wit and Humor-** From the text "A Tea Party" by Ruth Praver Jhabvala
2. **Risk Management-** From the text "Deadly Factory Fires in India."

**REFERENCE BOOKS**

1. Mohanraj, J. (2009). Let Us Hear Them Speak. New Delhi: Sage Texts. 2015. Print.  
Hancock, M. English Pronunciation in Use. Intermediate Cambridge: Cambridge University Press. 2009. Print.
2. Das, P. C. (2016). Applied English Grammar and Composition, 2016.

**COURSE OUTCOMES:**

**After completion of the course students will be able to:**

1. Ability to read and write in varying tones.
2. Equip students to be able to attempt the English written component in competitive exams.
3. Enhance logical thinking and error free writing.
4. Make inferences and predictions based on information in the text.
5. Enable students to be keen listeners and observers of the language.

**MALLA REDDY UNIVERSITY****I Year B. Sc – I Semester****L/T/P/C  
4/-/-/4****(MRU-R20FSCC01) INTRODUCTION TO FORENSIC SCIENCE****COURSE OBJECTIVES:**

1. Introduce to the concept and significance of forensic science.
2. Learn fundamental principles, functions of forensic science and role of forensic scientist.
3. Gain knowledge about various divisions in a forensic science laboratory.
4. Learn about the working of the forensic establishments in India and abroad.
5. To know the importance of Laboratory standards and accreditation.

**Unit I: Forensic Science – An introduction**

Introduction; what is forensic science? ; Definition and scope of forensic science; history and development of forensic science; forensic science in India; principles of forensic science; physical evidence; determining the admissibility of evidence – Frye standard and Daubert standard.

**Unit II: Divisions of Forensic Science**

Forensic Science Divisions – Ballistics division, Biology division, Chemistry division, Document division, Lie-detector division, Physics division, Serology division, and Toxicology division. Expansion of forensic science – Forensic Archeology, Forensic Paleontology, Forensic Geology, Forensic Ornithology, Industrial Forensic, Analytical Forensic, Forensic Accounting Forensic Auditing, Forensic Journalism, Forensic Cinematography, Agro Forensic, Crop Forensic, Rural Forensic, Forensic Gemology, Nuclear Forensic, Aeronautical Forensic, Space Forensic, Forensic Genetics, and Environmental Forensic.

**Unit III: Organizational set up of Forensic Science laboratories in India**

Hierarchical set up of central forensic science laboratories, State forensic science laboratories. Government examiners of questioned documents, Fingerprint bureaus, National crime records bureau, Police & detective training schools, Bureau of police research & development, Directorate of forensic science and mobile crime laboratories, Police academies, Police dogs, Services of crime laboratories. Set up of international organizations – INTERPOL and FBI.

**Unit IV: Role and Functions of Forensic scientist**

Qualifications, code of conduct of forensic scientist; functions of forensic scientist; role of forensic scientist in – criminal justice delivery system, protection of human rights and in containing torture; Expert – who is an expert; expert witness; expert testimony and admissibility of the testimony in the court of law.

**Unit V: Standards, Laboratory management and Safety**

Standards for analysis - Basic standards, Need of standards in analytical sciences – basic chemical standards, analytical standards, biological and biochemical standards, and reference materials. Laboratory Accreditation – NABL guidelines for accreditation in India, proficiency testing system. Laboratory Information Management System (LIMS), Laboratory safety standards and protocol.

**TEXT BOOKS**

1. Nabar, B. S. (2012). Forensic science in criminal investigation.
2. Saferstein, R. (2013). Criminalistics. Pearson Education.

**REFERENCE BOOKS**

1. Nanda, B. B. (2001). Forensic Science in India: A vision for the twenty-first century. Select Publishers.
2. Bhasin, M. K. and S. Nath (2002). Role of Forensic Science in the New Millennium, University of Delhi, Delhi.
3. James, S. H. and J.J. Nordby (2005). Forensic Science: An Introduction to Scientific and Investigative Techniques, 2nd Edition, CRC Press, Boca Raton.
4. Sharma, D. B. (2005). Forensic Science in Criminal Investigation & Trials. Universal Law Publishing Company.

**COURSE OUTCOMES:**

After learning, the concepts of this paper the student will be able to understand

1. The significance of forensic science to human society
2. Analyze the history and development of the forensic science India.
3. The fundamental principles, functions of forensic science and discuss the role of forensic scientist.
4. The various divisions within a forensic science laboratory and their functions.
5. The importance of total quality management system and the technical requirements required for a forensic science laboratory.



**MALLA REDDY UNIVERSITY****I Year B. Sc – I Semester****L/T/P/C  
4/-/-/4****(MRU-R20FSCC02) CRIME AND SOCIETY*****COURSE OBJECTIVES***

1. The importance of criminology.
2. The causes of criminal behavior.
3. The significance of criminal profiling to mitigate crime.
4. The consequences of crime in society.
5. The elements of criminal justice system.

**Unit I: Basics of Criminolog**

Criminology – definition, aim and scope; Schools of Criminology; Theories of criminal behavior – classical & positivist. Criminal anthropology, criminal profiling, understanding modus operandi and role of media.

**Unit II: Sociology**

Sociology – Introduction, definition & Origin, Nature and scope of the subject, Sociology as a science – methods and techniques used in social research, basic concepts, data & theories. Sociological causes of crime, Ethics being a mankind. Penology – theories of punishment, types of punishments. Prisons and correctional institutions – objectives, administration, functioning and limitations.

**Unit III: Crime**

Elements, nature, causes and consequences of crime. Deviant behavior, Hate crimes, organized crimes White collar crimes, public disorder, domestic violence and workplace violence. Victimology, Juvenile delinquency, Social change and crime, Psychological disorders, Criminality and situational crime prevention.

**Unit IV: Criminal Justice System**

Broad components of criminal justice system, Filing of criminal charges, Correctional measures and rehabilitation of offenders. Human rights and criminal justice system in India. Role of Forensic science to aid the criminal justice system.

### Unit V: Role of Police in Investigations

Policing styles and principles, police powers in investigation, investigation officer, community policing, policing a heterogeneous society, criminal investigation, urban and rural policing. Police reforms and administration

#### TEXT BOOKS

1. Bajpai, G.S. ( 2009) : Criminological Studies in Survey of Research in Sociology, ICSSR, New Delhi.

#### REFERENCE BOOKS:

1. James, S.H. and J.J. Nordby (2005). Forensic Science: An Introduction to Scientific and Investigative Techniques, 2nd Edition, CRC Press, Boca Raton.
2. Zulawski, D.E. and D.E. Wicklander (2002). Practical Aspects of Interview and Interrogation, CRC Press, Boca Raton.
3. Saferstein, R. (2013). Criminalistics. Pearson Education.
4. Jackson, J.L. and E. Barkley (1997). Offender Profiling: Theory, Research and Practice, Wiley, Chichester.

#### COURSE OUTCOMES

After going through this course, the student gets a thorough knowledge on

1. The concept of crime and recent development in its control and prevention.
2. The scope of criminology and understand causes of criminal behavior.
3. To elucidate criminal profiling and modus operandi.
4. Understand the role of Forensic Science in criminal justice system
5. To gain knowledge on police administrative system, police duties, responsibilities and powers.

## MALLA REDDY UNIVERSITY

I Year B. Sc – I Semester

L/T/P/C  
3/1/-/4

## (MRU-R20FSGE01) FORENSIC PHYSICS

## COURSE OBJECTIVES

1. Understand the elastic and thermal properties of materials used in the forensic physics.
2. Acquire the knowledge on the properties of sound & ultrasonics.
3. Understand the principles of laser and fiber optics and their applications.
4. Gain the knowledge on the radioactive materials and its applications.
5. Explore the various microscopy techniques employed in forensics.

**Unit-I: Elasticity and Thermal Physics**

Elasticity: Hooke's law, stress-strain diagram, Relationship between three moduli of elasticity (qualitative) and Poisson's ratio-Factors affecting Elasticity, twisting couple on a wire, Work done in twisting wire, Torsional pendulum-rigidity modulus of a wire. Bending moment, Depression of a cantilever, Experiment to Young's modulus by uniform bending, Thermal Physics: Concept of temperature-Zeroth law, First law of thermodynamics-statement, Work done during isothermal and Reversible process, Irreversible process, Carnot's reversible engine, Thermal efficiency, Carnot's cycle, Carnot's theorem, Second law of thermodynamics, Refrigeration, Co-efficient of performance.

**Unit-II: Acoustics and Ultrasonics**

A. Acoustics: Reverberation & Reverberation time, Basic requirements of acoustically good hall; Absorption Coefficient, Determination of absorption coefficient based on the standard times of reverberation, Sabine's formula (Qualitative treatment); Factors affecting the architectural acoustics and their remedies.

B. Ultrasonics: Introduction, Concept of Magnetostriction, Piezo and inverse Piezo electric effects; Production of Ultrasonic waves-Magnetostriction method, Piezo electric crystal method; Properties of Ultrasonic waves; Detection of Ultrasonics-Piezo electric detector, Kundt's tube, Sensitive flame method, Thermal detector; Applications-Communication, SONAR, Biological and Medical.

**Unit-III: Lasers and Fiber optics**

A. Lasers: Characteristics of Lasers, Absorption, Spontaneous and Stimulated Emission of Radiation, Einstein's Coefficients and Relation between them, Meta-stable State, Population Inversion, Lasing Action, Ruby Laser, Semiconductor diode Laser, Applications of Lasers.

B. Fiber Optics: Structure and working principle of optical fiber, Acceptance angle and Acceptance cone, Numerical aperture, Types of Optical fibers and their refractive index profiles, Attenuation in optical fibers, Application of optical fibers: Communication, Medical and Sensors.

**Unit-IV: Radioactivity**

Review of nuclear composition, Nuclear properties, Nuclear reactors, Radioactivity, Half-life, Mean life, Successive radioactive transformation ABC type, Radioactive equilibrium (transient and secular), Applications of Radio Isotopes, Radiometric dating, Carbon dating. Radioactive materials-Naturally occurring radioactive materials (NORM), Technologically enhanced natural occurring radioactive materials (TENORM).

**Unit-V: Microscopy**

Magnification and Resolution, Different types of microscope- Simple microscope, Comparison microscope, Binocular microscope, Stereo microscope, Phase contrast microscope, Dark field microscope, Fluorescence microscope, Electron microscope-Scanning Electron Microscope, Transmission Electron Microscope, X-ray diffraction, Forensic applications of microscopy.

**TEXT BOOKS:**

1. Avadhanulu, M. N. and P. G. Kshirsagar (2018). A text book of Engineering Physics, S Chand publications Pvt. Ltd.
2. Skoog, D. A., F. James holler and R. C. Stanley (2016). Principles of Instrumental Analysis, Cengage Learning, 6th Edition.

**REFERENCE BOOKS:**

1. Subrahmanyam and N, Brij lal (2018). A text book of sound 2/e, Vikas publications Pvt. Ltd.
2. Halliday, D., R. Resnick, and J. Walker (2015). Principles of Physics, Wiley.
3. Gaur, R. K., and S. L. Gupta (2012). Engineering Physics, Dhanpat Rai Publishers.
4. Linga Murty, K., and I. Charit (2013). An Introduction to Nuclear materials: Fundamentals and Applications, Wiley-VCH.
5. Basu, S., J. R. Millette (2012). Electron Microscopy in Forensic, Occupational, and Environmental Health Sciences, Springer, 2012.

**COURSE OUTCOMES**

1. Apply the principles of elastic and thermal properties of materials to investigate the phenomena in forensic sciences.
2. Analyze the sound and ultrasonics tools, which is useful in forensic photography
3. Distinguish the lasers from ordinary light & apply in the fiber optic communication.
4. Identify the different radioactive materials involved in nuclear forensic science.
5. Demonstrate the different electron microscopy techniques employed in forensic investigation.

## MALLA REDDY UNIVERSITY

I Year B. Sc – II Semester

L/T/P/C  
2/-/-/2

### (MRU-R20A0002) PROFESSIONAL ENGLISH

#### INTRODUCTION

English is a tool for global communication and is the dominant language, which is sweeping almost all the fields in the world. It has become a necessity for people to speak in English comfortably and confidently, if they want to enter the global workforce. Hence, the course is designed to help the students to meet the global standards. Each unit focuses on English skill-set to improve: Presentation Skills, discussions and narrations, writing professional documents and professional etiquette.

#### COURSE OBJECTIVES:

1. To enrich students to express themselves appropriately and fluently in professional contexts.
2. To enhance their employability through regular participation in group discussions and interviews.
3. To lay foundation with writing strategies for the future workplace needs.
4. To acquaint students with different components of professional presentation skills.
5. To equip students with necessary training in listening to comprehend dialects of English language.

#### UNIT-1: If-by Rudyard Kipling

Listening	Listening for General Details.
Reading	Reading speed (With reading comprehension texts)
Writing	Curricula vitae & Covering letters
Speaking	Effective Telephonic Interviews
Grammar	Simple, Complex and Compound Sentences
Vocabulary	Commonly confused words & misspell words
Value Orientation	Expansion of proverbs "A journey of a thousand miles begins with a single step"

#### UNIT-2: The Portrait of a Lady by Kushwant Singh

Listening	Listening for Specific Details
Reading	Articles Reviews
Writing	Expansion of proverbs & Précis writing
Speaking	Introduction to Presentations
Grammar	Reported speech
Vocabulary	Collocations & Idioms

Value Orientation      Expansion of proverbs “Don’t count your chickens before they hatch”

### UNIT-3 : Building a New State by A.P.J. Abdul Kalam

Listening                      Listening for Gist & Vocabulary.  
 Reading                        Book Reviews  
 Writing                         Types of reports & Report Writing  
 Speaking                        Oral Presentations  
 Grammar                        Redundancies and clichés  
 Vocabulary                      Practice of Recruitment Papers-1  
 Value Orientation              Expansion of proverbs “Time is money”

### UNIT-4: An Astrologer’s Day by R.K. Narayan

Listening                        Critical Listening (For attitude and opinion)  
 Reading                         Comprehension Passages from SAT & BEC  
 Writing                         Notices & Memos  
 Speaking                        Group Discussions & Debate-2  
 Grammar                        Relative clauses & Common errors in English  
 Vocabulary                      Vocabulary Enrichment  
 Value Orientation              Expansion of proverbs “An idle man’s brain is a devil’s workshop”

### REFERENCE BOOKS

1. Swan, M. (1995) Practical English Usage, OUP.
2. Zinsser, W. (2001). On Writing Well. Harper Resource Book.
3. Kumar, S. and Lata, P. (2011) Communication Skills. Oxford University Press.
4. Raman, M. and S. Sharma (2016). Technical Communication. Oxford University Press.
5. Sherfield, M. R. (2011). Cornerstone Developing Soft Skills.. Pearson India. Fourth edition.
6. Cambridge Advanced Learner’s Dictionary. Cambridge Publication. Fourth edition. 2013.
7. Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press.

### COURSE OUTCOMES

After completion of the course students will be able to:

1. Analyze and interpret a diverse range of engineering concepts through the synthesis of information
2. Understand the impact of professional engineering solutions in societal contexts and demonstrate its knowledge.
3. Achieve communicative ability in their personal and professional relations with clarity of speech and creativity in content.

4. Function effectively as an individual and a team; and would be able to prepare them to be market ready. Comprehend and write effective reports and design documentation, manage projects and make effective presentations.

**MALLA REDDY UNIVERSITY****I Year B. Sc – II Semester****L/T/P/C  
2/-/-2****(MRU-R20CSAE02) ENVIRONMENTAL SCIENCE****COURSE OBJECTIVES:**

1. To introduce to the concepts of Ecology and Ecosystems.
2. Create awareness on the current situation of global warming.
3. Explain the factors and pollutants causing climate change.
4. Introduce students to the prevailing situations of Human-Wildlife conflict.
5. To aware them with the environmental laws in India.

**UNIT – I Ecology and Ecosystems**

Basic concepts and definitions – ecology, ecosystems, resistance and resilience, autecology, synecology, major terrestrial biomes, biogeochemical cycles and sedimentary cycle, role of Mycorrhizae, decomposition and nutrient release, nutrient use efficiency, nutrient budget, nutrient conservation strategies. Types of ecosystem – forest, grassland, lentic, lotic, estuarine, marine, desert, wetlands, ecosystem structure and function, abiotic and biotic components of ecosystem.

**UNIT-II Environmental Pollutants and Pollution**

Definition of pollution – pollutants, classification of pollutants, solubility of pollutants (hydrophilic and lipophilic pollutants), transfer of pollutants within different mediums, role of chelating agents in transferring pollutants, concept of biotransformation and bioaccumulation, concept of radioactivity, radioactive decay and half-life of pollutants, organometallic compounds, acid mine drainage, causes of soil pollution and degradation, effect of soil pollution on environment, control strategies.

**UNIT – III Global Warming and Climate Change**

Evolution and development of Earth's atmosphere, atmospheric structure and composition, significance of atmosphere in making the Earth, the only biosphere. Ozone layer or ozone shield, importance of ozone layer, ozone layer depletion and causes. Trends of global warming and climate change, drivers of global warming & climate change, impact of climate change on atmosphere, weather patterns, sea level rise, agricultural productivity and biological responses. International agreements, Montreal protocol 1987, Kyoto protocol 1997, Convention on climate change, carbon credit and carbon trading, clean development mechanism.



**UNIT-IV Unit – IV Human-Wildlife Conflict and Management**

Journey of mankind from predator to conservator, prehistoric association between wildlife and humans. Who is the intruders: human or animal? Impact of conflict on humans and wildlife, impact of habitat fragmentation, social inequality in terms of forest conservation: forest produce as a need vs. forest exploitation. Concept of conservation reserves and community reserves, importance of wildlife corridors in minimizing the conflicts and conservation. What is the role of citizen, government, wildlife biologists and social scientists?

**UNIT-V Environmental Law**

The Indian Forest Act 1927, The Wildlife (Protection) Act 1972, The Water (Prevention and Control of Pollution) Act 1974, The Forests (Conservation) Act 1980, The Air (Prevention and Control of Pollution) Act 1981, The Environment (Protection) Act 1986, Motor Vehicle Act 1988, The Public Liability Insurance Act 1991, Noise Pollution (Regulation and Control) Rules 2000, The Biological Diversity Act 2002, The Schedule Tribes and other Traditional Dwellers (Recognition of Forests Rights) Act 2006, The National Green Tribunal Act 2010, scheme and labeling of environment friendly products, Eco parks.

**TEXT BOOKS:**

1. Gillespie, A. (2006). Climate Change, Ozone Depletion and Air Pollution: Legal Commentaries with Policy and Science Considerations. Martinus Nijhoff Publishers.
2. Naseem, M. (2011). Environmental Law in India Mohammad. Kluwer Law International

**REFERENCE BOOKS:**

1. Odum, E.P. (1971). Fundamentals of Ecology. W.B. Sounder.
2. Maslin, M. (2014). Climate Change: A Very Short Introduction. Oxford Publications.
3. Abraham, C.M. (1999). Environmental Jurisprudence in India. Kluwer Law International.
4. Pepper, I.L., C.P. Gerba, and M.L. Brusseau (2006). Environmental and Pollution Science. Elsevier Academic Press.
5. Leelakrishnan, P. (2008). Environmental Law in India (3rd edition). LexisNexis India

**COURSE OUTCOMES:**

Learning Objectives: After studying this paper the students will know –

1. Understand the basic concepts and terminology of Ecology and Ecosystems.
2. Acquire the knowledge on the current situation of global warming and its effects.
3. Understand the environmental pollutants causing climate change and evaluate the actions necessary to mitigate.
4. Develop an understanding on the concept of Human-Wildlife Conflict, its causes and future solutions.
5. Gain knowledge on the acts pertaining to Environmental Laws in India.

**MALLA REDDY UNIVERSITY****I Year B. Sc – II Semester****L/T/P/C  
4/-/-/4****(MRU-R20FSCC03) CRIMINAL LAW****COURSE OBJECTIVES:**

1. Know the judiciary system
2. Learn the elements of Criminal Procedure Code related to forensic science.
3. Study and understand the Preamble, and Articles of the Constitution of India.
4. Know Acts governing socio-economic crimes.
5. Know Acts governing environmental crimes.

**UNIT –I Role of Judiciary**

Introduction – Administration of civil and criminal justice, Hierarchy of courts – Powers of courts, Types of courts, Lok Ayukta system. Sentences which the court of Chief Judicial Magistrate may pass, Summary trials – Section 260(2), Judgments in abridged forms – Section 355.

**UNIT –II Criminal Procedure Code**

Criminal Procedure Code Act. Definitions – Offence and its connotations, cognizable and non-cognizable offences, bailable and non-bailable offences, prosecutors and defense, warrant and summons, First Information Report (FIR), arrest with and without warrant, rights of arrested individual under CrPC.

**UNIT–III Law to Combat Crime**

Indian Penal Code pertaining to offences against persons – Sections 121A, 299, 300, 302, 304A, 304B, 307, 309, 319, 320, 324, 326, 351, 354, 359, 362, Sections 375 & 377 and their amendments. Indian Penal Code pertaining to offences against property Sections – 378, 383, 390, 391, 405, 415, 420, 441, 463, 489A, 497, 499, 503, 511. Indian Evidence Act – Evidence and rules of relevancy in brief. Expert witness. Cross examination and re-examination of witnesses. Sections 32, 45, 46, 47, 57, 58, 60, 73, 135, 136, 137, 138, 141, Section 293 in the code of criminal procedure.

**UNIT –IV Constitution of India**

Preamble of the Constitution, Fundamental rights (part III) Articles 12-35, Directive principles of state policy (part IV) Articles 36-51 and Fundamental duties (part V)-51A.

**UNIT –V Special Acts**

Narcotic, Drugs and psychotropic substances act, Essential commodity act, Drugs and cosmetics act, Drugs and pharmaceuticals act, Explosive substances act. Arms act, Dowry prohibition act, Prevention of food adulteration act. Prevention of corruption act. RTIact(2005) 2019, Wildlife

protection act 1972, I.T. act. Environment protection act. SC/ST atrocities act, POCSO, UAPA, Senior citizens act and PETA.

**TEXT BOOKS:**

1. Lal, R. and D. Lal (2000). Indian Penal Code, Wadhwa & Co.
2. Pillai, A (2000) Criminal Law, Butterworth Co., 2000.

**REFERENCE BOOKS:**

1. Gour K.D (1999) Criminal Law - Cases and Materials, Butterworth Co.
2. Kenny (1998). Outlines of Criminal Law, (1998 Edition).
3. Srivastava O.P. (2016) General Principles of Criminal Law, 6<sup>th</sup> edition.

**COURSE OUTCOMES:**

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

1. Learn and understand the Judiciary system in India, and its importance.
2. Understand the Criminal Procedure Code, the acts and terminology and its implications.
3. The laws of Indian Penal Code and Indian Evidence Act, their important sections and relation to forensic science.
4. Gain knowledge on the Constitution of India, its values, importance and the need to know it.
5. Develop understanding on special laws in relation to socio-economic importance.

**MALLA REDDY UNIVERSITY****I Year B.Sc – II Semester****L/T/P/C  
4/-/-/4****(MRU-R20FSCC04) FORENSIC PSYCHOLOGY****COURSE OBJECTIVES:**

1. To know the subject – forensic psychology and its applications.
2. Know the fundamentals and legal aspects of forensic psychology.
3. Study the significance of criminal behavior and criminal profiling.
4. The importance of deception and tools to detect deception.
5. Study the advanced forensic techniques like polygraphy, narco analysis and brain electrical oscillation signatures

**UNIT –I Unit I: Psychology**

Introduction, definition, scope and importance, Schools of Psychology, Principles of development. Attention and perception, Process of learning, Memory and forgetting. Emotions – values of emotions.

**Unit II: Basics of Forensic Psychology**

Definition and fundamental concepts of forensic psychology and forensic psychiatry. Psychology and law – Ethical issues in forensic psychology. Assessment of mental competency. Mental disorders and forensic psychology. Psychology of evidence – eyewitness testimony, confession evidence. Criminal profiling. Psychology in the courtroom, with special reference to Section 84 IPC.

**Unit III: Criminal Behavior**

Psychopathology and personality disorder. Psychological assessment and its importance. Serial murderers. Psychology of terrorism, Biological factors and crime – social learning theories, psycho-social factors, abuse. Juvenile delinquency – theories of offending (social cognition, moral reasoning), Child abuse (physical, sexual, emotional), juvenile sex offenders, legal controversies.

**Unit IV: Detection of Deception**

Tools for detection of deception – interviews, non-verbal detection, statement analysis, voice stress analyzer. Hypnosis, Polygraphy, Narco analysis, Brain mapping. Operational and question formulation techniques, ethical and legal aspects, the guilty knowledge test and legal issues.

**Unit V: Rehabilitation & Psychological wellbeing**

Health and stress, Psychological wellbeing – study of state of mind & body language. Rehabilitation of criminals, drug addicts & psychopaths, Behavioral modifications.

**TEXT BOOKS:**

1. Spencer A. R. (1998). Psychology – Principles in Practice.

**REFERENCE BOOKS:**

1. Atkinson and Hilgard (2003). Introduction to Psychology, Thomson Wardsworth 14th Edition.
2. Baron, R.A. (2001). Psychology (5th Edition) Pearson Education Inc., New Delhi.
3. Baron, R.A and D. Byrne (2006). Social Psychology (10th Edition) Pearson Education Inc., New Delhi.
4. Hurlock, E.B. (1980). Developmental Psychology – a life span approach.
5. Jones, R. N. (1994). The Theory and Practice of Counselling Psychology.

**COURSE OUTCOMES:**

At the end of the course, the students are expected to

1. Understand the basics of Forensic Psychology.
2. Understand the fundamental concepts of Psychology and Psychiatry with forensic perspective.
3. Understand criminal behavior and factors effecting it.
4. The importance of deception, understand the principle and applications of tools used for detection.
5. The need for rehabilitation and the importance of psychological wellbeing.

**MALLA REDDY UNIVERSITY****I Year B. Sc – II Semester****L/T/P/C  
3/1/-/4****(MRU-R20FSGE02) COMPUTER APPLICATION TOOLS****COURSE OBJECTIVES:**

1. To Understand Knowledge of Computer and its Hardware, Software Components.
2. To Make the Student, equip them with the skill of using computers.
3. To Make the Student to understand basic knowledge of Computer Science concepts.
4. To understand the use of computer system in problem solving.
5. To Provide Student with Understanding of Internet and WWW.

**Unit 1: Computer fundamentals**

Computer System Introduction, Computer Architecture, History of Computer, Characteristics of Computers, Computer Languages, Advantage of Using Computers, Software, Hardware, CPU, I\O devices, Communication between CPU and I/O devices, primary and secondary memory Devices.

**Unit 2: Software Installation & Microsoft Word**

Introduction to System Software, Installation of Windows OS & Linux OS, Installation of MS -OFFICE 2010, Installation of Anti-Virus Software. MS-Office Introduction, MS-Word: Editing, Page Layout: Tab Orientation Margins, Size, Fonts Group: Edit, Drag/Drop, Copy Paste, Delete, Spell, Fix Grammar, Paragraph Group: Align, Spacing, Indent, Show/Hide, View Tab : Page Layout, Ruler, Zoom Review Tab, File Tab, Save/Save As, Print, Find/replace, Quick Access Toolbar, Format Painter, Save to .pdf, Options ,Page Break/Sections Breaks, Table of Contents : Headings, Header & Footer , Page numbers, Columns, Insert Hyperlink, Insert Basic Table : Format, Edit, Insert screen shot: Format, Edit, Wrap text, Bullets, Numbering, Forms and Templates: Table Forms, Developer Forms, Restrict Editing, Macros and repetitive actions ,Reformatting styles .

**Unit 3: Microsoft Excel & Power Point Presentation**

Introduction to Excel, MS-Excel: Formatting, Editing Commands, Create a spreadsheet, Format cells, rows, columns, and entire worksheets, Enter data into a spreadsheet, Use formulas and functions for math, accounting, and totaling, Create formulas and functions, charts and diagrams, data lists and forms, pivot tables and pivot charts, Excel templates, Share and protect your worksheets and workbooks.

Introduction to Power Point Presentation, MS-PPT: Create new presentations, Adding text, pictures, sounds, videos and charts to your presentations, Design slides using themes, colors, and special effects, Animate objects on slides, special effects, •Work with

Master Slides to make editing, Set up slide shows and rehearse timings for your slides, Collaborate using social media and PowerPoint together.

#### **Unit 4: Computer Networks & Operating System**

Introduction to Computer Networks, Types of Networks: LAN, WAN, MAN, Network Topologies: BUS, Star, Ring, Mesh, Hybrid, Network Devices: Hub, Repeater, Switch, Bridge, Router, Gateway. Operating System: Evolution of Operating Systems, Different types of operating Systems.

#### **Unit 5: WWW & Web Browsers**

WWW: Introduction, Internet, Applications of Internet, Web browsing software's, Search engines, URL's, IP Address and types of IP Addresses. Current trends on Internet: iPhone, VOIP, Internet video, E-commerce, Wireless communication Collaborative computing, Podcasting, Video conferencing.

#### **Reference Books:**

1. Singh, P. K. and P. Sinha. Computer Fundamentals, 6th Edition, BPB Publications.
2. Tanenbaum, S. A. Computer Networks. Pearson Education India.
3. Silberschatz, A. and P. Galvin. Operating System Concepts. Wiley India Edition.
4. Ravichandran, A. Internet and Web Technology. Khanna Publishers.
5. Cox, J., J. Lambert, and C. Fyre (2010). Microsoft Office Professional. Microsoft Press.

#### **COURSE OUTCOMES:**

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

1. Curriculum that prepares students for life-long learning of computer concepts and skills
2. Explain the needs of hardware and software required for a computation task.
3. To understand the student how to use computer applications as effective tools for problem solving and data analysis.
4. Familiarize operating systems, peripheral devices, networking, multimedia and internet.
5. To understand the proper usage of Internet and computing resources.
6. Students will be competent users of the Microsoft Office suite and will have data analysis skills that will be useful in future

**MALLA REDDY UNIVERSITY****Forensic Science****B. Sc I year – I Semester Practicals****(MRU-R20A0081) English Language Communication Skills Lab****Credits: 2**

The Language Lab focuses on the production and practice of sounds of the English language and familiarizes the students with its use in everyday situations and contexts.

**COURSE OBJECTIVES:**

6. To facilitate computer-aided multi-media instruction enabling individualized and independent language learning
7. To sensitize the students to the nuances of English speech sounds, word accent, intonation and rhythm
8. To bring about a consistent accent and intelligibility in their pronunciation, ample speaking opportunities are provided.
9. To improve the fluency in spoken English and neutralize mother tongue influence
10. To train students to use language appropriately for interviews, group discussions and public speaking

English Language Communication Skills Lab has two parts:

- A. Computer Assisted Language Learning (CALL) Lab
- B. Interactive Communication Skills (ICS) Lab

The following course content is prescribed for the English Language Communication Skills Lab

**UNIT –I**

**CALL Lab:** Introduction to Phonetics –Speech Sounds –Vowels and Consonants- Transcriptions

**ICS Lab:** Ice-Breaking activity - JAM session

**UNIT –II**

**CALL Lab:** Pronunciation: Past Tense Markers and Plural Markers

**ICS Lab:** Situational Dialogues/Role Plays—Greetings - Taking Leave – Introducing Oneself and Others - Requests and Seeking Permissions

**UNIT–III**

**CALL Lab:** Syllable and Syllabification



**ICS Lab:** Communication at Workplace- Situational Dialogues/Role Plays – Seeking Clarifications – Asking for and Giving Directions – Thanking and Responding – Agreeing and Disagreeing – Seeking and Giving Advice

#### **UNIT –IV**

**CALL Lab:** Word Stress and Intonation

**ICS Lab:** Information transfer – from visual to verbal - maps, charts, tables and graphs

#### **UNIT –V**

**CALL Lab:** Errors in Pronunciation- Accent - the Influence of Mother Tongue (MTI)

**ICS Lab:** Making a Short Speech - Extempore

### **(MRU-R20FSCP01) INTRODUCTION TO FORENSIC SCIENCE LAB**

**Credits: 2**

#### **LIST OF EXPERIMENTS**

1. To study the history of crime cases from forensic science perspective.
2. To cite examples of crime cases in which apprehensions arose because of Daubert standards.
3. To review the sections of forensic science at INTERPOL and compare with those in central forensic science laboratories in India. Include suggestions for improvements if any.
4. To study the annual reports of national crime records bureau and depict the data on different type of crime cases by way of smart art/templates.
5. To write report on different type of crime cases.
6. To review how the central fingerprint bureau, New Delhi, coordinates the working of state fingerprint bureaus.
7. To examine the hierarchical set up of different forensic science establishments and suggest improvements.
8. To examine the list of projects undertaken by the bureau of police research and development and suggest the thrust areas of research in police science.
9. To compare and contrast the role of a police academy and a police training school.
10. To compare the code of conduct prescribed by different establishments for forensic scientists.

**(MRU-R20FSCP02) CRIME AND SOCIETY****Credits: 2****LIST OF EXPERIMENTS**

1. To review past criminal cases and elucidate which theory best explains the criminal behavior of the accused.
2. To review crime cases where criminal profiling assisted the police to apprehend the accused.
3. To cite examples of crime cases in which the media acted as a pressure group.
4. To evaluate the post-trauma stress amongst victims of racial discrimination.
5. To correlate deviant behavior of the accused with criminality (take a specific example).
6. To evaluate victimology in a heinous crime.
7. To examine a case of juvenile delinquency and suggest remedial measures.
8. To evaluate how rising standards of living affect crime rate.
9. To review the recommendations on modernization of police stations and evaluate how far these have been carried out in different police stations.
10. To visit a 'Model Police Station' and examine the amenities vis-à-vis conventional police stations.
11. To examine steps being taken for rehabilitation of former convicts and suggest improvements.
12. To prepare a report on interrogation cells and suggest improvements.

**(MRU-R20FSGP01) FORENSIC PHYSICS LAB****Credits: 2****COURSE OBJECTIVES:**

1. Study the gravity and shearing stress using pendulum apparatus.
2. Acquire the knowledge on finding the height of building and temperature co-efficient of material.
3. Understand the principle of diffraction using grating to find the wavelength of light.
4. Understand the numerical aperture and bending loss of an optical fiber.
5. Gain the knowledge to use of travelling microscope for finding the young's modulus of beam.

**LIST OF EXPERIMENTS**

1. Measurement: To measure the dimension of an object using Vernier calipers and screw gauge.
2. Compound Pendulum: To determine the acceleration due to gravity 'g' using compound pendulum
3. Torsion Pendulum: To determine the Moment of inertia 'I' and Rigidity Modulus of wire using torsion pendulum.
4. Sextant: To determine the height of a building using a sextant experiment.
5. Laser Diffraction: To determine the wavelength of given Laser light using a diffraction grating.
6. Spectrometer: Determination of Wavelength of light using Spectrometer diffraction grating.
7. Numerical aperture: To calculate the numerical aperture of an optical fiber.
8. Losses in Optical fiber: To estimate the bending loss in an optical fiber.
9. Travelling Microscope: Determination of Young's Modulus by non-uniform bending method.
10. Travelling Microscope: Determination of Young's Modulus by uniform bending method.

**I Year B. Sc – II Semester – Practicals****(MRU-R20FSCP03) CRIMINAL LAW LAB****Credits: 2****LIST OF EXPERIMENTS**

1. To prepare a schedule of five cognizable and five non-cognizable offences.
2. To study the powers and limitations of the court of Judicial Magistrate of first class.
3. To prepare a schedule of the offences which may be tried under Section 260(2) of Criminal Procedure Code.
4. To study a crime case in which an accused was punished on charge of murder under Section 302.
5. To study a crime case in which an accused was punished on charge of rape under Section 375.
6. To cite example of a case in which the opinion of an expert was called for under Section 45 of the Indian Evidence Act.
7. To cite a case wherein a person was detained under Article 22(5) of the Indian Constitution. Express your views whether the rights of the person as enlisted in this Article were taken care of.
8. To cite a case under Article 14 of the Constitution of India wherein the Right to Equality before Law was allegedly violated.
9. To list the restrictions imposed on Right to Freedom of Worship under the Constitution of India.
10. To prepare a schedule of persons convicted under Narcotics, Drugs and Psychotropic Act statistically analyze the age group to which they belonged.

**(MRU-R20FSCP04) FORENSIC PSYCHOLOGY LAB****Credits: 2****LIST OF EXPERIMENTS**

1. To cite a crime case where legal procedures pertaining to psychic behavior had to be invoked.
2. To prepare a report on relationship between mental disorders and forensic psychology.
3. To review a crime case involving serial murders. Comment on the psychological traits of the accused.
4. To cite a crime case involving a juvenile and argue for and against lowering the age for categorizing an individual as juvenile.
5. To study a criminal case in which hypnosis was used as a means to detect deception.
6. To prepare a case report on thematic appreciation test.
7. To prepare a case report on Minnesota multiphasic personality inventory test.
8. To prepare a case report on thematic appreciation test.
9. To prepare a case report on word association test.
10. To prepare a case report on Bhatia's battery of performance test of intelligence.
11. To cite a criminal case in which narco analysis was used as a means to detect deception.

**(MRU-R20FSGP02) COMPUTER APPLICATION TOOLS LAB****Credits: 2****OBJECTIVES:**

1. Understand the internal structure and layout of the computer system. Learn to diagnose minor problems with the computer functioning.
2. Know the proper usage and threats of the world wide web.
3. Study in detail about the various features of Ms-Word, Excel, PowerPoint. Gain an awareness about the tools of LibreOffice.

**LIST OF EXPERIMENTS**

## Task- 1: COMPUTER PARTS IDENTIFICATION

Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral.

## Task- 2: PC HARDWARE

Assembling and disassembling of PC.

## Task 3: PC SOFTWARE

Demonstration & Installation of Windows and Ubuntu Operating System.

## Task 4:

Every student should individually install MS windows on the personal computer and implement Basic DOS Commands.

Task 5: Every student should individually install Linux on the personal computer and implement Basic Linux Commands.

## Task 6: Familiarization with MICROSOFT WORD

Task 7: Familiarization with MICROSOFT EXCEL

Task 8: Familiarization with MICROSOFT POWER POINT

Task 9: Familiarization with LIBRE OFFICE

Task 10: Familiarization with INTERNET & WEB BROWSERS