# UG Program (4 Years Honors)
# CBCS-2020-21

| |
|---|
| **B.Sc.,** |
| **B.Sc., Animation** |

# SYLLABUS

PRINCIPAL
Aditya Degree College
KAKINADA

**UG Program (4 years Honors) Structure (CBCS)**

**2020-21 A. Y., onwards**

**BACHLOR OF SCIENCE**

**(3rd and 4th year detailed design will be followed as per APSCHE GUIDELINES)**

| Subjects/ Semesters | | I | | II | | III | | IV | | V | | VI | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H/W | C | H/W | C | H/W | C | H/W | C | H/W | C | H/W | C | | |
| **Languages** | | | | | | | | | | | | THIRD PHASE of APPRENTICESHIP Entire 5th / 6th Semester | | FIRST and SECOND PHASES (2 spells) of APPRENTICESHIP between 1st and 2nd year and between 2nd and 3rd year (two summer vacations). | |
| English | | 4 | 3 | 4 | 3 | 4 | 3 | | | | | | | | |
| Language (H/T/S) | | 4 | 3 | 4 | 3 | 4 | 3 | | | | | | | | |
| Life Skill Courses | | 2 | 2 | 2 | 2 | 2+2 | 2+2 | | | | | | | | |
| Skill Development Courses | | 2 | 2 | 2+2 | 2+2 | 2 | 2 | | | | | | | | |
| **Core Papers** | | | | | | | | | | | | | | | |
| M-1 | C1 to C5 | 4+2 | 4+1 | 4+2 | 4+1 | 4+2 | 4+1 | 4+2<br>4+2 | 4+1<br>4+1 | | | | | | |
| M-2 | C1 to C5 | 4+2 | 4+1 | 4+2 | 4+1 | 4+2 | 4+1 | 4+2<br>4+2 | 4+1<br>4+1 | | | | | | |
| M-3 | C1 to C5 | 4+2 | 4+1 | 4+2 | 4+1 | 4+2 | 4+1 | 4+2<br>4+2 | 4+1<br>4+1 | | | | | | |
| M-1 | SEC (C6,C7) | | | | | | | | | 4+2<br>4+2 | 4+1<br>4+1 | | | | |
| M-2 | SEC (C6,C7) | | | | | | | | | 4+2<br>4+2 | 4+1<br>4+1 | | | | |
| M-3 | SEC (C6,C7) | | | | | | | | | 4+2<br>4+2 | 4+1<br>4+1 | | | | |
| **Hrs/ W (Academic Credits)** | | 30 | 25 | 32 | 27 | 32 | 27 | 36 | 30 | 36 | 30 | 0 | 12 | 4 | 4 |
| Project Work | | | | | | | | | | | | | | | |
| **Extension Activities (Non Academic Credits)** | | | | | | | | | | | | | | | |
| NCC/NSS/Sports/Extra Curricular | | | | | | | | | 2 | | | | | | |
| Yoga | | | | | | | 1 | | 1 | | | | | | |
| Extra Credits | | | | | | | | | | | | | | | |
| **Hrs/W (Total Credits)** | | 30 | 25 | 32 | 27 | 32 | 28 | 36 | 33 | 36 | 30 | 0 | 12 | 4 | 4 |

M= Major; C= Core; SEC: Skill Enhancement Courses

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UG Program (4 years Honors) Structure (CBCS)

## 2020-21 A. Y., onwards
### BACHLOR OF SCIENCE
(3rd and 4th year detailed design will be followed as per APSCHE GUIDELINES)

| Subjects/ Semesters | | I | | II | | III | | IV | | V | | VI | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H/W | C | H/W | C | H/W | C | H/W | C | H/W | C | H/W | C | |
| **Languages** | | | | | | | | | | | | THIRD PHASE of APPRENTICESHIP Entire 5th / 6th Semester | | FIRST and SECOND PHASES (2 spells) of APPRENTICESHIP between 1st and 2nd year and between 2nd and 3rd year (two summer vacations). |
| English | | 4 | 3 | 4 | 3 | 4 | 3 | | | | | | | |
| Language (H/T/S) | | 4 | 3 | 4 | 3 | 4 | 3 | | | | | | | |
| Life Skill Courses | | 2 | 2 | 2 | 2 | 2+2 | 2+2 | | | | | | | |
| Skill Development Courses | | 2 | 2 | 2+2 | 2+2 | 2 | 2 | | | | | | | |
| **Core Papers** | | | | | | | | | | | | | | |
| M-1 | C1 to C5 | 4+2 | 4+1 | 4+2 | 4+1 | 4+2 | 4+1 | 4+2<br>4+2 | 4+1<br>4+1 | | | | | |
| M-2 | C1 to C5 | 4+2 | 4+1 | 4+2 | 4+1 | 4+2 | 4+1 | 4+2<br>4+2 | 4+1<br>4+1 | | | | | |
| M-3 | C1 to C5 | 4+2 | 4+1 | 4+2 | 4+1 | 4+2 | 4+1 | 4+2<br>4+2 | 4+1<br>4+1 | | | | | |
| M-1 | SEC (C6,C7) | | | | | | | | | 4+2<br>4+2 | 4+1<br>4+1 | | | |
| M-2 | SEC (C6,C7) | | | | | | | | | 4+2<br>4+2 | 4+1<br>4+1 | | | |
| M-3 | SEC (C6,C7) | | | | | | | | | 4+2<br>4+2 | 4+1<br>4+1 | | | |
| **Hrs/ W (Academic Credits)** | | 30 | 25 | 32 | 27 | 32 | 27 | 36 | 30 | 36 | 30 | 0 | 12 | 4 | 4 |
| Project Work | | | | | | | | | | | | | | | |
| **Extension Activities (Non Academic Credits)** | | | | | | | | | | | | | | | |
| NCC/NSS/Sports/Extra Curricular | | | | | | | | | 2 | | | | | | |
| Yoga | | | | | | | 1 | | 1 | | | | | | |
| Extra Credits | | | | | | | | | | | | | | | |
| **Hrs/W (Total Credits)** | | 30 | 25 | 32 | 27 | 32 | 28 | 36 | 33 | 36 | 30 | 0 | 12 | 4 | 4 |

M= Major; C= Core; SEC: Skill Enhancement Courses

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## 2.DETAILS OF COURSE TITLES & CREDITS

Marks & Credits distribution: UG-Sciences

| Sl. No | Course type | No. of courses | Each course teaching Hrs/wk | Credit for each course | Total credits | Each course evaluation | | | Total marks |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Conti-Assess | Univ-exam | Total | |
| 1 | English | 3 | 4 | 3 | 9 | 25 | 75 | 100 | 300 |
| 2 | S.Lang | 3 | 4 | 3 | 9 | 25 | 75 | 100 | 300 |
| 3 | LS | 4 | 2 | 2 | 8 | 0 | 50 | 50 | 200 |
| 4 | SD | 4 | 2 | 2 | 8 | 0 | 50 | 50 | 200 |
| 5 | Core/SE -I | 5+2 | 4+2 | 4+1 | 35 | 25 | 75+50 | 150 | 1050 |
| | Core/SE -II | 5+2 | 4+2 | 4+1 | 35 | 25 | 75+50 | 150 | 1050 |
| | Core/SE -III | 5+2 | 4+2 | 4+1 | 35 | 25 | 75+50 | 150 | 1050 |
| 6 | Summer-Intern | 2 | | 4 | 8 | | 100 | 200 | 200 |
| 7 | Internship/ Apprentice/ on the job training | 1 | | 12 | 12 | | 200 | 200 5 | 200 |
| | | **38** | | | **159** | | | | **4550** |
| 8 | **Extension Activities (Non Academic Credits)** | | | | | | | 2 5 | |
| | NCC/NSS/Sports/ Extra Curricular | | | 2 | 2 | | | | |
| | Yoga | 2 | | 1 | 2 | | | | |
| | Extra Credits | | | | | | | 2 | |
| | **Total** | **40** | | | **142** | | | 5 | |

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## 1. LIFE SKILL AND SKILL DEVELOPMENT COURSES

Life /Skill development courses: 4 courses of LSC and 4 courses of SDC with options

Each course of 2 hrs/ week containing 3 units of syllabi for 30 hrs teaching with 2 credits based on 50 marks evaluation. No internal assessment. University sem-end exam:50 marks (2 Hrs)

Question paper would be in two sections (Section A and Section B) for 50 marks

**Section A** consisting of 8 questions covering two questions from each unit and the remaining to be from any unit. Student has to write 4 questions and each question carries 5 marks (i.e., 5 X 4 = 20 marks). Each question to be answered with 5-7 points/10-15 lines of answer with necessary diagram/equations/ figure/flow charts, if necessary.

**Section B** consisting of 6 questions covering all units (i.e., from each unit two questions to be given with either or choice). Student has to write 3 questions and Each question carries 10 marks. (i.e., 10 X 3 = 30 marks). Each question to be answered with 10 to 15 points or 20 to 35 lines along with diagrams/equations/ figure/flow charts, if necessary.

**List of Life Skill courses**

| Sem | No. of Courses | Course name | Preferred teaching department |
|---|---|---|---|
| I | 1 | Human Values and Professional Ethics (HVPE) | English/Telugu/Any Dept |
| | | Entrepreneurship Development (ED) | Commerce |
| II | 1 | Information and Communication Technology (ICT) | Computers |
| | | Indian Culture and Science (ICS) | History/Telugu |
| III | Compulsory | Environmental Education (EE) | Botany/Zoology/Environmental Science/ Any dept. |
| | 1 | Personality Development and Leadership (PDL) | English/Any Dept |
| | | Analytical Skills (AS) | Maths/Statistics |

**List of Skill Development Courses along with their Semester-wise allotment with choices.**

| SEM | No. of courses | Names of courses | | Preferred teaching department |
|---|---|---|---|---|
| I | One | 1. Tourism Guidance (or) | | History/Any dept |
| | | 2. Plant Nursery (or) | | Botany |
| | | 3. Electrical Appliances (or) | | Physics |
| | | 4. Insurance Promotion | | Commerce |
| II | Two (1 from A group and 1 from B Group) | 'A' Group | 1. Survey & Reporting (or) | Economics/History |
| | | | 2. Business communication (or) | English |
| | | | 3. Solar Energy (or) | Physics |
| | | | 4. Agricultural Marketing | Commerce/Economics |
| | | 'B' Group | 1. Social Work Methods (or) | Political science/social work |
| | | | 2. Advertising (or) | Commerce |
| | | | 3. Dairy Technology (or) | Zoology |
| | | | 4. Performing Arts | Telugu |
| III | one | 1. Disaster Management (or) | | English/Telugu/Any dept |
| | | 2. Online Business (or) | | Commerce |
| | | 3. Poultry Farming (or) | | Zoology |
| | | 4. Financial Markets | | Economics/Commerce |



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## 2. DETAILS OF PAPER TITLES & CREDITS

| Sem | Course no. | Course Name | Course type (T/L/P) | Hrs./ Week (Science: 4+2) | Credits (Science: 4+1) | Max. Marks Cont/ Internal/Mid Assessment | Max. MarksSem-end Exam |
|---|---|---|---|---|---|---|---|
| I | 1 | 2D Graphic Design | T | 4 | 4 | 25 | 75 |
| | | 2D Graphic Design Lab | L | 2 | 1 | - | 50 |
| II | 2 | 2D Animation | T | 4 | 4 | 25 | 75 |
| | | 2D AnimationLab | L | 2 | 1 | - | 50 |
| III | 3 | Introduction to3D | T | 4 | 4 | 25 | 75 |
| | | Introduction to 3D Lab | L | 2 | 1 | - | 50 |
| IV | 4 | Web Technologies | T | 4 | 4 | 25 | 75 |
| | | Web publishing Lab | L | 2 | 1 | - | 50 |
| | 5 | Advanced3D | T | 4 | 4 | 25 | 75 |
| | | Advanced3DLab | L | 2 | 1 | - | 50 |
| V | 6A | 2D Design | T | 4 | 4 | 25 | 75 |
| | | 2D Design Lab | L | 2 | 1 | - | 50 |
| | 7A | 2D Game | T | 4 | 4 | 25 | 75 |
| | | 2D Game Lab | L | 2 | 1 | - | 50 |
| | OR | | | | | | |
| | 6B | 3D iClone | T | 4 | 4 | 25 | 75 |
| | | 3D iClone Lab | L | 2 | 1 | - | 50 |
| | 7B | 3D Blender | T | 4 | 4 | 25 | 75 |
| | | 3D Blender Lab | L | 2 | 1 | - | 50 |
| | OR | | | | | | |
| | 6C | Game Level Design | T | 4 | 4 | 25 | 75 |
| | | Game Level Design Lab | L | 2 | 1 | - | 50 |
| | 7C | Game Programming and coding Lab | T | 4 | 4 | 25 | 75 |
| | | Game Programming and coding Lab | L | 2 | 1 | - | 50 |

**Note: *Course type code: T: Theory, L: Lab, P: Problem solving**

**Note 1:** For Semester–V, for the domain subject **ANIMATION**, any one of the three pairs of SECs shall be chosen as courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C. The pair shall not be broken (ABC allotment is random, not on any priority basis).

**Note 2:** One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate field skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the field skills embedded in the syllabus citing related real field situations.

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## DETAILS OF PAPER TITLES & CREDITS

| Sem | Course no. | CourseName | Course type (T/L/P) | Hrs./ Week: (Science: 4+2) | Credits: (Science 4+1) | Max. Marks Cont/ Internal/Mi d Assessment | Max. Marks Sem-end Exam |
|---|---|---|---|---|---|---|---|
| I | 1 | Art & Design | T | 4 | 4 | 25 | 75 |
| | | Art & Design Lab | L | 2 | 1 | - | 50 |
| II | 2 | Film Studies – I | T | 4 | 4 | 25 | 75 |
| | | Film Studies– I Lab | L | 2 | 1 | - | 50 |
| III | 3 | Compositing – I | T | 4 | 4 | 25 | 75 |
| | | Compositing – I Lab | L | 2 | 1 | - | 50 |
| IV | 4 | Digital Film Editing | T | 4 | 4 | 25 | 75 |
| | | Digital Film Editing Lab | L | 2 | 1 | - | 50 |
| | 5 | Compositing – II | T | 4 | 4 | 25 | 75 |
| | | Compositing – II Lab | L | 2 | 1 | - | 50 |
| V | 6A | Cinematography & Editing | T | 4 | 4 | 25 | 75 |
| | | Cinematography & Editing Lab | L | 2 | 1 | - | 50 |
| | 7A | Photography & Image Editing | T | 4 | 4 | 25 | 75 |
| | | Photography & Image Editing Lab | L | 2 | 1 | - | 50 |
| | OR | | | | | | |
| | 6B | Match moving | T | 4 | 4 | 25 | 75 |
| | | Match Moving Lab | L | 2 | 1 | - | 50 |
| | 7B | Visual Effects with soundEditing | T | 4 | 4 | 25 | 75 |
| | | Visual Effects with Sound Editing Lab | L | 2 | 1 | - | 50 |
| | OR | | | | | | |
| | 6C | AR & VR | T | 4 | 4 | 25 | 75 |
| | | AR & VR Lab | L | 2 | 1 | - | 50 |
| | 7C | UI & UX | T | 4 | 4 | 25 | 75 |
| | | UI & UX Lab | L | 2 | 1 | - | 50 |

Note: *Course type code: T: Theory, L: Lab, P: Problem solving

**Note 1**: For Semester–V, for the domain subject **FILM STUDIES**, any one of the three pairs of SECs shall be chosen as courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C. The pair shall not be broken (ABC allotment is random, not on any priority basis).

**Note 2:** One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate field skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the field skills embedded in the syllabus citing related real field situations.

**Note 3:** To insert assessment methodology for Internship/ on the Job Training/Apprenticeship under the revised CBCS as per APSCHE Guidelines.

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## DETAILS OF PAPER TITLES & CREDITS

| Sem | Course no. | Course Name | Course type (T/L/ P) | Hrs/Week Science: 4+2 | Credits Science: 4+1 | Max. Marks Cont/ Internal /Mid Assessment | Max. Marks Sem- end Exam |
|---|---|---|---|---|---|---|---|
| I | 1 | Problem Solvingin C | T | 4 | 4 | 25 | 75 |
| | | Problem Solving in CLab | L | 2 | 1 | - | 50 |
| II | 2 | Data Structures using C | T | 4 | 4 | 25 | 75 |
| | | Data Structures using C Lab | L | 2 | 1 | - | 50 |
| III | 3 | Database ManagementSystem | T | 4 | 4 | 25 | 75 |
| | | Database Management System Lab | L | 2 | 1 | - | 50 |
| IV | 4 | Object Oriented Programming using Java | T | 4 | 4 | 25 | 75 |
| | | Object OrientedProgramming using Java Lab | L | 2 | 1 | - | 50 |
| | 5 | Operating Systems | T | 4 | 4 | 25 | 75 |
| | | Operating Systems Lab using C/Java | L | 2 | 1 | - | 50 |
| V | 6A | Web InterfaceDesigning Technologies | T | 4 | 4 | 25 | 75 |
| | | Web Interface Designing Technologies Lab | L | 2 | 1 | - | 50 |
| | 7A | Web Applications Development using PHP& MYSQL | T | 4 | 4 | 25 | 75 |
| | | Web Applications Development using PHP & MYSQL Lab | L | 2 | 1 | - | 50 |
| | OR | | | | | | |
| | 6B | Internet of Things | T | 4 | 4 | 25 | 75 |
| | | Internet of Things Lab | L | 2 | 1 | - | 50 |
| | 7B | Application Development using Python | T | 4 | 4 | 25 | 75 |
| | | Application Development Using Python Lab | L | 2 | 1 | - | 50 |
| | OR | | | | | | |
| | 6C | Data science | T | 4 | 4 | 25 | 75 |
| | | Data Science Lab | L | 2 | 1 | - | 50 |
| | 7C | Python for Data science | T | 4 | 4 | 25 | 75 |
| | | Python for Data Science Lab | L | 2 | 1 | - | 50 |

Note: *Course type code: T: Theory, L: Lab, P: Problem solving



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| UG(English) | Semester - I | Credits: 03 |
|---|---|---|
| Course - 1 | A Course In Communication And Soft Skills | Hrs/Week: 04 |

**Learning Outcomes:**

**By the end of the course the learner will be able to :**

- Use grammar effectively in writing and speaking.
- Demonstrate the use of good vocabulary
- Demonstrate an understating of writing skills
- Acquire ability to use Soft Skills in professional and daily life.
- Confidently use the tools of communication skills

**UNIT I: Listening Skills**

i. Importance of Listening
ii. Types of Listening
iii. Barriers to Listening
iv. Effective Listening

**UNIT II: Speaking Skills**

a. Sounds of English: Vowels and Consonants
b. Word Accent
c. Intonation

**UNIT III: Grammar**

a) Concord
b) Modals
c) Tenses (Present/Past/Future)
d) Articles
e) Prepositions
f) Question Tags
g) Sentence Transformation (Voice, Reported Speech & Degrees of Comparison)
h) Error Correction

**UNIT IV: Writing**

v. Punctuation
vi. Spelling
vii. Paragraph Writing

**UNIT V: Soft Skills**

a. SWOC
b. Attitude
c. Emotional Intelligence
d. Telephone Etiquette
e. Interpersonal Skills

## పాఠ్య ప్రణాళిక

యూనిట్-I

రాజనీతి - నన్నయ

మహాభారతం-సభాపర్వం-ప్రథమాశ్వాసం-(26-57 పద్యాలు)

యూనిట్-II

దక్షయజ్ఞం - నన్నెచోడుడు

కుమారసంభవం-ద్వితీయాశ్వాసం-(49-86 పద్యాలు)

యూనిట్-III

ధౌమ్య ధర్మోపదేశము - తిక్కన

మహాభారతం-విరాటపర్వం-ప్రథమాశ్వాసం-(116-146) పద్యాలు

యూనిట్-IV

పలనాటి బెబ్బులి - శ్రీనాథుడు (పలనాటి వీరచరిత్ర-ద్విపద కావ్యం పుట 108-112
'బాలచంద్రుడు భీమంబగు సంగ్రామం బొనర్చుట.. (108)..
..... వెఱగంది కుంది' (112) సం. అక్కిరాజు ఉమాకాంతం
ముద్రణ.వి.కె.స్వామి, బెజవాడ 1911.

యూనిట్-V

సీతారావణ సంవాదం - మొల్ల

రామాయణము-సుందరకాండము-(40-87 పద్యాలు)

✦వ్యాకరణం

సంధులు: ఉత్వ, త్రిక, ద్రుతప్రకృతిక, నుగాగమ,ద్విరుక్తటకారాదేశ, యణాదేశ, వృద్ధి, శ్చుత్వ, జశ్త్వ, అనునాసిక సంధులు.

సమాసాలు: అవ్యయీభావ, తత్పురుష, కర్మధారయ, ద్వంద్వ, ద్విగు, బహువ్రీహి.

అలంకారాలుః

అర్థాలంకారాలు : ఉపమ, ఉత్ప్రేక్ష, రూపక, స్వభావోక్తి, అర్థాంతరన్యాస, అతిశయోక్తి.

శబ్దాలంకారాలు : అనుప్రాస (వృత్యనుప్రాస, ఛేకానుప్రాస లాటానుప్రాస, అంత్యానుప్రాస)

ఛందస్సు

వృత్తాలు: ఉత్పలమాల, చంపకమాల, శార్దూలము, మత్తేభము;

జాతులు : కందం, ద్విపద; ఉపజాతులు : ఆటవెలది, తేటగీతి, సీసం మరియు ముత్యాలసరాలు

| UG Courses | Semester - I | Credits:03 |
|---|---|---|
| Course: 1 | Poetry, Prose & Grammar | Hrs/Weeks:04 |

**UNIT – I OLD POETRY:** 1. "**Arya Padukabhishekaha**",

Valmiki Ramayanam- Ayodhya Kanda, Sarga-100 Geetha Press, Gorakhpur.

2. " **YakshaPrasnaha**", Mahabharatam of Vedavyasa, Vanaparva, Adhyaya -313, Geeta Press, Gorakhpoor.

**UNIT – II MODERN POETRY:** 1." **Mevada Rajyastapanam**" 4th Canto, Srimat Pratapa Ranayanam, Mahakavyam, Pt.Ogeti Parikshit sarma, Published by, Pt.Ogeti Parikshitsarma, 10/11, Sakal nagar, Pune, 1989.

2.**"VivekanandaSuktayaha"**, Vivekanandasuktisudha by Dr.SamudralaLakshmanaiah, Published by Author, 18-1-84, Yasoda Nagar, Tirupati. Selected Slokas 25.

**UNIT – III PROSE:** 1. "**Atyutkataihi papapunyairihaiva phalamasnute**",

Hitopadesaha-Mitralabha 2 & 3 stories, Pages 61-84.

2. " **Sudraka -Veeravarakatha**", Hitopadesaha-Vigraham, 8th story, Pages 63-70,Chowkhamba krishadas academy,Varanasi, 2006.

**UNIT - IV GRAMMAR:** 1.**DECLENSIONS**Nouns ending in vowels
Deva, Kavi, Bhanu, Dhatru, Pitru, Go, Ramaa, Mati.

**2.CONJUGATIONS**

1st Conjugation - Bhoo, Gam, Shtha, Drusir, Labh, Mud.

2nd Conjugation - As. 10th Conjugation – Bhaash.

**UNIT – V GRAMMAR:** 1. **SANDHI - Swara Sandhi** : Savarnadeergha, ayavayava, Guna,Vruddhi, yaanadesa.
-**Halsandhi**:Schutva, Stutva, Anunasika.2.**SAMASA**
Dwandwa, Tatpurusha, Karmadharaya,, Dwigu.

| UG(General HINDI) | Semester - I | Credits:03 |
|---|---|---|
| Course :1 | Prose, Short Stories, Grammar and Letter Writing | Hrs/Weeks:04 |

UNIT 1

गद्य संदेश (Prose)(सं. डा .वी. एल. नरसिंहन शिवकोटि)

1. साहित्य की महत्ता

2. मित्रता

3.पृथ्वीराज की आँखें

UNIT 2

कथा लोक (Short Stories)( सं. डा. घनश्याम)

1.मुक्तिधन

2.गूदडसाई

3.उसने कहा था

UNIT 3

व्याकरण (Grammar)(सरल हिन्दी व्याकरण, दक्षिण भारत हिन्दी प्रचार सभा,मद्रास)

लिंग, वचन, काल, वाच्य।

UNIT 4

कार्यालयीन शब्दावली : अंग्रेजी से हिंदी और हिंदी से अंग्रजी

(Changing Administrative Terminology Hindi to English and English to Hindi)

UNIT 5

पत्र लेखन : वैयक्तिक पत्र( छुट्टी पत्र, पिता, मित्र के नाम पत्र, पुस्तक विक्रेता के नाम पत्र

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# UG- LIFE SKILL COURSE

## HUMAN VALUES AND PROFESSIONAL ETHICS (HVPE)

(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (LS) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 hrs) |
|---|---|---|---|---|---|---|
| I | Life skill course | Human values and professional ethics (HVPE) | 30 | 2 | 2 | 50 Marks |

**Objective: Learning Outcome:** On completion of this course, the UG students will be able to

- Understand the significance of value inputs in a classroom and start applying them in their life and profession
- Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.
- Understand the value of harmonious relationship based on trust and respect in their life and profession
- Understand the role of a human being in ensuring harmony in society and nature.
- Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

**UNIT: 1 - Introduction – Definition, Importance, Process & Classifications of Value Education:** Understanding the need, basic guidelines, content and process for Value Education Understanding the thought provoking issues; need for Values in our daily life Choices making – Choosing, Cherishing & Acting, Classification of Value Education: understanding Personal Values, Social Values, Moral Values & Spiritual Values.

**UNIT: 2 - Harmony in the Family – Understanding Values in Human Relationships:**
Understanding harmony in the Family- the basic unit of human interaction, Understanding the set of proposals to verify the Harmony in the Family; Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship, Present Scenario: Differentiation (Disrespect) in relationships on the basis of body, physical facilities, or beliefs.
Understanding the Problems faced due to differentiation in Relationships. Understanding the harmony in the society (society being an extension of family): *Samadhan, Samridhi, Abhay, Sah-astitva* as comprehensive Human Goals Visualizing a universal harmonious order in society- Undivided Society (*AkhandSamaj*), Universal Order (*SarvabhaumVyawastha* )- from family to world family.

**UNIT: 3 - Professional Ethics in Education:** Understanding about Professional Integrity, Respect & Equality, Privacy, Building Trusting Relationships.Understanding the concepts; Positive co-operation, Respecting the competence of other professions. Understanding about Taking initiative and Promoting the culture of openness. Depicting Loyalty towards Goals and objectives.

**Text Books:**

1. R R Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.
2. Bhatia, R. & Bhatia, A (2015) Role of Ethical Values in Indian Higher Education.

**References books:**

1. Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and Harper Collins
2. E.F. Schumacher, 1973, Small is Beautiful: a study of economics as if people mattered, Blond & Briggs, Britain.
3. Sussan George, 1976, How the Other Half Dies, Penguin Press. Reprinted 1986, 1991
4. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, Limits to Growth – Club of Rome's report, Universe Books.
5. A Nagraj, 1998, JeevanVidyaEkParichay, Divya Path Sansthan, Amarkantak.
6. P L Dhar, RR Gaur, 1990, Science and Humanism, Commonwealth Publishers.
7. A N Tripathy, 2003, Human Values, New Age International Publishers.

**Co-curricular Activities:**

1. Visit to an Old Age Home and spending with the inmates for a day.
2. Conduct of Group Discussions on the topics related to the syllabus.
3. Participation in community service activities.
4. Working with a NGO like Rotary Club or Lions International, etc.

# UG- LIFE SKILL COURSE
# ENTREPRENEURSHIP DEVELOPMENT (ED)
(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (LS) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 hrs) |
|---|---|---|---|---|---|---|
| I | Life skill course | Entrepreneurship Development | 30 | 2 | 2 | 50 Marks |

**Course Objective**: A Generic Course that is intended to inculcate an integrated personal Life Skill to the student.

**Learning Outcomes:**

After successful completion of the course the student will be able to;

- Understand the concept of Entrepreneurship, its applications and scope.
- Know various types of financial institutions that help the business at Central, State and Local Level
- Understand Central and State Government policies, Aware of various tax incentives, concessions
- Applies the knowledge for generating a broad idea for a starting an enterprise/start up
- Understand the content for preparing a Project Report for a start up and differentiate between financial, technical analysis and business feasibility.

**Unit-I: Entrepreneurship:** Definition and Concept of entrepreneurship - Entrepreneur Characteristics – Classification of Entrepreneurs –Role of Entrepreneurship in Economic Development –Start-ups.

**Unit-II: Idea Generation and Project Formulation:** Ideas in Entrepreneurships – Sources of New Ideas – Techniques for Generating Ideas – Preparation of Project Report –Contents; Guidelines for Report preparation – Project Appraisal Techniques –Economic Analysis-Financial Analysis-Market Analysis.

**Unit-III: Institutions Supporting and Taxation Benefits:** Central level Institutions: NABARD; SIDBI,– State Level Institutions –DICs – SFC - Government Policy for MSMEs - Tax Incentives and Concessions.

**Reference Books:**

1. Arya Kumar, Entrepreneurship, Pearson, Delhi
2. Poornima MCH, Entrepreneurship Development –Small Business Enterprises, Pearson, Delhi
3. Sangeetha Sharma, Entrepreneurship Development, PHI Learning
4. KanishkaBedi, Management and Entrepreneurship, Oxford University Press, Delhi
5. Anil Kumar, S., ET.al., Entrepreneurship Development, New Age International Publishers, New Delhi
6. Khanka, SS, Entrepreneurship Development, S. Chand, New Delhi
7. Peter F. Drucker, Innovation and Entrepreneurship
8. A.Sahay, M. S. Chhikara, New Vistas of Entrepreneurship: Challenges &Opportunities
9. Dr B E V L Naidu, Entrepreneurship. Seven Hills Publishers

**Suggested Co-Curricular Activities** (As far as possible)

1. Group Discussion
2. Debate
3. Seminar
4. Visit to an SSI and preparing of an outline Report
5. Invited Lecture by a Bank Employee on the Bank Support to a Start Up.
6. Chart showing tax concessions to SSI, MSME both direct and indirect.

# UG- SKILL DEVELOPMENT COURSE
## TOURISM GUIDANCE
(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|
| I | Skill Development Course | Tourism Guidance | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes:**
By successful completion of the course, students will be able to:

- Understand the basic tourism aspects .
- Comprehend the requirements, role and responsibilities of profession of a Tourist Guide
- Apply the knowledge acquired in managing different groups and guiding in a tour
- Explain basic values related to tourism and heritage

**Unit I:** (06 hrs)
Tourism – What is Tourism - Characteristics of Tourist Places – Guidance in Tourism - Meaning of Guidance – Types of Tour Guidance - Government/Department Regulations

**Unit II:** (10 hrs)
Types of Guides – Characteristics of a Guide - Duties and Responsibilities of a Guide - The Guiding Techniques –Guide's personality- Training Institutions – Licence.
Leadership and Social Skills - Presentation and Communication Skills - Working with different age and linguistic groups - Working under difficult circumstances – Precautions at the site -Relationship with Fellow Guides and Officials.

**Unit III:** (10 hrs)
Guest Relationship Management- Personal and Official - Arrangements to Tourists – Coordinating transport - VISA/Passport -Accident/Death -Handling Guests with Special Needs/ Different Abilities – Additional skills required for Special/Adventure Tours - Knowledge of Local Security and Route Chart – Personal Hygiene and Grooming - Checklist - Code of Conduct

**Co-curricular Activities Suggested:** (04 hrs)

1. Assignments, Group discussion, Quiz etc.
2. Invited lecture/training by local tourism operators/expert/guides
3. Visit to local Tourism Department office and a tourist service office
4. Organisation of college level short-duration tours to local tourist sites.

**Reference Books:**

1. Jagmohan Negi (2006); Travel Agency and Tour Operations, Kanishka Publishers, New Delhi
2. Mohinder Chand (2009); Travel Agency and Tour Operations: An Introductory Text, Anmol Publications Pvt. Limited, New
3. Pat Yale(1995); Business of Tour Operations, Longman Scientific & Technical, New Delhi
4. Websites on Tourism guidance.

# UG- SKILL DEVELOPMENT COURSE
# PLANT NURSERY
(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|
| I | Skill Development Course | Plant Nursery | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes:** On successful completion of this course students will be able to;

- Understand the importance of a plant nursery and basic infrastructure toestablish it.
- Explain the basic material, tools and techniques required for nursery.
- Demonstrate expertise related to various practices in a nursery.
- Comprehend knowledge and skills to get an employment or to become an entrepreneur in plant nursery sector.

**Unit-1: Introduction to plant nursery:** **(06 Hrs)**

1. Plant nursery: Definition, importance.
2. Different types of nurseries –on the basis of duration, plants produced, structure used.
3. Basic facilities for a nursery; layout and components of a good nursery.
4. Plant propagation structures in brief.
5. Bureau of Indian Standards (BIS-2008) related to nursery.

**Unit- 2: Necessities for nursery:** **(09 Hrs)**

1. Nursery beds – types and precautions to be taken during preparation.
2. Growing media, nursery tools and implements, and containers for plant nursery, in brief.
3. Seeds and other vegetative material used to raise nursery in brief.
4. Outlines of vegetative propagation techniques to produce planting material.
5. Sowing methods of seeds and planting material.

**Unit-3: Management of nursery:** **(09 Hrs)**

1. Seasonal activities and routine operations in a nursery.
2. Nursery management – watering, weeding and nutrients; pests and diseases.
3. Common possible errors in nursery activities.
4. Economics of nursery development, pricing and record maintenance.
5. Online nursery information and sales systems.

**Suggested Co-curricular activities:** **(6 Hrs)**

1. Assignments/Group discussion/Quiz/Model Exam.
2. Demonstration of nursery bed making.
3. Demonstration of preparation of media for nursery.
4. Hands on training on vegetative propagation techniques.
5. Hands on training on sowing methods of seeds and other material.
6. Invited lecture cum demonstration by local expert.
7. Watching videos on routine practices in plant nurseries.
8. Visit to an agriculture/horticulture /forest nursery.
9. Case study on establishment and success of a plant nursery.

**Reference books:**

1. Ratha Krishnan, M., et.al. (2014) *Plant nursery management: Principles and practices,* Central Arid Zone Research Institute (ICAR), Jodhpur, Rjasthan
2. Kumar, N., (1997) *Introduction to Horticulture*, Rajalakshmi Publications, Nagercoil.
3. Kumar Mishra, K., N.K. Mishra and Satish Chand (1994) *Plant Propagation*, John Wiley & Sons, New Jersey.

# UG- SKILL DEVELOPMENT COURSE
# ELECTRICAL APPLIANCES
(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|
| I | Skill Development Course | Electrical Appliances | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes**: By successful completion of the course, students will be able to:

- Acquire necessary skills/hand on experience/ working knowledge on multimeters, galvanometers, ammeters, voltmeters, ac/dc generators, motors, transformers, single phase and three phase connections, basics of electrical wiring with electrical protection devices.
- Understand the working principles of different household domestic appliances.
- Check the electrical connections at house-hold but will also learn the skill to repair the electrical appliances for the general troubleshoots and wiring faults.

**UNIT-I :** **(6 hrs)**

Voltage, Current, Resistance, Capacitance, Inductance, Electrical conductors and Insulators, Ohm's law, Series and parallel combinations of resistors, Galvanometer, Ammeter, Voltmeter, Multimeter, Transformers, Electrical energy, Power, Kilowatt hour (kWh), consumption of electrical power

**UNIT-II :** **(10 hrs)**

Direct current and alternating current, RMS and peak values, Power factor, Single phase and three phase connections, Basics of House wiring, Star and delta connection, Electric shock, First aid for electric shock, Overloading, Earthing and its necessity, Short circuiting, Fuses, MCB, ELCB, Insulation, Inverter, UPS

**UNIT-III:** **(10 hrs)**

Principles of working, parts and servicing of Electric fan, Electric Iron box, Water heater; Induction heater, Microwave oven; Refrigerator, Concept of illumination, Electric bulbs, CFL, LED lights, Energy efficiency in electrical appliances, IS codes & IE codes.

**Co-curricular Activities (Hands on Exercises):** **(04 hrs)**

[Any four of the following may be taken up]

1. Studying the electrical performance and power consumption of a given number of bulbs connected in series and parallel circuits.
2. Measuring parameters in combinational DC circuits by applying Ohm's Law for different resistor values and voltage sources
3. Awareness of electrical safety tools and rescue of person in contact with live wire.
4. Checking the specific gravity of lead acid batteries in home UPS and topping-up with distilled water.
5. Identifying Phase, Neutral and Earth on power sockets.
6. Identifying primary and secondary windings and measuring primary and secondary voltages in various types of transformers.
7. Observing the working of transformer under no-load and full load conditions.
8. Observing the response of inductor and capacitor with DC and AC sources.
9. Observing the connections of elements and identify current flow and voltage drops.
10. Studying electrical circuit protection using MCBs, ELCBs
11. Assignments, Model exam etc.

**Reference Books:**

1. A Text book on Electrical Technology, B.L.Theraja, S.Chand& Co.,
2. A Text book on Electrical Technology, A.K.Theraja.
3. Performance and design of AC machines, M.G.Say, ELBSEdn.,
4. Handbook of Repair & Maintenance of domestic electronics appliances; BPB Publications
5. Consumer Electronics, S.P.Bali, Pearson
6. Domestic Appliances Servicing, K.P.Anwer, Scholar Institute Publications

# UG- SKILL DEVELOPMENT COURSE
# INSURANCE PROMOTION
(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|
| 1 | Skill Development Course | Insurance Promotion | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes:**
By successful completion of the course, students will be able to;

- Understand the field level structure and functioning of insurance sector and it's role in protecting the risks.
- Comprehend pertaining skills and their application for promoting insurance coverage
- Prepare better for the Insurance Agent examination conducted by IRDA
- Plan 'promoting insurance coverage practice' as one of the career options.

**UNIT I:**
**Section I:** **(06 Hrs)**
Introduction of Insurance - Types of insurances. Growth of Insurance sector in India - Regulatory mechanism (IRDA) - Its functions

**UNIT II:**
**Section II:** **(10 Hrs)**
Life Insurance plans. Health insurance plans. Products and features. Contents of documents– Sales Promotion methods - Finding prospective customers –Counselling – Helping customers in filing - Extending post-insurance service to customers.

**UNIT III:**
**Section III:** **(10 Hrs)**
General Insurance - It's products (Motor, Marine, Machinery, Fire, Travel and Transportation) and features. Contents of documents. Dealing with customers – Explaining Products to Customers - Promoting Customer loyalty. Maintenance of Records.

**Co-curricular Activities Suggested:** **(4 hrs)**

1. Collection of pamphlets of various insurance forms and procedures
2. Invited Lectures by Development Officers concerned
3. Mock practice of selling of insurance products
4. Preparation of working documents
5. Assignments, Group discussion, Quiz etc.

**Reference books:**

1. Principles of Insurance, Himalaya publishing House
2. Principles and Practice of Insurance, "
3. Fundamentals of insurance, "
4. Life and General Insurance Management, "
5. Financial services, Tata McGraw hill
6. Insurance Principles and Practices, Sultan Chand &Sons
7. Websites on insurance promotion

1. **Details of course-wise Syllabus**

| B. Sc | Semester: I | Credits: 4 |
|---|---|---|
| Course: 1 | 2D Graphic Design | Hrs/Wk: 4 |

Aim and objectives of Course (Title of the course/paper):

- This course will study advanced topics in Graphic design. The focus will be onlearning recentmethods in print and designing graphic works.

Learning outcomes of Course (in consonance with the Bloom's Taxonomy):

- Analyze the range of technologies in digital image acquisition andmanipulation
- Apply the fundamental principles of 2D computer graphics
- Develop, Document and Evaluate students graphics works within range ofmedia
- Create and demonstrate graphics works

Detailed Syllabus: (Five units with each unit having 12 hours of class work)

**UNIT I:**

**Multimedia:** Introduction to multimedia - Multimedia system Requirements - - Multimedia application - Types of graphics - Difference between Raster Graphic & Vector Graphic and its uses- Graphic Design - Types of objects - Audio formats - Video formats - Image formats - Text document formats - Types of video editing - Types of printers - printing outputs.

**UNIT II:**

**Introduction:** Getting started with Photoshop - document dimension – Working with selections - Drawing toolbar - healing tool - clone stamp tool-Status bar-Photo-Ruler-Grid-Working with Colors-color mode-Resolution-Guide-Working with LayersNew layer-Delete layer- Working with quick mask -Applying filters-Adding and Manipulating type-Saving and printing images

**UNIT III:**

**Illustrator:** Getting started with Illustrator - Interface – Workspace – Tools – Menus – Working with paths – Pathfinder – Paths - Live Paint - Compound Path - Working with Objects and Symbols – Clip Mask - Working with type - Text Wrap – Types of Tools - Gradient – Working with Layers - Logos - Tracing images – Drawing – Effects, Filters and Style - Hotkeys – Saving & Printing – Export and Import - Save for web - Convert PDF

**UNIT IV:**

**In design:** Getting started – Introduction the workspace – Tools & Menus – Working with panels - Working with styles – Working with graphics – Working with Layer - Flowing Text – Working with Typography - Creating Table

**UNIT V:**

**CorelDraw**: Workspace Tour – Application window: Tools & Menus - CorelDraw terminology and concepts– Object; Drawing; Vector graphic - Artistic Test; Paragraph Test -Drawing Shapes - Working with objects - Filling Objects - Working with color - Changing the Transparency of objects - Working with pages and layout tools - Creating layers -Publishing web etc.

**TEXT BOOKS:**

1. Introduction to Multimedia and Its Applications (English, Paperback, Jain V. K.)Khanna Publishers
2. Master Adobe Photoshop, Illustrator, Premiere and After Effects by Wiley-dreamtechIndia Pvt. Ltd.
3. Adobe InDesign CC Classroom in a Book – Pearson

**REFERENCES:**

1. Adobe In Design CC Classroom in a Book (2017 release) 1st, Kindle Edition
2. Adobe Illustrator CC Classroom in a Book by Wood Brian (Author)
3. Adobe In Design CS6 Classroom in a Book by Adobe Creative Team
4. Corel DRAW X7: The Official Guide Book by Gary David Button

**CO-CURRICULAR ACTIVITIES:**

- Graphic assignments
- Seminar/Workshop on Graphic design role in the industry
- The student will demonstrate the graphic works with print
- Visiting the Graphic design Studios/House for getting the knowledge on theliveexperience
- RVJ (Reflective Visual Journal) on the theory and particles
- Group discussion on topics related to graphic industry

**ASSESSMENT METHODS:**

- Oral presentations
- Self-reflective blogs
- Practical production works
- Peers and self –assessment for output

| B. Sc | Semester: I | Credits: 1 |
|---|---|---|
| Course: 1(L) | 2D Graphic Design Lab | Hrs/Wk: 2 |

**Details of Lab syllabus: 2D GRAPHIC DESIGN**

**LABAAdobe Photoshop:**

1. Create your visiting card
2. Create Title for any forthcoming film
3. Digital Matte Paint
4. Convert Black and White to Color
5. Convert Day mode to Night mode
6. Design Image manipulation
7. Smooth skin and remove blemishes & scars
8. Create a 3D pop-out effect
9. Create Textures
10. Timeline Animation

**Adobe Illustrator:**

1. Advertisement
2. Digital Illustrations
3. Brochure
4. Packet Design(Toothpaste packet, Soap cover, any Food product)
5. Danglers for display
6. Menu cards
7. Calendar Design
8. Tracing image
9. Vehicle Design
10. Festival

**Adobe Indesign:**

1. Magazine A4 Size
2. Newspaper layout design & advertisements – Fine arts
3. Special Supplement
4. Different categories of Books
5. Info-graphics
6. Caricatures

**Corel DRAW:**

1. Create a paper ad for advertising of any commercial agency
2. Package Design
3. Corporate ID
4. Exhibition Layout
5. Oblers

## DETAILS OF COURSE-WISE SYLLABUS

| B.Sc | Semester: I | Credits: 4 |
|---|---|---|
| Course: 1 | Art & Design | Hrs/Wk: 4 |

**Learning Outcomes:**

- Understanding of the drawing skills and conceptual skills
- Explore and integrate color and design theories in the art
- Apply Design theories & Art techniques in the production
- Analyze the Shapes and Patterns of the 2D & 3D forms
- Create artwork of sculpture and craftworks

**Learning Outcomes of course**

**Course Objectives:** The course will cover theory, techniques, and tools for Art & Design. Finally introduces image modification in the form of image segmentation.

**UNIT I:**

**Figure Drawing:** 2D & 3D – geometrical shapes – basic shapes, patterns, textures, perspectives, overlapping objectives, light and shades, forms, human anatomy.

**UNIT II:**

**Clay modeling**: Different approaches to composition in figure drawing – materials, tools, and strategies of clay modeling. Indoor & Outdoor sketching; Pencil Drawing, Painting Techniques, Still Art; Sculpture; Craftworks; Pastel Drawings; Thermacoal Decoration; Clay & Sand art; Event Decoration

**UNIT III:**

Color Balance, Color, RYB Color System, And Properties of Color: Hue - Value Tint - Shade - Tone -Intensity, Color scheme: Monochromatic, Analogous, Complementary, Color domination - Colours in terms of Weight.

**UNIT IV:**

Making Color Wheel - Primary, Secondary, Tertiary Colors - Warm and cool Colour - Additive Colour System (RGB) -Subtractive Colour System (CMYK).

**UNIT V:**

**PRINCIPLES OF DESIGN: Balance - Proximity - Alignment - Repetition - Contrast - Space**, Copy Preparation, **Design, and Layout** - Layouts for DTP & Printing,**Type Faces** - Classification of Types, Type Setting.

**TEXT BOOKS:**

1. Enchanted Drawings: Solomon, Charles, The History of Animation - Steven Cavalier Animation Art: From Pencil to Pixel - Beck, Jerry, The world of Cartoon, Anime, andCGI - Collins, 2004.
2. Animation Art: The Early Years 1911-1953 - Lotman, Jeff and Smith, Jonathan, Animation in Asia and Pacific - Joan Libbey, 2010.

**REFERENCES:**

1. Color Psychology and Color Therapy - Faber Birren The Color Revolution - Regina Lee Blaszczyk Color and Space Sandu Cultural Media
2. Historical Color Guide: Primitive to Modern Times with Thirty Plates in Color Elizabeth Burris-Meyer

**CO-CURRICULAR ACTIVITIES:**

- The student has to do the outdoor and indoor drawing assignment
- Seminar/Workshop on clay & craftworks.
- Group discussion on the art and craft works output
- Exhibition on the art and design works
- Outdoor study tour for the live sketching in the public areas

**ASSESSMENT METHODS:**

- Critical engagement in practical assignments
- Oral Presentations on the craftwork
- Evidence of process and experimentation in response to artistic exercises

| B.Sc | Semester: I | Credits: 1 |
|---|---|---|
| Course: 1 | ART & DESIGN LAB | Hrs/Wk: 2 |

**Details of the Lab: ART & DESIGN LAB**

**ART**

1. Geometrical shapes, Basic shapes, Patterns.
2. Perspectives Drawings: One, Two and Three-Point Perspectives
3. Overlapping objectives light and shades, forms
4. Indoor & Outdoor sketching
5. Pencil Drawing; Drawing & Oil Canvas Painting
6. Still Art: Clay, Craftworks, Pastel Drawings

**DESIGN**

7. Draw a color wheel
8. Primary color and Secondary color
9. Tint and shade color
10. Cool colors and warm color
11. Additive & Subtractive Color system

## DETAILS OF COURSE-WISE SYLLABUS

| B Sc | Semester: I | Credits: 4 |
|---|---|---|
| Course: 1 | PROBLEM SOLVING IN C | Hrs/Wk: 4 |

**Aim and objectives of Course:**

- This course aims to provide exposure to problem-solving through programming.
- It introduces the concepts of the C Programming language.

**Learning outcomes of Course:**

Upon successful completion of the course, a student will be able to:

- Understand the evolution and functionality of a Digital Computer.
- Apply logical skills to analyse a given problem
- Develop an algorithm for solving a given problem.
- Understand 'C' language constructs like Iterative statements, Arrayprocessing, Pointers.
- Apply 'C' language constructs to the algorithms to write a 'C' languageprogram.

3. Detailed Syllabus: (Five units with each unit having 12 hours of class work)

**UNIT I:**

**General Fundamentals:** Introduction to computers: Block diagram of a computer, characteristics and limitations of computers, applications of computers, types of computers, computer generations.

**Introduction to Algorithms and Programming Languages:** Algorithm – Key features of Algorithms, Flow Charts, Programming Languages – Generations of Programming Languages – Structured Programming Language- Design and Implementation of Correct, Efficient and Maintainable Programs.

**UNIT II:**

**Introduction to C:** Introduction – Structure of C Program – Writing the first C Program – File used in C Program – Compiling and Executing C Programs – Using Comments – Keywords – Identifiers – Basic Data Types in C – Variables – Constants – I/O Statements in C- Operators in C- Programming Examples.

**Decision Control and Looping Statements:** Introduction to Decision Control Statements– Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Goto Statement

**UNIT III:**

**Arrays:** Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array– Operations on Arrays – one dimensional, two dimensional and multi dimensional arrays, character handling and strings.

**UNIT IV:**

**Functions:** Introduction – using functions – Function declaration/ prototype – Functiondefinition – function call – return statement – Passing parameters – Scope of variables – Storage Classes – Recursive functions.

**Structure, Union, and Enumerated Data Types:** Introduction – Nested Structures – Arrays of Structures – Structures and Functions– Union – Arrays of Unions Variables – Unions inside Structures – Enumerated Data Types.

**UNIT V:**

**Pointers:** Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables – Pointer Expressions and Pointer Arithmetic – Null Pointers - Passing Arguments to Functions using Pointer – Pointer and Arrays – Memory Allocation in C Programs – Memory Usage – Dynamic Memory Allocation – Drawbacks of Pointers

**Files:** Introduction to Files – Using Files in C – Reading Data from Files – Writing Data to Files – Detecting the End-of-file – Error Handling during File Operations – Accepting Command Line Arguments.

**TEXT BOOKS:**

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.
2. Brain W Kernighan and Dennis M Ritchie - The 'C' Programming language" - Pearson publications.

**REFERENCES:**

1. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson EditionPublications.
2. YashavantKanetkar - Let Us 'C' – BPB Publications.

| B Sc | Semester: I | Credits: 1 |
|---|---|---|
| Course: 1(L) | PROBLEM SOLVING IN C Lab | Hrs/Wk: 2 |

**1.** Details of Lab Syllabus: **Problem solving in C LAB**

1. Write a program to check whether the given number is Armstrong or not.
2. Write a program to find the sum of individual digits of a positive integer..
3. Write a program to generate the first n terms of the Fibonacci sequence.
4. Write a program to find both the largest and smallest number in a list of integer values
5. Write a program to demonstrate refection of parameters in swapping of two integervalues using Call by Value & Call by Address
6. Write a program that uses functions to add two matrices.
7. Write a program to calculate factorial of given integer value using recursive functions
8. Write a program for multiplication of two N X N matrices.
9. Write a program to perform various string operations.
10. Write a program to search an element in a given list of values.
11. Write a program to sort a given list of integers in ascending order.
12. Write a program to calculate the salaries of all employees using ***Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary)*** structure.
    a. DA is 30 % of Basic Pay
    b. HRA is 15% of Basic Pay
    c. Deduction is 10% of (Basic Pay + DA)
    d. Gross Salary = Basic Pay + DA+ HRA
    e. Net Salary = Gross Salary – Deduction
13. Write a program to illustrate pointer arithmetic.
14. Write a program to read the data character by character from a file.
15. Write a program to create ***Book (ISBN, Title, Author, Price, Pages, Publisher)*** structure and store book details in a file and perform the following operations
    a. Add book details
    b. Search a book details for a given ISBN and display book details, if available
    c. Update a book details using ISBN
    d. Delete book details for a given ISBN and display list of remaining Books

5. RECOMMENDED CO-CURRICULAR ACTIVITIES:
(Co-curricular activities shall not promote copying from textbook or from otherswork and shall encourage self/independent and group learning)

**A. Measurable**

1. Assignments (in writing and doing forms on the aspects of syllabuscontent and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individualactivity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real- time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity

**B. General**

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

6. RECOMMENDED CONTINUOUS ASSESSMENT METHODS:
Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Problem-solving exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports like "Creating Text Editor in C".
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work.

| UG(English) | Semester -II | Credits: 03 |
|---|---|---|
| Course - 2 | A Course In Reading & Writing Skills | Hrs/Week: 04 |

**Learning Outcomes:**
**By the end of the course the learner will be able to :**

- Use reading skills effectively
- Comprehend different texts
- Interpret different types of texts
- Analyse what is being read
- Build up a repository of active vocabulary
- Use good writing strategies
- Write well for any purpose
- Improve writing skills independently for future needs

**UNIT I:**
**Prose** : 1. How to Avoid Foolish Opinions Bertrand Russell
**Skills** : 2. Vocabulary: Conversion of Words
: 3. One Word Substitutes
: 4. Collocations

**UNIT II:**
**Prose** : 1. The Doll's House Katherine Mansfield
**Poetry** : 2. Ode to the West Wind P B Shelley
**Non-Detailed Text** : 3. Florence Nightingale Abrar Mohsin
**Skills** : 4. Skimming and Scanning

**UNIT III:**
**Prose** : 1. The Night Train at Deoli Ruskin
BondPoetry : 2. Upagupta Rabindranath
Tagore
**Skills** : 3. Reading Comprehension
: 4. Note Making/Taking

**UNIT IV**
**Poetry** : 1. Coromandel Fishers Sarojini Naidu
**Skills** : 2. Expansion of Ideas
: 3. Notices, Agendas and Minutes

**UNIT V:**
**Non-Detailed Text** : 1. An Astrologer's Day R K Narayan
**Skills** : 2. Curriculum Vitae and Resume
: 3. Letters
: 4. E-Correspondence

## పాఠ్య ప్రణాళిక

**యూనిట్-I : ఆధునిక కవిత్వం**

1. ఆధునిక కవిత్వం- పరిచయం
2. కొండవీడు - దువ్వూరి రామిరెడ్డి
   ('కవికోకిల' గ్రంథావళి-ఖండకావ్యాలు-నక్షత్రమాల సంపుటి నుండి)
3. మాతృసంగీతం - అనిసెట్టి సుబ్బారావు ('అగ్నివీణ' కవితాసంపుటి నుండి)
4. 'తాతకో నూలుపోగు' - బండారు ప్రసాదమూర్తి ('కలనేత' కవితాసంపుటి నుండి)

**యూనిట్-II : కథానిక**

5. తెలుగు కథానిక - పరిచయం
6. భయం (కథ) - కాళీపట్నం రామారావు
7. స్వేదం ఖరీదు....? - (కథ) - రెంటాల నాగేశ్వరరావు

**యూనిట్-III : నవల**

8. తెలుగు 'నవల' - పరిచయం
9. రథచక్రాలు (నవల) - మహీధర రామ్మోహన రావు (సంక్షిప్త ఇతివృత్తం మాత్రం)
10. రథచక్రాలు (సమీక్షా వ్యాసం) - డా॥ యల్లాప్రగడ మల్లికార్జునరావు

**యూనిట్-IV: నాటకం**

11. తెలుగు 'నాటకం' - పరిచయం
12. యక్షగానము (నాటిక) - ఎం.వి.ఎస్. హరనాథరావు.
13. "అపురూప కళారూపాల విధ్వంసదృశ్యం 'యక్షగానము' (సమీక్షా వ్యాసం)"
    -డా॥కందిమళ్ళసాంబశివరావు

**యూనిట్-V: విమర్శ**

14. తెలుగు సాహిత్య విమర్శ - పరిచయం
15. విమర్శ-స్వరూప స్వభావాలు; ఉత్తమ విమర్శకుడు-లక్షణాలు

| UG(General HINDI) | Semester - II | Credits:03 |
|---|---|---|
| Course : 2 | Prose, Short Stories, Grammar and Letter Writing | Hrs/Weeks:04 |

Unit 1

गद्य संदेश (Prose) (सं. डा.वी.एलण्नरसिंहम शिवकोटि)

1. बिंदा

2. भारत एक है

3.एच.आई.वी / एड्स

Unit 2

कथा लोक (Short Stories) ( सं. डा. घनश्याम)

1.भूख हडताल

2.परमात्मा का कुत्ता

3.और वह पढ गई...

Unit 3

व्याकरण (Grammar) (सरल हिन्दी व्याकरण.. दक्षिण भारत हिन्दी प्रचार सभा मद्रास)

संधि विच्छेद, वाक्यों की शुद्धि

Unit 4

कार्यालयीन हिंदी : पदनाम ... हिंदी से अंग्रेजी और अंग्रेजी से हिंदी

(Changing Administrative Terminology Hindi to English and English to Hindi)

Unit 5

पत्र लेखन : (Letter Writing)

नौकरी केलिए आवेदन पत्र

**** **** ****

| UG Courses | Semester - II | Credits:03 |
|---|---|---|
| Course: 2 | Poetry, Prose & Grammar | Hrs/Weeks:04 |

**UNIT – I OLD POETRY:**

1."**Indumateeswayamvaram**", Raghuvamsam of kalidasa, 6th canto, Chowkhamba krishadas academy, Varanasi-2012.

2. "**Deekshaapradanam**", Buddacharitam of Aswagosha, 16th canto. Selected verses.

**UNIT – II MODERN POETRY:**

1. "**Gangavataranam**", Bhojas Champu Ramayanam, Balakanda.
2. "**Mohapanodaha**", 4th cant. Dharma Souhrudam by P.Pattabhi Ramarao, , Published by Author, Ramanth Nagar.
3. "**VandeKasmeerabharatam**", by Doolypala Ramakrishna from Samskrita pratibha, sahitya academy , New Delhi -2018.

**UNIT – III PROSE:**

1. "**Avantisundarikatha**", 5th Chapter. Dasakumara Charitam, Purva peetika.
2. "**Charudattacharitam**", Bhasakathasaraha by Y.Mahalingasastry.

**UNIT - IV GRAMMAR:**

1. **DECLENSIONS** :Nouns ending in vowels
Nadee, Janu, vadhoo, Matru, Phala, Vaari & Madhu.
2. **CONJUGATIONS**
III Conjugation- Yudh, IV Conjugation- Ish, VIII Conjugation- Likh, Kru, IX Conjugation-Kreen X, Conjugation-Kath, Ram, Vand.

**UNIT – V GRAMMAR:**

1. **SANDHI** - Halsandhi : Latva, Jastva
-Visarga sandhi: Utva, Visargalopa, Rephadesa, Ooshma.

2.**SAMASA**
Avyayeebhava, Bahruvrihi.

# UG- LIFE SKILL COURSE
# INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (LS) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 hrs) |
|---|---|---|---|---|---|---|
| II | Life skill course | Information and Communication Technology (ICT) | 30 | 2 | 2 | 50 Marks |

**Objectives:** This course aims at acquainting the students with basic ICT tools which help them in their day to day and life as well as in office and research.

**Course outcomes:** After completion of the course, student will be able to;

- Understand the literature of social networks and their properties.
- Explain which network is suitable for whom.
- Develop skills to use various social networking sites like twitter, flickr, etc.
- Learn few GOI digital initiatives in higher education.
- Apply skills to use online forums, docs, spreadsheets, etc for communication, collaboration and research.
- Get acquainted with internet threats and security mechanisms.

**UNIT-I:Fundamentals of Internet:** What is Internet?, Internet applications, Internet Addressing – Entering a Web Site Address, URL–Components of URL, Searching the Internet, Browser–Types of Browsers, Introduction to Social Networking: Twitter, Tumblr, LinkedIn, Facebook, flickr, Skype, yahoo, YouTube, WhatsApp.

**UNIT-II: E-mail:** Definition of E-mail -Advantages and Disadvantages –User Ids, Passwords, Email Addresses, Domain Names, Mailers, Message Components, Message Composition, Mail Management. G-Suite: Google drive, Google documents, Google spread sheets, Google Slides and Google forms.

**UNIT-III:** Overview of Internet security, E-mail threats and secure E-mail, Viruses and antivirus software, Firewalls, Cryptography, Digital signatures, Copyright issues. What are GOI digital initiatives in higher education? (SWAYAM, Swayam Prabha, National Academic Depository, National Digital Library of India, E-Sodh-Sindhu, Virtual labs, e-acharya, e-Yantra and NPTEL).

**RECOMMENDED CO-CURRICULAR ACTIVITIES:** Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/ independent and group learning.

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz and Group Discussion
4. Slip Test
5. Try to solve MCQ's available online.
6. Suggested student hands on activities:

a. Create your accounts for the above social networking sites and explore them, establish a video conference using Skype.
b. Create an Email account for yourself- Send an email with two attachments to another friend. Group the email addresses use address folder.
c. Register for one online course through any of the online learning platforms like NPTEL, SWAYAM, Alison, Codecademy, Coursera. Create a registration form for your college campus placement through Google forms.

**Reference Books:**

1. In-line/On-line: Fundamentals of the Internet and the World Wide Web, 2/e –By Raymond Green law and Ellen Hepp, Publishers: TMH
2. Internet technology and Web design, ISRD group, TMH.
3. Information Technology – The breaking wave, Dennis P.Curtin, Kim Foley, Kunai Sen and Cathleen Morin, TMH.

## UG- LIFE SKILL COURSE
## INDIAN CULTURE AND SCIENCE(ICS)
(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (LS) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam(2 Hrs) |
|---|---|---|---|---|---|---|
| II | Life skill course | Indian culture and science(ICS) | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes:** By successful completion of the course, students will be able to:

- Understand the evolution of India's culture
- Analyze the process of modernization of Indian society and culture from past to future
- Comprehend objective education and evaluate scientific development of India in various spheres
- Inculcate nationalist and moral fervour and scientific temper

**Unit – I: Unity in Diversity in India:** **(09 hrs)**

Coexistence of various religions since ancient times - Hinduism, Buddhism, Jainism and Atheism, and later Sikhism, Islam and Christianity The Bhakti (Vishnavite and Saivaite) and Sufi Movements. The concepts of seela, karuna, kshama, maitri, vinaya, santhi and ahimsa Achievements in Literature, Music, Dance, Sculpture and Painting - Craftsmanship in cloth, wood, clay, metal and ornaments Cultural diversity, Monogamy, Family system, Important seasonal festivals

**Unit – II: Social Reforms and Modern Society:** **(09 hrs)**

Reforms by Basaveswara - Raja Rama Mohan Roy – Dayananda Saraswathi –Swamy Vivekananda –Mahatma Gandhi - B. R. Ambedkar - Reforms in Andhra by Vemana,Veerabrahmam, Gurajada, Veeresalingam and Gurram Jashua (only reforms in brief, biographies not needed). Modern Society: Family unity, Community service, Social Harmony, Civic Sense, Gender Sensitivity, Equality, National Fervor

**Unit – III: Science and Technology:** **(11 hrs)**

Objectivity and Scientific Temper – Education on Scientific lines (Bloom's Taxonomy) - Online Education. Developments in Industry, Agriculture, Medicine, Space, Alternate Energy, Communications, Media through ages

**Co-curricular Activities Suggested:** Assignments, Group discussions, Quiz etc

1. Invited Lecture by a local expert
2. Visit to a scientific institutions, local heritage sites, museums, industries etc.

**Reference Books:**

1. History of India and Culture (Upto 1526 A.D), Telugu Academy
2. History of India and Culture (1526 A.D to 1964), Telugu Academy
3. Basham, A.L (ed), A Cultural History of India
4. Hana S. Noor Al-Deen&J.A.Hendricks, Social Media : Usage and Impact
5. Bipan Chandra, Aditya Mukherjee, Mridula Mukherjee, India After Independence
6. S.K.Thakur, ISRO: History and Achievements
7. V. Ramakrishna, Social Reform Movement Andhra, Vikas Publications

# UG- SKILL DEVELOPMENT COURSE

## SURVEY & REPORTING

(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Group 'A' | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|---|
| II | Skill Development Course | | Survey & Reporting | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes:**

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

- Understand the basics of survey and reporting needs and methods
- Comprehend designing of a questionnaire
- Conduct a simple and valid survey and Collect data
- Organize and interpret data and Prepare and submit report.

**Unit I:** (08Hrs)

Survey: Meaning and Definition –Identifying need for survey - Identifying Sample –Characteristics of Sample - Types of Survey – Survey Methods – Advantages and Disadvantages of Survey – Essential Steps in Survey – Online Survey.

**Unit II:** (09Hrs)

Preparing Questionnaire: Types and Parts of Questionnaire – Qualities of good Questionnaire – Precautions in Preparing Questionnaire. Administering/Piloting Questionnaire –Collection of data - Dealing with People – Maintaining objectivity/neutrality.

**Unit III: (10 Hrs):** Methods of Organizing data – Forms of data presentation - Tables and Figures – Basic Statistical Methods of Analysis of data –Percentages - Mean, Mode and Median –Simple Ways of showing Results– Tables/Graphs/Diagrams

Report Writing: Forms of Reporting - Parts of a Report - Title page to Acknowledgements - Characteristics of a Good Report – Style of language to be used - Explaining Data in the Report – Writing fact-based Conclusions – making Recommendations – Annexing required material.

**Recommended Co-curricular Activities (3 hrs):**

1. Invited Lecture/Training by a Local Expert
2. Collection and study of questionnaires
3. Preparation of sample questionnaire and conduct a live sample survey
4. Preparation of a sample Report
5. Assisting a real time field survey and report writing
6. Assignments, Group discussion, Quiz etc.

**Reference books:**

1. Denscombe M., The Good Research Guide: For Small-Scale Social Research Projects, Open Uni. Press, 1998
2. Sudman S &Bradburn N.M., Asking Questions, 1973

# UG- SKILL DEVELOPMENT COURSE
## BUSINESS COMMUNICATION
(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Group 'A' | Course Title | Hrs/ Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|---|
| II | Skill Development Course | | Business Communication | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes**:
After successful completion of this course, students will be able to;

- Understand the types of business communication and correspondence
- Comprehend the processes like receiving, filing and replying
- Acquire knowledge in preparing good business communications
- Acquaint with organizational communication requirements and presentations.

**UNIT I:** **(06hrs)**
Introduction and Importance of communication an overview - meaning and process of communication - organizational communication and its barriers.

**UNIT II:** **(10hrs)**
Types of Business Communications –Categories, methods and formats - Business vocabulary - Business idioms and collocations – Organisational Hierarchy - Various levels of communication in an organization – Top-down, Bottom-up and Horizontal-Business reports, presentations– Online communications.

**UNIT III:** **(10hrs)**
Receiving business communications -Filing and processing -Sending replies. Routine cycle of communications – Writing Communications - Characteristics of a good business communication - Preparation of business meeting agenda – agenda notes - minutes –circulation of minutes – Presentations of communication using various methods.

**Recommended Co-curricular Activities** **(04hrs)**:
1. Collection of various model business letters
2. Invited lecture/field level training by a local expert
3. Reading of various business reports and minutes and its analysis
4. Presentations of reports, charts etc.
5. Assignments, Group discussion, field visit etc.

**Reference books**:

1. Chaturvedi. P.D.Chaturvedi.M - Business Communication concepts, Cases and applications - Pearsons Education.
2. Kaul Asha - Effective Business Communication - PHI Learning pvt Ltd .
3. www.swayam.gov.in
4. Websites on business communication

# UG- SKILL DEVELOPMENT COURSE
# SOCIAL WORK METHODS
(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Group | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|---|
| II | Skill Development Course | 'B' | Social work Methods | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes:** By successful completion of the course, students will be able to:

- Understand the basic concepts relating to social work practice, values, principles of social work and social problems in India
- List out different approaches of providing help to the people in need.
- Acquaint the process of primary methods of social work
- Get to know the skills of working with individuals, groups and communities.

**Unit-I: (07Hrs)- Introduction to social work and concepts related to social work :** Introduction to Social Work- Definition- Scope- objectives - Functions- social service, social welfare services, social reform, major social problems in India; Social work philosophy, values, objectives, principles, methods and fields of social work.

**Unit-II: (09Hrs) Methods of Working with Individuals and Groups**

Social case work –Definition-scope and importance of social case work, principles and process of social case work -Tools and techniques in social case work- Counselling skills.

Social Group Work-Definition-scope- the need for social group work –Group work process - Principles of Group Work -Stages of Group Work-Facilitation skills and techniques.

**Unit-III: (09Hrs) Working with Communities and Field Work in social work**

Community – definition - characteristics- types- community organisation as a method of social work-definition-objectives-principles- phases of community organization - 3 concepts of community development, community participation and community empowerment.

Field work in social work – Nature, objectives and types of field work - Importance of field work supervision.

**Suggested Co-curricular Activities:** (05 hours)

1. Divide the students into groups, each group containing not exceeding 10 students depending upon the total number of students in a class or section. Each group can search in internet about any one of the institutions which work for the welfare of children or women or elderly or scheduled caste and scheduled tribe children or differently abled persons or Juvenile homes or Correctional homes or hospitals or Mahila Pragathi pranganam or Swadhar project or any social welfare project or non governmental organizations (NGOs) to have an idea about welfare agencies working for the needy.
2. Ask each group to exchange and discuss the information with other groups in the classroom with the information they collected on Internet.
3. Group Discussion with the students- what type of community problems they observe in their villages/towns/cities? Ask them to tell what are the line departments which will help to solve the problems of their communities and suggest them what type strategies help the communities to empower.
4. Invited lectures/Training by local experts
5. Visit to a community
6. Assignments, Quiz etc.

**Reference books**:

1. Chowdhary, Paul. D. (1992). Introduction to Social Work. New Delhi: Atma Ram and Sons.
2. Friedlander W.A. (1955). Introduction to social welfare, New York, Prentice Hall.
3. Government of India, (1987). Encyclopedia of Social Work in India (Set of 4 Volumes). New Delhi, Publications Division, Ministry of Information and Broadcasting.
4. Lal Das, D.K. (2017). Practice of Social Research – Social Work Perspective, Jaipur, Rawat Publications.
5. Madan, G.R. (2009). Indian Social Problems (Volume 1 & 2). New Delhi: Allied publishers Private Limited.
6. Siddiqui, H.Y. (2007). Social Group Work. Jaipur: Rawat Publications
7. Pasty McCarthy &Carolin Hatcher, (2002). Presentation skills. The Essential Guide for Students. New Delhi, Sage Publications.
8. Websites on Social work methods.

# UG- SKILL DEVELOPMENT COURSE

## SOLAR ENERGY

(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Group 'A' | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|---|
| II | Skill Development Course | | Solar Energy | 30 | 2 | 2 | 50 Marks |

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

- Acquire knowledge on solar radiation principles with respect to solar energy estimation.
- Get familiarized with various collecting techniques of solar energy and its storage
- Learn the solar photovoltaic technology principles and different types of solar cells for energy conversion and different photovoltaic applications.
- Understand the working principles of several solar appliances like Solar cookers, Solar hot water systems, Solar dryers, Solar Distillation, Solar greenhouses

**UNIT-I – Solar Radiation:** **(6 hrs)**

Sun as a source of energy, Solar radiation, Solar radiation at the Earth's surface, Measurement of Solar radiation-Pyroheliometer, Pyranometer, Sunshine recorder, Prediction of available solar radiation, Solar energy-Importance, Storage of solar energy, Solar pond

**UNIT-II – Solar Thermal Systems:** **(10 hrs)**

Principle of conversion of solar radiation into heat, Collectors used for solar thermal conversion: Flat plate collectors and Concentrating collectors, Solar Thermal Power Plant, Solar cookers, Solar hot water systems, Solar dryers, Solar Distillation, Solar greenhouses.

**UNIT-III – Solar Photovoltaic Systems:** **(10 hrs)**

Conversion of Solar energy into Electricity - Photovoltaic Effect, Solar photovoltaic cell and its working principle, Different types of Solar cells, Series and parallel connections, Photovoltaic applications: Battery chargers, domestic lighting, street lighting and water pumping

**Co-curricular Activities (Hands on Exercises):** **(04 hrs)**

[Any four of the following may be taken up]

1. Plot sun chart and locate the sun at your location for a given time of the day.
2. Analyse shadow effect on incident solar radiation and find out contributors.
3. Connect solar panels in series & parallel and measure voltage and current.
4. Measure intensity of solar radiation using Pyranometer and radiometers.
5. Construct a solar lantern using Solar PV panel (15W)
6. Assemble solar cooker
7. Desigining and constructing photovoltaic system for a domestic house requiring 5kVA power
8. Assignments/Model Exam.

**Reference Books:**

1. Solar Energy Utilization, G. D. Rai, Khanna Publishers
2. Solar Energy- Fundamentals, design, modeling& applications, G.N. Tiwari, Narosa Pub., 2005.
3. Solar Energy-Principles of thermal energy collection & storage, S.P. Sukhatme, Tata Mc-Graw Hill Publishers,1999.
4. Solar Photovoltaics- Fundamentals, technologies and applications, Chetan Singh Solanki, PHI Learning Pvt. Ltd.,
5. Science and Technology of Photovoltaics, P. Jayarama Reddy, BS Publications, 2004.

UG- SKILL DEVELOPMENT COURSE

# AGRICULTURAL MARKETING

(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Group | Course Title | Hrs/ Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|---|
| II | Skill Development Course | 'A' | Agricultural Marketing | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes:**

By the successful completion of this course, the student will be able to;

- Know the kinds of agricultural products and their movement
- Understand the types, structure and functioning of agricultural marketing system
- Comprehend related skills and apply them in sample situations
- Extend this knowledge and skills to their production/consumption environment

**Unit- I:** **(06hrs)**

Introduction of Agriculture and agricultural products (including agriculture, horticulture, sericulture, floriculture, aquaculture- genetic culture and dairy product) - Agricultural Marketing - Role of marketing - Concepts - Goods and services - Movement of product from farm to consumer –Middlemen – Moneylenders - Types of agricultural markets (basic classification).

**Unit- II:** **(09hrs)**

Basic structure and facilities of an agricultural market – Primary, secondary and tertiary markets– Functioning of Market Yards–Market information – Rythu Bharosa Kendras (RBK) – Govt market policies and regulations- Contract farming -Govt Apps for marketing of agri products.

**Unit- III:** **(10hrs)**

Planning production – assembling – grading - transportation– storage facilities. Price fixation. Dissemination of market information –and role of ICT. Marketing - Mix- Product element- Place element- Price element- Promotion element. Selection of target market. Government programs in support of Agricultural marketing in India.

**Suggested Co-curricular Activities:** **(05hrs)**

1. Study visit to agricultural markets and Rythu Bharosa Kendras (RBK)
2. Invited lecture by field expert
3. Survey of various involved activities e.gassembling, grading, storage, transportation and distribution
4. Identify the demand for food processing units
5. Application of Govt Apps as one Nation and one Market
6. Assignments, Group discussion, Quiz etc.

**Reference books:**

1. S.S.Acharya & N.L.Agarwala, Agricultural Marketing in India - Oxford and IBH Publications
2. K.S.Habeeb - Ur - Rahman Rural Marketing in India - Himalaya publishing
3. S.S.Chinna Agricultural Marketing in India - KALYANI publishers
4. Publications of National Institute of Agricultural Marketing, Odisha
5. Wikiepedia and other websites on Agricultural Marketing.

# UG- SKILL DEVELOPMENT COURSE
# ADVERTISING
(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Group 'B' | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|---|
| II | Skill Development Course | | Advertising | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes**:
After Successful completion of this course, the students are able to;

- Understand the field of Advertising
- Comprehend opportunities and challenges in Advertising sector
- Prepare a primary advertising model
- Understand applying of related skills
- Examine the scope for making advertising a future career

**UNIT I:** **(06hrs)**
Introduction of advertising concepts- functions - Types of advertising - Creative advertising messages - Factors determining opportunities of a product/service/Idea

**UNIT II:** **(10 hrs)**
Role of advertising agencies and their responsibilities - scope of their work and functions - - Ethical issues - Identifying target groups -Laws in advertising. Advertising Statutory Bodies in India - Role of AAAI (Advertising Agencies Association of India), ASCI (Advertising Standard Council of India)

**UNIT III:** **(10hrs)**
Types of advertising – Basic characteristics of a typical advertisement –Reaching target groups - Local advertising – Feedback on impact of advertisement - Business promotion.

**Recommended Co-curricular Activities:** **(04 hrs)**

1. Collection and segmentation of advertisements
2. Invited Lectures/skills training on local advertising basics and skills
3. Visit to local advertising agency
4. Model creation of advertisements in compliance with legal rules
5. Assignments, Group discussion, Quiz etc.

**Reference books:**

1. Bhatia. K.Tej - Advertising and Marketing in Rural India - Mc Millan India
2. Ghosal Subhash - Making of Advertising - Mc Millan India
3. JethWaneyJaishri& Jain Shruti - Advertising Management - Oxford university Press Publications of Indian Institute of Mass Communications
4. Websites on Advertising

UG- SKILL DEVELOPMENT COURSE

# DAIRY TECHNOLOGY

(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Group 'B' | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|---|
| II | Skill Development Course | | Dairy Technology | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes**:

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

- Understand the pre-requisites for starting a Dairy farm
- Recognize different breeds of Cows & buffaloes following safety precautions.
- Prepare and give recommended feed and water for livestock
- Maintain health of livestock along with productivity
- Vaccination of cattle, nutrients requirements
- Entrepreneurship i.e., Effectively market dairy products
- Ensure safe and clean dairy farm and Standard safety measures to be taken Efficiently start and manage to establish or develop a Dairy Industry

**Unit- I (Introduction and Establishment of a Dairy Farm):** **(05 Hrs)**

1.1 Dairy development in India – Dairy Cooperatives (NDRI, NDDB, TCMPF) (1hr)
1.2 Constraints of Present Dairy Farming and Future Scope of Dairy Farmer. (1 hr)
1.3 Selection of site for dairy farm; Systems of housing – Loose housing system, Conventional Dairy Farm; Records to be maintained in a dairy farm. (2 hrs)

**Unit - II (Livestock Identification and Management):** **(13 Hrs)**

2.1 Breeds of Dairy Cattle and Buffaloes – Identification of Indian cattle and buffalo breeds and Exotic breeds; Methods of selection of Dairy animals. (5 hrs)
2.2 Systems of inbreeding and crossbreeding. (2 hrs)
2.3 Weaning of calf, Castration, Dehorning, Deworming and Vaccination programme (3 hrs)
2.4 Care and management of calf, heifer, milk animal, dry and pregnant animal, bulls and bullocks.(3 hrs)

**Unit- III (Feed Management, Dairy Management, Cleaning and Sanitation):** **(8 Hrs)**

3.1 Basic Principles of Feed, Important Feed Ingredients, Feed formulation and Feed Mixing (2 hrs)
3.2 Operation Flood –Definition of Milk and Nutritive value of milk and ICMR recommendation of nutrients –Per Capita Milk production and availability in India and Andhra Pradesh – Methods of Collection and Storage of Milk–Labelling and Storage of milk products (4 hrs)
3.3 Cleaning and sanitation of dairy farm – Safety precautions to prevent accidents in an industry. (2 hrs)

**Co-curricular Activities Suggested:** (4 hrs)

1. Group discussion & SWOT analysis
2. Visit to a Dairy Farm
3. Visit to Milk Cooperative Societies
4. Visit to Feed Milling Plants
5. Market Study and Identification of Government Schemes, Insurance and Bank Loans in relation

**Reference books**:

1. Dairy Science: Petersen (W.E.) Publisher – Lippincott & Company
2. Principles and practices of Dairy Farm –Jagdish Prasad
3. Text book of Animal Husbandry - G C Benarjee
4. Hand book of Animal Husbandry - ICAR Edition
5. Outlines of Dairy Technology – Sukumar (De) – Oxford University press
6. Indian Dairy Products – Rangappa (K.S.) & Acharya (KT) – Asia Publishing House.
7. The technology of milk Processing – Ananthakrishnan, C.P., Khan, A.Q. and Padmanabhan, P.N. – Shri Lakshmi Publications.
8. Dairy India 2007, Sixth edition
9. Economics of Milk Production – Bharati Pratima Acharya Publishers.
10. http://www.asci-india.com/BooksPDF/Dairy%20Farmer%20or%20Entrepreneur.pdf
11. https://labour.gov.in/industrial-safety-health

# UG- SKILL DEVELOPMENT COURSE

## PERFORMING ARTS

## (w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Group 'B' | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|---|
| II | Skill Development Course | | Performing Arts | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes**:

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

- Acquire the basic knowledge in performing arts
- Understand the modern stage and performance on the stage
- Comprehend and improve the skills related to performing arts on the stage
- Understand various Telugu folk arts and their significance
- Know the modes of presentation and skills pertaining to folk arts.

**Unit-I: Introduction to performing Arts** (06 Hrs)

Arts – and its definition; Fine Arts; Arts - Learning &Imitation – Rasaas, Bhaavas and Rasa Sutra, Dasaroopakaas; Nrittha, Nrithya,Natya; Action – Kinds of Actions; Ancient Costume style

**Unit-II: Performing Arts – Stage Arts** (10 Hrs)

Origin of Drama (Theatre); Features of Stage; Varieties of Modern Telugu Drama; Famous Telugu Dramas. Stage performance; Dramatic Actor and its definition; Actor–characteristics, Functions and Responsibilities. Traits of an Actor – Diction, Articulation, Dialogue modulation, Time sense, Observation, Mime, Improvisation, Commentary, Dress code, Make-up, lighting &Stage Direction.

**Unit-III: Performing Arts – Forms** (10 Hrs )

Folk Arts, their nature and significance – Brief introduction to Pagativeshaalu, Bommalaatalu, Veedhinaatakaalu, Yakshagaanaalu, Harikathalu, Burrakathalu, Oggukathalu, Chindu,Yakshagaanam, KolaatamandPulivesham.

**Co-curricular Activities Suggested:** (4 hrs)

1. Collection of information on modern stage plays, natakasamajams and audio visual material.
2. Providing training classes/inviting lectures with the help of local artists
3. Visit to a real time performing folk arts, if possible.
4. Mock experience classes of Stage plays and Folk arts.
5. Assignments, Group discussion, Quiz etc.

**Reference books**:

1. Andhra Naataka Ranga Charithra –Mikkilineni Radha Krishna Murthy
2. Telugu SahithyaSameeksha (Vol-II) – Dr. G. Nagaiah
3. Telugu NaatakaVilaasam – Dr.P.S.RAppa Rao
4. Telugu JaanapadaVignanam – Prof. Tangirala Venkata Subba Rao
5. JaanapadaVignandhyayanam – Prof. G.S. Mohan
6. NaatyaSasthramu (VisleshanathmakaAdhyayanam) – Dr.P.S.RAppa Rao
7. SahithyaSilpaSameeksha – Prof. PingaliLakshmikantham
8. Nurella Telugu NatakaRangam – Prof. ModaliNagabhushanaSarma
9. Websites on Performing Arts.

| B. Sc | Semester: II | Credits: 4 |
|---|---|---|
| Course: 2 | 2D ANIMATION | Hrs/Wk: 4 |

**Aim and objectives of course: 2D ANIMATION**

- Understand and Apply the symbols, animation keys
- Analyze the tweens, shapes and articulated motions, Navigation menus andinteractive movieclips
- Evaluate the developed project

**Learning outcomes of course** (in consonance with the Bloom's Taxonomy):

- Knowledge and utilize components to create interactivity and manipulate animationusingseveral animation tools and techniques in this course.

**Detailed Syllabus:** (Five units with each unit having 12 hours of class work)

**UNIT I:**

What is Animation- Early examples of Animation- Stop Motion Photo Animation- Zoetrope- Thaumatrope – Cell and Paper Animation -Types of Animation - Facial expressions -Flash Overview-About Adobe Animate Interface -Menu Bar, Tools-Layers-Property Inspector-Timeline-Stage- Scene - File Formats: .fla, .swf – Library - Import tothe stage - Import to Library - Color Swatches -Grid, Guide & Rulers - Creating New Document - Working on Stage.

**UNIT II:**

**Using Layers:** About Layers - Create - Delete Layers, Rename Layers - Lock & Unlock Layers - Typeof Frames: Key fame - Blank Frame - Onion Skin – FPS – Symbols – Graphics - Movie Clip & Button– Tweening - Types of Tweens - Object & Merge Drawings-Gradient Color - Color Effects

**UNIT III:**

Filters, Shape Tween, Shape Hint Tween, About Mask, Layer Mask, Ease in and Ease out Animation, Working Frame - by - Frame Animations, Working on Tween Animation, Character creation - Animation - Creating Storyboard, Creating any Cartoon Character, Creating Background Scenes, Using Bone Setup Tool, Lip Movements, Adding Audio to Scene, Publish Movie, Publish Setting.

**UNIT IV:**

Online Frame Work - Types of E - learning's - ADDIE model for E-learning - Analysis and Design – Development – Implementation – Evaluation - Action Script, Interfaceof Action Script in Flash, Uses of Action Script, Event Handling, Using Code Snippets, Drag & Drop, Moving with Keyboard Arrows, Go to Frame and Stop, Play & Stop Sound Layout Creation - Timeline Actions- Creating Frame- Action Controlling Sound -Sound Controls– Video Controls- Handling Components- ApplyingBehavior.

**UNIT V:**

Action Script on Buttons, Movie Clips, Event Handlers, Create a Slide Show, Creating an Interactive Flash Game, Flash File Publishing, Export Options, Publish Settings from Flash to After Effects Working on Adobe After Effects, Export Flash to After Effects, Create Character Animation in After Effects, Export to Movie Format, Test Movie.

**TEXT BOOKS:**

1. The Animator's Survival Kit by Richard Williams, Straus & Giroux Pub. (U.S.A)
2. Flash Professional CC Class Room In a Book - Pearson

**REFERENCE BOOKS:**

1. The complete animation course by Chris Patmore -Baron's Educational Series. (NewYork)
2. Animation Unleashed by Ellen Bessen, Michael Weise Productions, 2008(U.S.A)
3. Draw Animation by Paul Hardman.

**CO-CURRICULAR ACTIVITIES:**

- Demonstrate or exhibit the graphics animation and school projects
- Seminar/workshop on E-Learning and 2D Animation
- Study tour to visit 2D animation production house

**ASSESSMENT METHODS:**

- Domain specific projects assessment
- Portfolios of 2D
- Reflective Visual Journal for the works

| B. Sc | Semester: II | Credits: 1 |
|---|---|---|
| Course: 2(L) | 2D ANIMATION Lab | Hrs/Wk: 2 |

**Details of Lab syllabus : 2D ANIMATION LAB**

1. Creating Web Banners in Adobe Flash
2. Creating a Logo Animation in Adobe Flash
3. Creating Frame by Frame animation
4. Draw Cartoon Animation using reference.
5. Create Lip Sink to Characters
6. Using filters & Special effects
7. Create a scene by using Mask layers animation

**E-Learning Lab:**

8. Student Application form
9. Video Controlling
10. Audio Controlling
11. Start Drag and Stop Drag Actions
12. Interactive Keyboard Controls using Flash Action Script.
13. Interactive Flash Game.
14. Creating Character Animation in After Effects

| B.Sc | Semester: II | Credits: 4 |
|---|---|---|
| Course :2 | Film Studies - I | Hrs/Wk: 4 |

**Learning Outcomes:**

- Analyze variety of research & Digital film techniques
- Understand how to implement the idea to video edit
- Create storyboard for a short film concepts
- Evaluate the Ideas using different techniques

**Learning Outcomes of course:**

**Course Objectives:** Learn many technical and conceptual developments of digital film making process, such as relationships to the truth, beauty, and fact as well as the ethics of digital film making

**UNIT I:**

Research methodology - Creative thinking, How to think out of the box. Creative thinking vs. Critical thinking, Divergent thinking, Convergent thinking, Six Thinking Hats, Lateral Thinking, Brainstorming, Idea generation techniques, Mind map - Idea management - Evaluation of ideas by the filtering process. (Key questions like feasibility, uniqueness, relevance, etc...)

**UNIT II:**

**Production Pipeline** - Introduction to Storyboard - The difference between storyboard and Comic book - Difference between Storyboard and Presentation Board - Anatomy of a Storyboard - Thumbnail Storyboard - Preparing Storyboards using Digital software - Transitions, Aspects of the storyboard – Understanding the scene and emotion – Matching with the layout - Animatics.

**UNIT III:**

**Film Grammar** - Digital film making - Cinematographic properties – Camera movement calculation - Basic shot terminology – Scene – Sequence – Space and framing - 180-degree rule, 30-degree rule, jump cuts, intercuts, cuts always and cut-ins, editing, and direction, aesthetics of cinematography. Kula shove effect, vertigo effect, Camera angles – Camera Shots and camera movement – Tri Angle Exposure/F- Stop/Shutter/ISO Depth of field Camera operating

**UNIT IV:**

Mis-En-Scene and design, Acting and Performance Composition The appeal, Golden mean, Centerstage, pyramid, circular composition, Dutch angle, weight, balance, rhythm, directing the eye - Shot timing – Sound or Dialogue track

**UNIT V:**

Different film Formats (16 min, 35 mm, 70 mm) and aspect ratios - Parts of a still camera – Editing and Rendering - Cinematography and photography - Camera quiz – Introduction to digital editing – Principles of editing

**TEXT BOOKS:**

1. Storyboards: Motion in Art Book by Mark Simon
2. The Digital Filmmaking Handbook, 2nd edition. U Ben Long and Sonja Schenk

(June 2002)

3. Digital Photography for Dummies by Julie Adair King

**REFERENCES:**

1. Exploring Storyboarding Book by Wendy Tumminello
2. Directing the Story Book by Francis Glebas
3. Don Bluth's the Art of Storyboard Textbook by Don Bluth
4. The Art of the Storyboard: Storyboarding for Film, TV, and Animation Book by John M. Hart

**Film Making Reference:**

1. Block, Bruce. The Visual Story: Creating the Visual Structure of Film, TV and DigitalMedia, 2nd. Ed. Focal Press, 2008.
2. Film Directing Shot by Shot: Visualizing from Concept to ScreenU Stephen D. Katz(1991)
3. Final Cut Express 2: Digital Video Editing for Everyone. U Diana Weynand (2004)
4. Writing for Television and Radio 6th edition.U Robert L. Hilliard (1997)

**Idea & Research Reference:**

1. Lateral Thinking: Creativity step by step by Edward de Bono
2. Six thinking hats by Edward de Bono
3. Start with why: how great leaders inspire everyone to take action by Simon Sinek

**CO-CURRICULAR ACTIVITIES:**

- Seminar/Workshop on the short film and documentary making process
- Outdoor shooting like Landscape, Nature, Forest
- Quiz program on cameras, film process & portable storage device
- Create individual research on short films
- Maintain a Blog and RVJ(Reflective Visual Journal)

**ASSESSMENT METHOD:**

- Oral presentation on script to shooting
- Viva voice on concepts
- Self-assessment of outputs

| B.Sc | Semester: II | Credits: 1 |
|---|---|---|
| Course: 2 | Film Studies Lab | Hrs/Wk: 2 |

**Details of the Lab: FILM STUDIES-I LAB**

1. Preparation of script and storyboard with the animatics
2. Camera: Operation, Shot, Angles, and Movements
3. The shooting of the script in the video
4. Different Transaction and Effects in editing
5. Shooting a silent or Mix genres ( Drama, Horror, Action, Thriller, etc.,) short film
6. Edit the short film using different techniques
7. Edit the title and add effects on the shots

| B Sc | Semester: II | Credits: 4 |
|---|---|---|
| Course: 2 | DATA STRUCTURES USING C | Hrs/Wk: 4 |

**Aim and objectives of Course:**

- To introduce the fundamental concept of data structures and to emphasize the importance of various data structures in developing and implementing efficient algorithms.

**Learning outcomes of Course:**

Upon successful completion of the course, a student will be able to:

- Understand available Data Structures for data storage and processing.
- Comprehend Data Structure and their real-time applications - Stack,Queue, Linked List, Trees and Graph
- Choose a suitable Data Structures for an application
- Develop ability to implement different Sorting and Search methods
- Have knowledge onData Structures basic operations like insert, delete,search,update and traversal
- Design and develop programs using various data structures
- Implement the applications of algorithms for sorting, pattern matching etc

Detailed Syllabus: (Five units with each unit having 12 hours of class work)

**UNIT I:**

**Introduction to Data Structures:** Introduction to the Theory of Data Structures, Data Representation, Abstract Data Types, Data Types, Primitive Data Types, Data Structure and Structured Type, Atomic Type, Difference between Abstract Data Types, Data Types, and Data Structures, Refinement Stages.
**Principles of Programming and Analysis of Algorithms**: Software Engineering, Program Design, Algorithms, Different Approaches to Designing an Algorithm, Complexity, Big 'O' Notation, Algorithm Analysis, Structured Approach to Programming, Recursion, Tips and Techniques for Writing Programs in 'C'.

**UNIT II:**

**Arrays:** Introduction to Linear and Non- Linear Data Structures, One- Dimensional Arrays, Array Operations, Two- Dimensional arrays, Multidimensional Arrays, Pointers and Arrays, an Overview of Pointers.
**Linked Lists:** Introduction to Lists and Linked Lists, Dynamic Memory Allocation, Basic Linked List Operations, Doubly Linked List, Circular Linked List, Atomic Linked List, Linked List in Arrays, Linked List versus Arrays.

**UNIT III:**

**Stacks**: Introduction to Stacks, Stack as an Abstract Data Type, Representation of Stacks through Arrays, Representation of Stacks through Linked Lists, Applications of Stacks,Stacks and Recursion.
**Queues:** Introduction, Queue as an Abstract data Type, Representation of Queues, Circular Queues, Double Ended Queues- Deques, Priority Queues, Application of Queues.

**UNIT IV:**

**Binary Trees:** Introduction to Non- Linear Data Structures, Introduction Binary Trees, Types of Trees, Basic Definition of Binary Trees, Properties of Binary Trees, Representation of Binary Trees, Operations on a Binary Search Tree, Binary Tree Traversal, Counting Number of Binary Trees, Applications of Binary Tree.

**UNIT V:**

**Searching and sorting:** Sorting – An Introduction, Bubble Sort, Insertion Sort, Merge Sort, Searching – An Introduction, Linear or Sequential Search, Binary Search, Indexed Sequential Search

**Graphs:** Introduction to Graphs, Terms Associated with Graphs, Sequential Representation of Graphs, Linked Representation of Graphs, Traversal of Graphs, Spanning Trees, Shortest Path, Application of Graphs.

**TEXT BOOKS:**

1. "Data Structures using C", ISRD group Second Edition, TMH
2. "Data Structures through C", Yashavant Kanetkar, BPB Publications

**REFERENCES:**

1. "Data Structures Using C" Balagurusamy E. TMH

| B Sc | Semester: II | Credits: 1 |
|---|---|---|
| Course: 2(L) | DATA STRUCTURES USING C Lab | Hrs/Wk: 2 |

Details of Lab Syllabus: **Data Structures Using C Lab**

a. Write a program to read 'N' numbers of elements into an array and also perform thefollowing operation on an array
   i. Add an element at the begging of an array
   ii. Insert an element at given index of array
   iii. Update a element using a values and index
   iv. Delete an existing element

b. Write a program using stacks to convert a given
   i. postfix expression to prefix
   ii. prefix expression to postfix
   iii. infix expression to postfix

c. Write Programs to implement the Stack operations using an array

d. Write Programs to implement the Stack operations using Liked List.

e. Write Programs to implement the Queue operations using an array.

f. Write Programs to implement the Queue operations using Liked List.

g. Write a program for arithmetic expression evaluation.

h. Write a program for Binary Search Tree Traversals

i. Write a program to implement dequeue using a doubly linked list.

j. Write a program to search an item in a given list using the following SearchingAlgorithms
   i. Linear Search
   ii. Binary Search.

k. Write a program for implementation of the following Sorting Algorithms
   i. Bubble Sort
   ii. Insertion Sort
   iii. Quick Sort

l. Write a program for polynomial addition using single linked list

m. Write a program to find out shortest path between given Source Node and DestinationNode in a given graph using Dijkstrar's algorithm.

n. Write a program to implement Depth First Search graph traversals algorithm

o. Write a program to implement Breadth First Search graph traversals algorithm

RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from otherswork and shall encourage self/independent and group learning)

**A. Measurable**

1. Assignments (in writing and doing forms on the aspects of syllabuscontent and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individualactivity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real- time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity

**B. General**

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

p. The oral and written examinations (Scheduled and surprise tests),

q. Closed-book and open-book tests,

r. Problem-solving exercises,

s. Practical assignments and laboratory reports,

t. Observation of practical skills,

u. Individual and group project reports like "Creating Text Editor in C".

v. Efficient delivery using seminar presentations,

w. Viva voce interviews.

x. Computerized adaptive testing, literature surveys and evaluations,

y. Peers and self-assessment, outputs form individual and collaborative work.

| UG(English) | Semester -III | Credits: 03 |
|---|---|---|
| Course - 3 | A Course In Conversational Skills | Hrs/Week: 04 |

**Learning Outcomes**

***By the end of the course the learner will be able to :***

- Speak fluently in English
- Participate confidently in any social interaction
- Face any professional discourse
- Demonstrate critical thinking
- Enhance conversational skills by observing the professional interviews

**UNIT I:**

**Speech** : 1. Tryst with Destiny Jawaharlal Nehru
**Skills** : 2. Greetings
: 3. Introductions

**UNIT II:**

**Speech** : 1. Yes, We Can Barack Obama
**Interview** : 2. A Leader Should Know How to Manage Failure Dr.A.P.J.Abdul Kalam/ India Knowledge at Wharton
**Skills** : 3. Requests

**UNIT III:**

**Interview** : 1. Nelson Mandela's Interview With Larry King
**Skills** : 2. Asking and Giving Information
: 3. Agreeing and Disagreeing

**UNIT IV:**

**Interview** : 1. JRD Tata's Interview With T.N.Ninan
**Skills** : 2. Dialogue Building
: 3. Giving Instructions/Directions

**UNIT V:**

1. **Speech** : 1. You've Got to Find What You Love Steve Jobs
**Skills** : 2. Debates
: 3. Descriptions
: 4. Role Play

## పాఠ్య ప్రణాళిక

**యూనిట్-I: వ్యక్తీకరణ నైపుణ్యాలు**

1. భాష-ప్రాథమికాంశాలు: భాష-నిర్వచనం, లక్షణాలు, ఆవశ్యకత, ప్రయోజనాలు
2. వర్ణం-పదం-వాక్యం', వాక్య లక్షణాలు, సామాన్య-సంయుక్త-సంశ్లిష్టవాక్యాలు
3. భాషా నిర్మాణంలో 'వర్ణం-పదం-వాక్యం' ప్రాధాన్యత

**యూనిట్-II సృజనాత్మక రచన**

4. కవితా రచన : ఉత్తమ కవిత - లక్షణాలు
5. కథారచన : ఉత్తమ కథ - లక్షణాలు
6. వ్యాస రచన : ఉత్తమ వ్యాసం-లక్షణాలు

**యూనిట్-III: అనువాద రచన**

7. అనువాదం-నిర్వచనం, అనువాద పద్ధతులు,
8. అనువాద సమస్యలు-భౌగోళిక,భాషా,సాంస్కృతిక సమస్యలు, పరిష్కారాలు
9. అభ్యాసము : ఆంగ్లం నుండి తెలుగుకు,తెలుగు నుండి ఆంగ్లానికి ఒక పేరానుఅనువదించడం

**యూనిట్ IV మాధ్యమాలకు రచన-1 (ముద్రణామాధ్యమం/ప్రింట్ మీడియా)**

10. ముద్రణామాధ్యమం (అచ్చుమాధ్యమం) : పరిచయం, పరిధి, వికాసం
11. వివిధ రకాల పత్రికలు-పరిశీలన, పత్రికాభాష, శైలి, వైవిధ్యం
12. పత్రికా రచన : వార్తా రచన, సంపాదకీయాలు, సమీక్షలు-అవగాహన

**యూనిట్ V మాధ్యమాలకు రచన-2 (ప్రసార మాధ్యమం/ఎలక్ట్రానిక్ మీడియా)**

13. ప్రసారమాధ్యమాలు : నిర్వచనం, రకాలు, విస్తృతి, ప్రయోజనాలు
14. శ్రవణ మాధ్యమాలు - రచన: రేడియో రచన, ప్రసంగాలు, నాటికలు, ప్రసార సమాచారం
15. దృశ్యమాధ్యమాలు - రచన: వ్యాఖ్యానం (యాంకరింగ్), టెలివిజన్ రచన

| UG(General HINDI) | Semester III | Credits:03 |
|---|---|---|
| Course : 3 | Old and Modern Poetry, History of Hindi Literature ,Essays (Translation and Functional Hindi) | Hrs/Weeks:04 |

Unit 1

1. काव्यदीप (Ancient and Modern Poetry) (सं.बी.राधाकृष्णमूर्ति)

साखी...1..10 दोहे

सूरदास...बाल वर्णन

मातृभूमि...मैथिलीशरण गुप्त

तोडती पत्थर...सूर्यकांत त्रिपाठी निराला

भारतमाता...सुमित्रानंदन पंत

Unit 2

2. हिंदी साहित्य का इतिहास (History of Hindi Literature) (डा. बाबू गुलाबराय)

हिंदी साहित्य का काल विभाजन (डा. रामचन्द्र शुक्ल)

भक्तिकाल की विशेषताएँ

ज्ञानाश्रयी शाखा ... कबीर

प्रेमाश्रयी शाखा ... जायसी

Unit 3

3. निबंध (General Essays)

1.समाचार पत्र 2.बेकारी समस्या

3.पर्यावरण और प्रदूषण 4. साहित्य और समाज

Unit 4

4. अनुवाद (Translation) अंग्रेजी से हिंदी (Five Simple Sentences)

Unit 5

5. प्रयोजनमूलक हिंदी (Functional Hindi)

राष्ट्रभाषा, राजभाषा, संपर्क भाषा

*** **** ***

| UG Courses | Semester - III | Credits:03 |
|---|---|---|
| Course: 3 | Drama, Upanishad, Alankara and History of Literature. | Hrs/Weeks:04 |

**UNIT – I : OLD DRAMA**

1."**Madhyamavyayogaha**". Bhasa Natakachakram. krishadas academy, Varanasi 1998.

**UNIT – II :MODERN DRAMA**

**"Sankalpabalam"** by Prof.G.S.R.Krishna Murthy, Published by Semushi, R.S.Vidyapeetam, Tirupati-2019.

**UNIT – III :UPANISHAD**

1."**Sishyanusasanam**" – Sikshavalli of Taittireeyopanishad.

2. **"Sraddatrayavibhagayoga"**,

17th Chapter, Bhagavadgita, Geetapress, Gorakhpoor.

**UNIT - IV : 1. ALANKARAS**:

1. Upama 2. Ananvaya 3. Utpreksha 4. Deepakam

5. Aprastutaprasamsa 6.Drushtanta 7. Prateepa.

**2.HISTORY OF SANSKRIT LITERATURE**

1.Panini 2.Kautilya 3.Bharatamuni 4. Bharavi 5.Magha

6.Bhavabhuti 7. Sankaracharya, 8.Jagannatha. 9. Dandi.

**UNIT – V : HALANTA SABDAS**

1.Jalamuch 2.Vaach 3.Marut 4.Bhagavat 5.Bhavat

6.Pachats 7. Naman 8.Rajan 9.Gunin 10.Vidwas 11. Manas.

UG- LIFE SKILL COURSE

# ENVIRONMENTAL EDUCATION (EE) (Mandatory)

(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (LS) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|
| III | Life skill course | Environmental Education(EE) | 30 | 2 | 2 | 50 Marks |

**Course objective:** A Generic Course intended to create awareness that the life of human beings is an integral part of environment and to inculcate the skills required to protect environment from all sides.

**Learning outcomes:** On completion of this course the students will be able to …..

- Understand the nature, components of an ecosystem and that humans are an integral part of nature.
- Realize the importance of environment, the goods and services of a healthy biodiversity, dependence of humans on environment.
- Evaluate the ways and ill effects of destruction of environment, population explosion on ecosystems and global problems consequent to anthropogenic activities.
- Discuss the laws/ acts made by government to prevent pollution, to protect biodiversity and environment as a whole.
- Acquaint with international agreements and national movements, and realize citizen's role in protecting environment and nature.

**Unit 1: Environment and Natural Resources:** **(06hrs)**

1. Multidisciplinary nature of environmental education; scope and importance.
2. Man as an integral product and part of the Nature.
3. A brief account of land, forest and water resources in India and their importance.
4. Biodiversity: Definition; importance of Biodiversity - ecological, consumptive, productive, social, ethical and moral, aesthetic, and option value.
5. Levels of Biodiversity: genetic, species and ecosystem diversity.

**Unit-2: Environmental degradation and impacts:** **(10hrs)**

1. Human population growth and its impacts on environment; land use change, land degradation, soil erosion and desertification.
2. Use and over-exploitation of surface and ground water, construction of dams, floods, conflicts over water (within India).
3. Deforestation: Causes and effects due to expansion of agriculture, firewood, mining, forest fires and building of new habitats.
4. Non-renewable energy resources, their utilization and influences.
5. A brief account of air, water, soil and noise pollutions; Biological, industrial and solid wastes in urban areas. Human health and economic risks.
6. Green house effect - global warming; ocean acidification, ozone layer depletion, acid rains and impacts on human communities and agriculture.
7. Threats to biodiversity: Natural calamities, habitat destruction and fragmentation, over exploitation, hunting and poaching, introduction of exotic species, pollution, predator and pest control.

**Unit 3: Conservation of Environment:** **(10hrs)**

Concept of sustainability and sustainable development with judicious use of land, water and forest resources; a forestation.

1. Control measures for various types of pollution; use of renewable and alternate sources of energy.
2. Solid waste management: Control measures of urban and industrial waste.
3. Conservation of biodiversity: In-situ and ex-situ conservation of biodiversity.
4. Environment Laws: Environment Protection Act; Act; Wildlife Protection Act; Forest Conservation Act.
5. International agreements: Montreal and Kyoto protocols; Environmental movements: Bishnois of Rajasthan, Chipko, Silent valley.

**Suggested activities to learner: (4 hours)**

1. Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc
2. Visit to a local polluted site-Urban/Rural/Industrial/Agricultural site.
3. Study of common plants, insects, birds and basic principles of identification.
4. Study of simple ecosystems- forest, tank, pond, lake, mangroves etc.
5. Case study of a Forest ecosystem or a pond ecosystem.

**Suggested text book:**

1. Erach Barucha (2004) *Text book of Environmental Studies for Undergraduate courses* (Prepared for University Grants Commission) Universities Press.
2. Purnima Smarath (2018) *Environmental studies* Kalyani Publishers, Ludhiana

**Reference books:**

1. Odum, E.P., Odum, H.T. & Andrews, J. (1971) *Fundamentals of Ecology*. Philadelphia: Saunders.
2. Pepper, I.L., Gerba, C.P. &Brusseau, M.L. (2011). *Environmental and Pollution Science*. Academic Press.
3. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. (2012) *Environment. 8th edition*. John Wiley & Sons.
4. Singh, J.S., Singh, S.P. and Gupta, S.R. (2014) *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
5. Sengupta, R. (2003) Ecology and economics: An approach to sustainable development. OUP.
6. Wilson, E. O. (2006) *The Creation: An appeal to save life on earth*. New York: Norton.
7. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll (2006) *Principles of Conservation Biology*. Sunderland: Sinauer Associates.

## UG- LIFE SKILL COURSE
## PERSONALITY ENHANCEMENT AND LEADERSHIP (PDL)
(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (LS) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam(2 Hrs) |
|---|---|---|---|---|---|---|
| III | Life skill course | Personality enhancement and leadership(PDL) | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes:**

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

- Develop comprehensive understanding of personality
- Know how to assess and enhance one's own personality
- Comprehend leadership qualities and their importance
- Understand how to develop leadership qualities

**Unit – I:** (7 hrs)

Meaning of Personality – Explanations of Human Personality – Psychodynamic Explanations – Social Cognitive Explanation – Big Five traits of Personality

**Unit – II:** (8 hrs)

Assessment of Personality - Projective& Self Report Techniques - Building Self-Confidence – Enhancing Personality Skills

**Unit – III:** (10 hrs)

Leadership Characteristics – Types of Leaders – Importance of Leadership – Leadership Skills – Building and Leading Efficient Teams – Leadership Qualities of Abraham Lincoln, mahatma Gandhi, Prakasam Pantulu, Dr. B. R. Ambedkar & J.R.D.Tata

**Co-curricular Activities Suggested:** (05 hrs)

- Assignments, Group discussions, Quiz etc
- Invited Lecture by a local expert
- Case Studies (ex., on students behavior, local leaders etc.)

**Reference Books:**

1. Girish Batra, Experiments in Leadership, Chennai: Notion Press, 2018
2. Mitesh Khatri, Awaken the Leader in You, Mumbai: Jaico Publishing House, 2013
3. Carnegie Dale, Become an Effective Leader, New Delhi: Amaryllis, 2012
4. Hall, C.S., Lindzey. G. & Campbell, J.B Theories of Personality. John Wiley & Sons,1998

## UG- LIFE SKILL COURSE

## ANALYTICAL SKILLS(AS)

(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (LS) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|
| III | Life skill course | Analytical skills(AS) | 30 | 2 | 2 | 50 Marks |

**Course Objective:** Intended to inculcate quantitative analytical skills and reasoning as an inherent ability in students.

**Course Outcomes:**

After successful completion of this course, the student will be able to;

- Understand the basic concepts of arithmetic ability, quantitative ability, logical reasoning, business computations and data interpretation and obtain the associated skills.
- Acquire competency in the use of verbal reasoning.
- Apply the skills and competencies acquired in the related areas
- Solve problems pertaining to quantitative ability, logical reasoning and verbal ability inside and outside the campus.

**UNIT – 1:** (10 Hrs)

**Arithmetic ability:** Algebraic operations BODMAS, Fractions, Divisibility rules, LCM & GCD(HCF).

**Verbal Reasoning:** Number Series, Coding & Decoding, Blood relationship, Clocks, Calendars.

**UNIT – 2:** (10 Hrs)

**Quantitative aptitude:** Averages, Ratio and proportion, Problems on ages, Time-distance–speed.

**Business computations:** Percentages, Profit & loss, Partnership, simple compound interest.

**UNIT – 3:** (07 Hrs)

**Data Interpretation:** Tabulation, Bar Graphs, Pie Charts, line Graphs. Venn diagrams.

**Recommended Co-Curricular Activities** (03 Hrs)

Surprise tests / Viva-Voice / Problem solving/Group discussion.

**Text Book:**

Quantitative Aptitude for Competitive Examination by R.S. Agrawal, S.Chand Publications.

**Reference Books:**

1. Analytical skills by Showick Thorpe, published by S Chand And Company Limited, Ramnagar, New Delhi-110055.
2. Quantitative Aptitude and Reasoning by R V Praveen, PHI publishers.
3. Quantitative Aptitude for Competitive Examination by Abhijit Guha, Tata Mc Graw Hill Publications.

# UG- SKILL DEVELOPMENT COURSE
## DISASTER MANAGEMENT
(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|
| III | Skill Development Course | Disaster Management | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes:**
After successful completion of the course, the students are able to;

- Understand the nature, cause and effects of disasters
- Comprehend the importance of Disaster Management and the need of awareness
- Acquire knowledge on disaster preparedness, recovery remedial measures and personal precautions
- Volunteer in pre and post disaster management service activities

**UNIT-I:** **(06 hrs)**
Introduction of Disaster - Different types of disasters- Natural- (flood, cyclone, earthquake, famine and pandemic) - Accidental- (Fire, Blasting, Chemical leakage, Rail, Aviation, Road boat tragedies and nuclear pollution) - Disaster Management Act 2005

**UNIT-II:** **(09hrs)**
Causes and immediate effects of Disasters - Preparedness of disasters –Precautions – Dissemination of information - Nature and concepts - Role of National Disaster Management Authority and Role of Government and non governmental organizations in protecting human livestock and natural resources.- Use of technology -Role of Citizens and Youth in the prevention.

**UNIT-III:** **(09 hrs)**
Post disaster effects - short term - Procedures for Rehabilitation and Recovery - Role of volunteers and Safety Precautions - Long term remedial and preventive measures – Collection, filing and storage of information - Case studies

**Suggested co curriculum Activities:** **(06 hrs)**

1. Invite lectures by local experts
2. Training on preparedness, post disaster services
3. Analysis of Case studies
4. Visit to a disaster management office and facility
5. Assignments, Group discussion, quiz etc.

**Reference books:**

1. Jagbirsingh - Disaster Management Future challenges and opportunities- - K.W.Publishers
2. GOI - UNDP Disaster Management Guidelines
3. J.P.Singhal - Disaster Management - Laxmi Publications
4. www. ndma. gov.in
5. Wikipedia and other websites on Disaster management.

## UG- SKILL DEVELOPMENT COURSE

## ONLINE BUSINESS

(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|
| III | Skill Development Course | Online Business | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes**:

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

- Understand the online business and its advantages and disadvantages
- Recognize new channels of marketing, their scope and steps involved
- Analyze the procurement, payment process, security and shipping in online business
- Create new marketing tools for online business
- Define search engine, payment gateways and SEO techniques.

**Unit-I**: **(06 Hrs)**

Introduction to Online-business-Definition-Characteristics-Advantages of Online Business-Challenges-Differences between off-line business, e-commerce and Online Business.

**Unit-II**: **(10 Hrs)**

Online-business Strategies-Strategic Planning Process- Procurement -Logistics & Supply Chain Management- Customer Relationship management.

**Unit-III**: **(10 Hrs)**

Designing Online Business Website – Policies - Security & Legal Issues - Online Advertisements - Payment Gateways - Case Study

**Co-curricular Activities Suggested:** **(4 hrs)**

1. Assignments, Group discussion, Quiz etc.
2. Short practical training in computer lab
3. Identifying online business firms through internet
4. Invited Lectures by e-commerce operators
5. Working with Google and HTML advertisements.
6. Visit to a local online business firm.

**Reference books**:

1. David Whiteley, "E-Commerce", Tata McGraw Hill, 2000.
2. E Business by Jonathan Reynolds from Oxford University Press.
3. Soka, From EDI to Electronic Commerce, McGraw Hill.
4. Websites on Online business.

# UG- SKILL DEVELOPMENT COURSE

## POULTRY FARMING

(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|
| III | Skill Development Course | Poultry Farming | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes**: By successful completion of the course, students will be able to;

- Understand the field level structure and functioning of insurance sector and it's role in protecting the risks
- Comprehend pertaining skills and their application for promoting insurance coverage
- Prepare better for the Insurance Agent examination conducted by IRDA
- Plan 'promoting insurance coverage practice' as one of the career options.

**Unit I (Introduction to Poultry Farming):** **(10Hrs)**

1.1 General introduction to poultry farming -Definition of Poultry; Past and present scenario of poultry industry in India.

1.2 Principles of poultry housing. Poultry houses. Systems of poultry farming.

1.3 Management of chicks, growers and layers. Management of Broilers.

1.4 Preparation of project report for banking and insurance

**Unit II (Feed and Livestock Health Management):** **(10 Hrs):**

2.1 Poultry feed management – Principles of feeding. Nutrient requirements for different stages of layers and broilers. Feed formulation and Methods of feeding.

2.2 Poultry diseases – viral, bacterial, fungal and parasitic(two each); symptoms, control and management; Vaccination programme.

**Unit III (Harvesting of Eggs and Sanitation):** **(10 Hrs)**

3.1 Selection, care and handling of hatching eggs. Egg testing. Methods of hatching.

3.2 Brooding and rearing. Sexing of chicks.

3.3 Farm and Water Hygiene, Recycling of poultry waste.

**Co-curricular Activities Suggested:** **(4 hrs)**

1. Group discussion& SWOT analysis
2. Visit to a poultry farm
3. Invited Lectures by Concerned officers of government or private farms
4. Cheap and Healthy Feed preparation by students based on government standards
5. Market study and Survey (Monitoring of daily price hike in poultry market and analysis)
6. Online Swayam Moocs course on poultry farming (see reference 9 below)

**Reference books**:

1. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. 2. Jull A. Morley, 2007. Successful Poultry Management. 2nd Edition. Biotech Books, New Delhi"
3. Hurd M. Louis, 2003. Modern Poultry Farming. 1st Edition. International Book Distributing Company, Lucknow.
4. Life and General Insurance Management
5. Financial services, Tata McGraw hill
6. http://www.asci-india.com/BooksPDF/Small%20Poultry%20Farmer.pdf
7. https://nsdcindia.org/sites/default/files/MC_AGR-Q4306_Small-poultry-farmer-.pdf
8. http://ecoursesonline.iasri.res.in/course/view.php?id=335
9. https://swayam.gov.in/nd2_nou19_ag09/preview

## UG- SKILL DEVELOPMENT COURSE

## FINANCIAL MARKETS

(w.e.f. 2020-2021 A.Y.)

| Semester | Course Code (SD) | Course Title | Hrs/Sem | Hrs/wk | Credits | Sem End Exam (2 Hrs) |
|---|---|---|---|---|---|---|
| III | Skill Development Course | Financial Markets | 30 | 2 | 2 | 50 Marks |

**Learning Outcomes:**

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

- Acquire knowledge of financial terms
- Know the concepts relating to and markets and different avenues of investment
- Understand the career skills related to Stock Exchanges
- Comprehend the personal financial planning and money market skills

**UNIT-I:** **(06hrs)**

Indian Financial System- its components - Financial markets and institutions

**UNIT-II:** **(10hrs)**

Capital Market - its function - organizations - elements - (shares, debentures, bonds, mutual funds) debt market - Equity market (SEBI) and secondary market (NSE)

**UNIT-III:** **(10hrs)**

Money market - Organized - Unorganized - Sub market (call money, commercial bills, Treasury bill, Certificate of Deposit, Commercial papers)

**Co-curricular activities:** **(04 hrs)**

1. Collection and study of pamphlets, application forms etc.
2. Invited lectures on the field topics by local experts
3. Introducing Online classes from NSE
4. Field visit to mutual fund offices/share brokers
5. Observation, study and analysis of selected companies share prices
6. Assignments, Group discussion, quiz etc.

**Reference books:**

1.T.R. Jain R.L.Sarma - Indian Financial System- VK Global publisher
2. Jithendra Gala - Guide to Indian Stock markets Buzzing Stock publishing house
3. Saha Siddhartha- Indian financial System- and Markets - McGraw hill
4. Websites on Indian Financial markets.

| B. Sc | Semester: III | Credits: 4 |
|---|---|---|
| Course: 3 | INTRODUCTION TO 3D | Hrs/Wk: 4 |

**Aim and objectives of Course (Title of the course/paper): INTRODUCTIONTO 3D**

- Understand the virtual 3D space and how to build objects
- Create objects using primitive shapes and sub patch geometry
- Analyze the importance of file backup and management(projects setup)
- Evaluate the projects and assignments developed/prepared by the students

**Learning outcomes of Course (in consonance with the Bloom's Taxonomy):**

- Use these tools to build complex objects then learn the basic 3D rendering tools and technique including camera settings. Expose to all relevant aspects of CG creating with 3DSoft wares.

**UNIT I:**

Introduction to the interface of Maya, Menu set, Main Menu Bar, Panel Menu, The Channel Box and Layer Editor, Shelf, Hotkeys, Viewport, Attribute Editor, Hot Box, Setting and Preferences, New, Set Project, About Polygons, Creating Polygon primitives, Cameras, Edit Selections: Selection, Move, Scale, Rotate, Lasso tools - Creating New Shelf, Duplicating objects, Pivot points, Snapping, Outline.

**UNIT II:**

NURBS, CV, EP, Bezier, Pencil Curve tools. Props Modeling - Modeling a high poly model, Mesh Conversion: Polygon to Nurbs, Nurbs to polygon, Highpoly, Low Poly, viewport references, Model using Reference images, basic posture, Difference between hi- poly & low-poly characters.

**UNIT III:**

Introduction to basic material types & Procedurals. Study of concepts: Opacity, Transparency, Specularity and color, Working with Transparency, Reflection & Refraction, Bump & Displacement Maps. Introduction to unwrapping, Unwrapping the maps for various 3d characters. Working with 2D Textures and 3D, Texture, Introduction to the mapping and Normal Maps, Shadow maps, Raytraced shadows.

**UNIT IV:**

Lighting, Working with Maya Lights 1-Point, Direct, Spot, Working with Maya Lights 2-Ambient, Area and Volume, Direct Illumination-Creating and Illuminating a Stage Show, Three Point Lighting and Exterior Lighting, Cast shadows, decay rate, Previewing lighting and shadows creating depth map Shadow, creating ray-traced

**UNIT V:**

Concept of a lighting system and shadows, Creating area light shadows, setting area light visibility, Creating soft shadows with spotlights, Indirect lighting: Setting illumination for interiors, Tuning global illumination rendering an AVI, Rendering an image sequence. Render layers: introduction, creating, Applying to render layer presets, setting overrides, creating render layer composites, Render Passes: Introduction, compare render passes and render layers, Render quality: anti-aliasing, setting color profiles, diagnosing ray tracing, adjust motion blur.

**TEXT BOOKS:**

1. Digital Modeling Book by William Vaughan
2. Advanced Maya Texturing and Lighting Book by Lee Lanier

**REFERENCES:**

1. 3D Automotive Modeling: An Insider's Guide to 3D Car - Book by Andrew Gahan
2. Character Development in Blender 2.5 Book by Jonathan Williamson
3. 3D Modeling and Printing with Tinkercad: Create and Print - Book by James FloydKelly
4. Beginning Blender: Open Source 3D Modeling, Animation, - Book by Lance Flavell
5. Integrating 3D Modeling, Photogrammetry - Book by David Halbstein and Shaun Foster

**CO-CURRICULAR ACTIVITIES:**

- Presentation on Modeling, Texturing Rendering, and popular workflow
- Demonstrate or Exhibit(museum) developed projects
- Group discussion on 2D, 2.5D & 3D
- Study tour or Visit to production house to get knowledge on the 3D pipeline
- Exhibit on the external and internal models with a team project

**ASSESSMENT METOHD:**

- Written assignment
- Self-directed study with peers and tutors
- Evidence of process and experimentation in response of animation

| B. Sc | Semester: III | Credits: 1 |
|---|---|---|
| Course: 3(L) | Introduction to 3D Lab | Hrs/Wk: 2 |

**Details of Lab syllabus : Introduction to 3D Lab**

1. Create any Model some objects such as chairs, tables, fruits, utensils
2. Create any Model instruments, tools
3. Create any Model of Cars or Bike,
4. Create any model of the male or female character.
5. Create any Model of any animal.
6. Create any Model of any birds, fishes, and worms.
7. Apply basic material and shader types & Procedurals textures.
8. Unwrap the models of objects and characters using various projection maps.
9. Apply texture on various objects and characters.
10. Create a natural outdoor or indoor scene.
11. Create Opacity, Smoothness, Secularity, and color maps, Transparency, Reflection
12. Bump & Displacement Maps
13. Render a frame and video of indoor and outdoor scenes.
14. Render a video of indoor scenes.
15. Render a photorealistic output of an interior scene.
16. Advance lighting using mental ray render.
17. Animate day and night scene of a street with the help of lighting.

| B. Sc | Semester: III | Credits: 4 |
|---|---|---|
| Course: 3 | Compositing – I | Hrs/Wk: 4 |

**Learning Outcomes:**

- Analyze and awareness of computer graphics software
- Understand and Recognize the different techniques in the VFX
- Create a drawing using motion graphics techniques
- Evaluate the own assignment

**Learning Outcomes of course:**

**Course Objectives:** Understand and apply the basic principles, techniques for generating and interacting with simple graphical objects on a display screen

**UNIT I:**

**Introduction** to layer-based software – Workspace and panels – Timeline panel – Working with composition settings – Importing and interpreting video and audio – Frame rate – Pixel aspect ratio and frame aspect ratio – Preparing and importing – Layers and properties – Selecting and arranging layers – Null object layers – 3D layer

**UNIT II:**

Cameras – Lights – Points of interest – Animation and keyframes - Keyframe interpolation – Controlling speed – Animating with puppet tools – Time stretching and time remapping – Paint tools: Brush, Clone Stamp, and Eraser – Shapes and Mask

**UNIT III:**

Creating Text – Editing text layers – Animating text - Alpha channels – Masks – Mattes – Keying – Roto Brush - Refine matte – Motion graphics – Blur – Sharpen – Channel effects

**UNIT IV:**

Color Correction effects – Time remapping – 3D Camera tracking – Transparency – Compositing - Effects – 4-Color gradient effects – fill effects – Fractal effect – Ramp effects – paint bucket effects – Lens flare effect – Vegas effects – write-on effect – Drop shadow effects – Shatter effects – cc effects

**UNIT V:**

Rig removal - Morphing - XMP metadata – Expression basics – Transition – Compositions – Tracking and stabilizing – Audio effects – Audio transition – Rendering and exporting – Exporting still images – Exporting Image sequences

**REFERENCE BOOKS:**

1. The Art and Science of Digital Compositing Book by Ron Brinkmann
2. Compositing Visual Effects: Essentials for the Aspiring Artist Book by Steve Wright
3. Digital Compositing in Depth! Book by Doug Kelly
4. Adobe After Effects CS6 Classroom in a Book by Adobe Creative Team (Author)

**ACTIVITIES:**

- Workshop/Seminar on motion graphics
- Work on the given assignments
- The individual shooting of your original footage for the demo reel
- Visit the Chroma studio to shoot green/blue screen footage
- RVJ

| B.Sc | Semester: III | Credits: 1 |
|---|---|---|
| Course: 3 | Compositing Lab | Hrs/Wk: 2 |

**Details of the Lab: COMPOSITING – I LAB**

1. Rotoscopy
2. Keying (Green/Blue screen shooting and compositing
3. Color Correction
4. Tracking and Stabilizing
5. Day to Night convert
6. Wire or Rig Removals
7. Applying various effects
8. Motion poster design
9. Title animation
10. Info-graphic and Motion graphic using with the effects

| B Sc | Semester: III | Credits: 4 |
|---|---|---|
| Course: 3 | DATABASE MANAGEMENTSYSTEM | Hrs/Wk: 4 |

**Aim and objectives of Course:**

- The objective of the course is to introduce the design and development ofdatabases with special emphasis on relational databases.

**Learning outcomes of Course:** Upon successful completion of the course, a student will be able to:

- Gain knowledge of Database and DBMS.
- Understand the fundamental concepts of DBMS with special emphasis onrelational data model.
- Demonstrate an understanding of normalization theory and apply suchknowledge to the normalization of a database
- Model data base using ER Diagrams and design database schemas based on themodel.
- Create a small database using SQL.
- Store, Retrieve data in database.

Detailed Syllabus: (Five units with each unit having 12 hours of class work)

**UNIT I:**

**Overview of Database Management System:** Introduction to data, information, database, database management systems, file-based system, Drawbacks of file-Based System, database approach, Classification of Database Management Systems, advantages of database approach, Various Data Models, Components of Database Management System, three schema architecture of data base, costs and risks of database approach.

**UNIT II:**

**Entity-Relationship Model:** Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity-relationship model (EER model), generalization and specialization, IS A relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, advantages of ER modeling.

**UNIT III:**

**Relational Model:** Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra, relational calculus, tuple relational calculus, domain relational Calculus (DRC), Functional dependencies and normal forms upto 3rd normal form.

**UNIT IV:**

**Structured Query Language:** Introduction, History of SQL Standard, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Join Operation, Set Operations, View, Sub Query.

**UNIT V**

**PL/SQL**: Introduction, Shortcomings of SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control, Procedure, Function, Database Triggers, Types of Triggers.

**TEXT BOOKS:**

1. Database System Concepts by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill
2. Database Management Systems by Raghu Ramakrishnan, McGrawhill

**REFERENCES:**

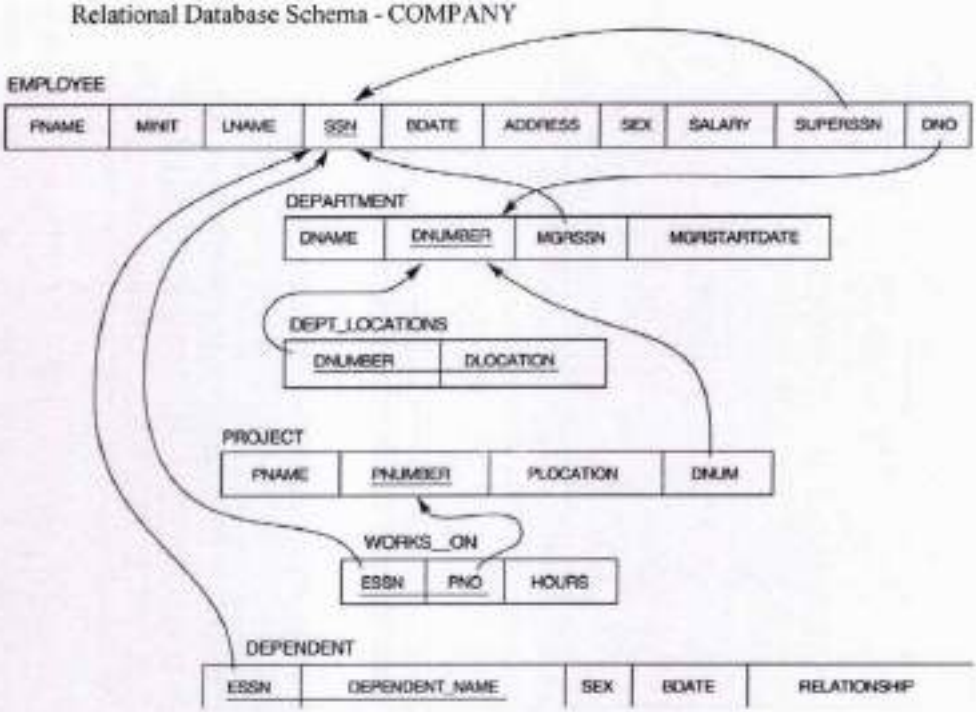
1. Principles of Database Systems by J. D. Ullman
2. Fundamentals of Database Systems by R. Elmasri and S. Navathe
3. SQL: The Ultimate Beginners Guide by Steve Tale.

| B Sc | Semester: III | Credits: 1 |
|---|---|---|
| Course: 3(L) | DATABASE MANAGEMENT SYSTEM LAB | Hrs/Wk: 2 |

**Details of Lab Syllabus: DATABASE MANAGEMENT SYSTEM LAB**

1. Draw ER diagram for hospital administration
2. Creation of college database and establish relationships between tables
3. Relational database schema of a company is given in the following figure.

Relational Database Schema - COMPANY




**Questions to be performed on above schema**

1. Create above tables with relevant ***Primary Key, Foreign Key and other constraints***
2. Populate the tables with data
3. Display all the details of all employees working in the company.
4. Display ***ssn, lname, fname, address*** of employees who work in department no 7.
5. Retrieve the ***Birthdate and Address*** of the employee whose name is 'Franklin T.Wong'
6. Retrieve the name and salary of every employee.
7. Retrieve all distinct salary values
8. Retrieve all employee names whose address is in 'Bellaire'
9. Retrieve all employees who were born during the 1950s
10. Retrieve all employees in department 5 whose salary is between 50,000 and60,000 (inclusive)

*11.* Retrieve the names of all employees who do not have supervisors

*12.* Retrieve SSN and department name for all employees

*13.* Retrieve the name and address of all employees who work for the 'Research'department

*14.* For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birth date.

*15.* For each employee, retrieve the employee's name, and the name of his or her immediate supervisor.

*16.* Retrieve all combinations of Employee Name and Department Name

*17.* Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan' either as a worker or as a manager of the department that controls the project.

*18.* Increase the salary of all employees working on the 'ProductX' project by 15%. Retrieve employee name and increased salary of these employees.

*19.* Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name.

*20.* Select the names of employees whose salary does not match with salary of any employee in department.

*21.* Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford.

*22.* Find the sum of the salaries of all employees, the maximum salary, the minimum salary, and the average salary. Display with proper headings

*23.* Find the sum of the salaries and number of employees of all employees of the 'Marketing' department, as well as the maximum salary, the minimum salary, and the average salary in this department.

*24.* Select the names of employees whose salary is greater than the average salary of all employees in department 10.

*25.* Delete all dependents of employee whose ***ssn is '123456789'***.

*26.* Perform a query using alter command to drop/add field and a constraint in Employeetable.

RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from otherswork and shall encourage self/independent and group learning)

**A. Measurable**

1. Assignments (in writing and doing forms on the aspects of syllabuscontent and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individualactivity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real- time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity

**B. General**

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Problem-solving exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports like "Creating Text Editor in C".
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work.

| B. Sc | Semester: IV | Credits: 4 |
|---|---|---|
| Course: 4 | WEB TECHNOLOGIES | Hrs/Wk: 4 |

**Aim and objectives of Course (Title of the course/paper): WEB TECHNOLOGIES**

- Understand the web softwares to build objects
- Apply the knowledge to create web pages and web banners
- Analyze the importance of file backup and management(setup forms)
- Evaluate the projects and assignments developed/prepared by the students

**Learning outcomes of Course (in consonance with the Bloom's Taxonomy):**

- Define the terms and principles of web design and development. Get knowledge on theprogramming and scripting languages to develop web

**UNIT I:**

Page Setup, Designing Web Layout, Creating a Header, Create a Menu Bar, Search options, Importing Images, Aligning the page, Slice Tool Options, File Formats, Save for Web, Create a Animate Web Banner, Web Template using Flash, Publishing for Web.

**UNIT II:**

**Dream Weaver:** Interface, Defining a Site, Properties Panel, Creating a Page with Text, Creating Tables, Importing Images, .swf files, videos, Creating Hyper links, Frames & Frame Sets, i frames, Forms, Rollovers, Div Tags, Cascading Style Sheet, Types of CSS: Inline, Internal or Embedded, and External CSS. Publishing the Web Site

**UNIT III:**

Introduction HTML – Structure of HTML program – Commonly used HTML tags – Text Formatting – Text Styles – Other Text Effects – Lists – Tables – Frames –Adding Graphics to HTML Document – Cascading Style Sheets – Font Attributes – Color and Background Attributes – Text Attributes – Border Attributes – Margin Attributes – List Attributes.

**UNIT IV:**

**Web Types:** Static and Responsive Web Pages, Communicating on the Internet Web Services, Domain Name, Overview of TCP/IP and its Services –Web Servers – Web Clients/Browsers.

**UNIT V:**

**(Web Hosting)** Introduction to Protocols – About FTP – Web Hosting – Hosting through DOS-Hosting through Character Interface & Graphics Interface.

**TEXT BOOKS**:

1. Web Design Portfolio 2020 - Adobe Dreamweaver & Photoshop
2. Adobe Dreamweaver CC Basics of Web Design & Development - MARK MYERS

**REFERENCES:**

1. DAVID, RHONDA – Web Design with HTML/Flash/Java Script Bible.
2. RON WODASKI – Web Graphics Bible.
3. JIM MAIVALD - Adobe Dreamweaver Classroom in a Book

| B. Sc | Semester: IV | Credits: 1 |
|---|---|---|
| Course: 4(L) | WEB PUBLISHING Lab | Hrs/Wk: 2 |

**Details of Lab syllabus: WEB PUBLISHING LABPHOTOSHOP & FLASH**

1. Designing Web Layouts
2. Designing Web Pages
3. Publishing Flash Intros with Links
4. Publishing the Web site
5. HTML Page Layouts
6. HTML Page Development
7. Adding Graphics to HTML Document

**DREAMWEAVER**

1. Creating Web Pages and aligning through Dreamweaver
2. Creating web page college/institution
3. Any Brand of Product/Services web page
4. Fashion Design/Creative studio web page
5. Create web page software company
6. Forms web page
7. Flash web page
8. Incorporating Audio & Video Files
9. Database Linking
10. Web Hosting

**CO-CURRICULAR ACTIVITIES:**

- Conducting seminar/workshop on web design and development
- Conducting quiz on web
- Competition on web page creation

**ASSESSMENT METOHD:**

- Domain specific projects assessment
- Maintain web pages for temples
- Reflective Visual Journal for the works

| B. Sc | Semester: IV | Credits: 4 |
|---|---|---|
| Course: 5 | ADVANCED 3D | Hrs/Wk: 4 |

**Aim and objectives of Course (Title of the course/paper): ADVANCED 3D**

- Understand the origins of 3D Animation practice
- Learn fundamental principles of 3D animation
- Analyze the development in the 3D production
- Create the Artifacts appropriate for each stage of the pipeline

**Learning outcomes of Course (in consonance with the Bloom's Taxonomy):**

- Hands-on experience on the processes, tools, techniques, and stages of production inherent in the 3D industry

**Detailed Syllabus: (Five units with each unit having 12 hours of class work)**

**UNIT I:**

Introduction to bone system/Joints and IK handles - Creating bone system and maintaining naming conventions - Skinning types - Import and export of skin weights - IK and FK basics - IK and FK switch - Introduction to Deformers - Introduction to constrains and implementation to rig - Maintaining proper hierarchy - Grouping and creating controls - Rigging the characters - Use of deformers in the rigging process.

**UNIT II:**

Brief about animation principles - Animation tools in 3D - Applying classical 2D animation techniques - Stretch squash for the 3D character - Creating the illusion of weight - Overview of Maya - Playback controls and Exploring Maya animation preferences - Details about graph editor - Bouncing Ball Exercise - Body language - Animating object along a motion path - Utilizing the tracks-editor to blend animation clips - Controlling attributes with set driven keys - Animating with constraints.

**UNIT III:**

Keyframing – Graph editor – Set the beginning and ending keys – Keys to make a ball bounce – Speed up the animation – Tune the animation curve – Set driven key – Playback range and create the objects – Examine the driven key – Path animation – Raise the train above the path – Trax Editor – Character set – Motion with a new clip

**UNIT IV:**

Previewing animations in real-time with play blasts, Introduction to scene animation and keyframing, dope sheet. Animal walk& run cycles, snakes, and birds. Biped Character walk cycles, Biped Character run cycles, pushing and pulling objects. Facialanimation and lip-sync. Nonlinear Animation with Trax editor. Working with character sets and clips. character interactions.

**UNIT V:**

Rendering Overview, What is rendering, How Maya renders Shader Networks, Shading Groups, Materials, Lights, Maya architecture, Nodes and Attributes, Hyper graph, IPR (Interactive Photorealistic Rendering), V-Ray techniques, Mental ray Techniques.

**TEXT BOOKS:**

1. Mastering Autodesk Maya 2016 – Wiley

**REFERENCES:**

1. Character Emotion in 2D and 3D Animation Book by Les Pardew
2. Introducing Character Animation with Blender Book by Tony Mullen
3. Mastering 3D Animation Book by Peter Ratner
4. The Art of 3D Computer Animation and Effects Book by Isaac Victor Kerlow
5. 3D Animation Essentials Book by Andy Beane.

6. Animation Methods - Rigging Made Easy: Rig Your First 3D ...
7. 3D game animation for dummies Book by Kelly Murdock

**CO-CURRICULAR ACTIVITIES:**

- Follow the given assignments
- Study tour for getting professional practice in industry-standard 3D Softwares
- Students will give seminar on Oral presentation of the animation
- Conducting quiz program on the 3D
- Group discussions on 3D Pipeline

**ASSESSMENT METHOD:**

- Domain specific quiz
- Practical production work on 3D portfolio
- Oral presentations on outputs

| B. Sc | Semester: IV | Credits: 1 |
|---|---|---|
| Course: 5(L) | Advanced 3D Lab | Hrs/Wk: 2 |

**Details of Lab syllabus : Advanced 3D Lab**

1. Create rigs for any model
2. Make an animation of a character walking in the street he picks up some object andthrows it.
3. Make various expressions of models and use them for blend shapes.
4. Make different kinds of biped walk (Happy, Sad, Attitude and Tiptop)
5. Mechanical rig and Vehicle rig
6. Rigging various props
7. Create run, jump, skid animations. Stair up and a stair down
8. Make animations of coin drop, ball bounce, path animation
9. Render a frame and video of indoor and outdoor scenes
10. Render a photorealistic output of an interior scene
11. Render a natural scene show different time by v-ray lighting
12. Advance lighting using mental ray render
13. Animate day and night scene of a street with the help of lighting
14. Create a hair system on a male or female model
15. Apply fur on a dog or cat model
16. Create a scene with a waterfall or fountain
17. Apply active/passive soft and rigid bodies
18. Create a scene of campfire followed by rainfall/snowfall
19. Create an animation of a non-living object.

| B.Sc | Semester: IV | Credits: 4 |
|---|---|---|
| Course: 4 | Digital Film Editing | Hrs/Wk: 4 |

**Learning Outcomes:**

- Understand video formats and principles
- Learn fundamental of linear and non-linear editing
- Analyze on high quality motion graphics and editing techniques
- Able to do professional style color correction

**Learning Outcomes of course:**

**Course Objectives:** Explore the theory and practice of various editing techniques and styles in order to gain a better understanding on stories narration and set as a sequence (or) order. Learn advanced editing techniques with an in-depth examination of editing softwares.

**UNIT I:**

Introduction to digital editing – Principles of Editing – Liner & Nonlinear – Online & Offline editing – Film formats – Broad Brand formats – Scene – Shot – Frame – Frame Aspect ratio – Live DV Capture – Analog Editing Equipment – Red Giant - Introduction to editing software's.

**UNIT II:**

Workspace and workflow – Project setup – Importing footage into software – Supported file formats – Importing still images – Importing digital audio – Working with timecode – Digitizing analog video – Editing sequences – Graphics – Titles – Motiongraphics – Monitoring assets – Exporting media

**UNIT III:**

Effects – Transitions – Effects presets – Masking and tracking – Stabilize effects – Adjustment layer – Three way color corrector – audio effects – audio transitions – Rolling shutter – Interlacing field – Animation – Keyframes – Moving and copying keyframes – Editing audio – Audio track mixer – Editing audio timeline – Recording audio – Advanced mixing

**UNIT IV:**

Editing time and pace – Re edit the exiting film – Effects – Applying, Removing– Organizing effects - Color correction and adjustment – Eliminate flicker – Motion –Position – Scale – Transition overview – Compositing – Alpha channels.

**UNIT V:**

Audio editing – Timeline panel – Recording audio – Mixes the audio – Panning – Balancing – Multitrack – Mixing multitrack sound – EQ controls – Audio effects – Audio truncation - Recording surround sound – 5.1 sound – save and export audio files – XMP metadata – Exporting DVD or Blue-ray Disc – Exporting web and mobile devices – Exporting videotape

**TEXT BOOKS:**

1. Adobe Premiere Pro 2 Bible, w/dvd, by Adele Droblas, Seth Greenberg,Wiley
2. Adobe Audition CS6 Classroom in a Book, by Adobe Creative Team

**REFERENCES:**

1. Premiere Pro CS5 in Simple Steps, Kogent Learning Solutions Inc., Simple Steps
2. After Effects CS6 in Simple Steps, Kogent Learning Solutions Inc. Dreamtech
3. Exploring Adobe Premium Pro CS6, Prof. Sham Tickoo, Sakshi Malhotra, Dreamtech
4. After Effects CS5 in Simple Steps, Kogent Learning Solutions Inc, Simple Steps

**CO-CURRICULAR ACTIVITIES:**

- Conducting competition on short film
- Seminar on Advanced Editing techniques
- Field studies in the film/television industry

**ASSESSMENT METHOD:**

- Maintain a Blog for outputs
- Individual and group projects feedback from the target audience
- Viva on outputs

| B.Sc | Semester: IV | Credits: 1 |
|---|---|---|
| Course: 4 | DIGITAL FILM EDITING LAB | Hrs/Wk: 2 |

**Details of the Lab: DIGITAL FILM EDITING LAB**

1. Title Graphics
2. Video – Audio synchronization
3. Non-linear editing and color correction
4. Remix video and audio
5. Music video
6. 30 Second Commercial AD
7. 30 Second Message video on Public Server Announcement (PSA)
8. 1 minute Trailer (any movie)
9. Edit a Documentary (or) short film for your own script
10. Edit Action scene on exiting movie

| B.Sc | Semester: IV | Credits: 4 |
|---|---|---|
| Course: 5 | Compositing - II | Hrs/Wk: 4 |

**Learning Outcomes:**

- Analyze various techniques for realistic effects
- Create and Recognize the different techniques in the VFX
- Understand the shooting techniques in visual effects sequences
- Apply the filters and effects to get photorealistic

**Course Objectives:** fundamentals of film making with Chroma shoot to create photorealisticeffects and different techniques in VFX

**UNIT I:**

Introduction to the interface – Introduction to the flow editor – Working with polylines – Working with effect masks – working with motion paths – Working with grid warp deformations – particles – 3D interface – working with auxiliary channels – Stereoscopic and optical flow - Previews and Final renders.

**UNIT II:**

Induction to node software – Understanding the workflow – Toolbar – Menu bar – Properties panels – Project Settings - Read & Write nodes – Node software file name variables - File formats - Color space in node software - Color space LUT & viewer LUT - Reformat Animation Parameters – Curve Editor – Keying – Working with paint and rotoscoping – Color and Rotoscoping - 3D integration – Warping and Morphing Images – Tracking – Stabilizing – Image-based keying - Renders.

**UNIT III:**

User interface – Project – Sessions – Using the timeline – Adding note – Curve Editor – Nodes – Roto – Motion Blur – Paint – Clone Brush - Power Matte – Closed shape method – Blue/Green screen keying – zMatte – Pin Based warping – Shape-based warping - Morphing – Inverse Kinematics – Planar Tracker – Point Tracker – Offset Tracking –Modifying Tracking Data – Stereo paint – Rendering

**UNIT IV:**

Planar tracking - the lynchpin to mocha. Fast mask creation, inserts, and even 3D camera tracking are impossible without solid tracking data. Tougher tracks, Stabilization, Skin retouch, Camera Tracking Roto tips & tricks in mocha,3D camera solve, Removing lens flare, Techniques for removal, and background patching.

**UNIT V:**

The user interface, project overview, shot overview,3d perspective, an orthographic view, Useful Keys, Menus, tracking menu, camera menu, Import footage, Tracking Parameters, Color key, Clean Auto Feature Tracks, Survey Data, Camera Parameters, Solver Controls, Lens distortion, Depth Map, Importing footage, Footage format, footage properties, camera parameters, Auto feature tracking, Tracking length graph(Track-L), Tracking Error Graph(Track – E), Editing feature track F- Curves, creating masks, tracking masks, image masks, solving camera motion, constraints, survey data.

**TEXT BOOKS:**

1. Nuke 101: Professional Compositing and Visual Effects Book by Ron Gambar
2. Digital Compositing with Nuke by Lee Lanier (Author)

**REFERENCES:**

1. The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures by Susan Zwerman (Editor), Jeffrey A. Okun (Editor)
2. The Art and Science of Digital Compositing: Techniques for Visual Effects, Animation and Motion Graphics (The Morgan Kaufmann Series in Computer Graphics) by Ron Brinkmann (Author)

**ACTIVITIES:**

- Workshop/Seminar on VFX techniques and projects
- Assignments on compositing
- Study tour for the Outdoor and Indoor shooting to collecting own footage for VFX
- RVJ(Reflective Visual Journal)

**ASSESSMENT METHOD:**

- Maintain a webpage or blog on demo reel
- Industry survey reports
- Viva on Visual Effects

| B.Sc | Semester: IV | Credits: 1 |
|---|---|---|
| Course: 5 | COMPOSITING – II LAB | Hrs/Wk: 2 |

**Details of the Lab:**

1. Working with nodes
2. Working with Chrome Keying
3. Working on Rotoscoping
4. Human Rotoscoping
5. Animal Rotoscoping
6. Object adding or removing with the Paint
7. Day to night converting + Color Correction
8. 2D Compositing in live-action short
9. 3D Compositing in live-action short
10. Working with Hair Rotoscoping
11. Tracking and Stabilizing
12. Crowd duplication with particles

| B Sc | Semester: IV | Credits: 4 |
|---|---|---|
| Course: 4 | OBJECT ORIENTED PROGRAMMING USING JAVA | Hrs/Wk: 4 |

**Aim and objectives of Course:**

- To introduce the fundamental concepts of Object-Oriented programming and todesign & implement object oriented programming concepts in Java.

**Learning outcomes of Course:**

- Understand the benefits of a well-structured program
- Understand different computer programming paradigms
- Understand underlying principles of Object-Oriented Programming in Java
- Develop problem-solving and programming skills using OOP concepts
- Develop the ability to solve real-world problems through software developmentin high-level programming language like Java

Detailed Syllabus: (Five units with each unit having 12 hours of class work)

**UNIT I:**

**Introduction to Java:** Features of Java, The Java virtual Machine, Parts of Java

**Naming Conventions and Data Types:** Naming Conventions in Java, Data Types in Java, Literals **Operators in Java**: Operators, Priority of Operators. **Control Statements in Java**: if... else Statement, do... while Statement, while Loop, for Loop, switch Statement, break Statement, continue Statement, return Statement. **Input and Output:** Accepting Input from the Keyboard, Reading Input with Java.util.Scanner Class, Displaying Output with System.out.printf(), Displaying Formatted Output with String.format(). **Arrays:** Types of Arrays, Three Dimensional Arrays (3D array), array name. length, Command Line Arguments

**UNIT II:**

**Strings**: Creating Strings, String Class Methods, String Comparison, Immutability of Strings. **Introduction to OOPs**: Problems in Procedure Oriented Approach, Features of Object- Oriented Programming System (OOPS). **Classes and Objects**: Object Creation, Initializing the Instance Variables, Access Specifiers,Constructors.

**Methods in Java:** Method Header or Method Prototype, Method Body, Understanding Methods, Static Methods, Static Block, The keyword 'this', Instance Methods, Passing Primitive Data Types to Methods, Passing Objects to Methods, Passing Arrays to Methods, Recursion, Factory Methods. **Inheritance:** Inheritance, The keyword 'super', The Protected Specifier, Types ofInheritance.

**UNIT III:**

**Polymorphism**: Polymorphism with Variables, Polymorphism using Methods, Polymorphism with Static Methods, Polymorphism with Private Methods, Polymorphism with Final Methods, final Class. **Type Casting**: Types of Data Types, Casting Primitive Data Types, Casting Referenced Data Types, The Object Class. **Abstract Classes**: Abstract Method and Abstract Class.

**Interfaces**: Interface, Multiple Inheritance using Interfaces. **Packages:** Package, Different Types of Packages, The JAR Files, Interfaces in a Package, Creating Sub Package in a Package, Access Specifiers in Java, Creating API Document. **Exception Handling:** Errors in Java Program, Exceptions, throws Clause, throw Clause, Types of Exceptions, Re – throwing an Exception.

**UNIT – IV**

**Streams:** Stream, Creating a File using FileOutputStream, Reading Data from a File uingFileInputStream, Creating a File using FileWriter, Reading a File using FileReader, Zipping and Unzipping Files, Serialization of Objects, Counting Number of Characters in a File, File Copy, File Class

**Threads:** Single Tasking, Multi Tasking, Uses of Threads, Creating a Thread and Running it, Terminating the Thread, Single Tasking Using a Thread, Multi Tasking Using Threads, Multiple Threads Acting on Single Object, Thread Class Methods, Deadlock of Threads, Thread Communication, Thread Priorities, thread Group, Daemon Threads, Applications of Threads, Thread Life Cycle.

**UNIT V:**

**Applets:** Creating an Applet, Uses of Applets, <APPLET> tag, A Simple Applet, An Applet with Swing Components, Animation in Applets, A Simple Game with an Applet, Applet Parameters.

**Java Database Connectivity**: Database Servers, Database Clients, JDBC (Java Database Connectivity), Working with Oracle Database, Working with MySQL Database, Stages in a JDBC Program, Registering the Driver, Connecting to a Database, Preparing SQL Statements, Using jdbc–odbc Bridge Driver to Connect to Oracle Database, Retrieving Data from MySQL Database, Retrieving Data from MS Access Database, Stored Procedures and CallableStatements, Types of Result Sets.

**TEXT BOOKS:**

1. Core Java: An Integrated Approach, Authored by Dr. R. Nageswara Rao &Kogent Learning Solutions Inc.
2. E.Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGraw- HillCompany.

**REFERENCES:**

1. John R. Hubbard, Programming with Java, Second Edition, Schaum's outlineSeries, TMH.
2. Deitel&Deitel. Java TM: How to Program, PHI (2007)

| B Sc | Semester: IV | Credits: 1 |
|---|---|---|
| Course: 4(L) | Object Oriented Programming using Java Lab | Hrs/Wk: 2 |

**Details of Lab Syllabus: Object Oriented Programming using Java Lab**

1. Write a program to read ***Student Name, Reg.No, Marks[5]*** and calculate ***Total,Percentage, Result***. Display all the details of students
2. Write a program to perform the following String Operations
   a. Read a string
   b. Find out whether there is a given substring or not
   c. Compare existing string by another string and display status
   d. Replace existing string character with another character
   e. Count number of works in a string
3. Java program to implements Addition and Multiplication of two N X N matrices.
4. Java program to demonstrate the use of Constructor.
5. Calculate area of the following shapes using method overloading.
   a. Triangle
   b. Rectangle
   c. Circle
   d. Square
6. Implement inheritance between ***Person (Aadhar, Surname, Name, DOB, and Age)*** and ***Student (Admission Number, College, Course, Year)***classes where ReadData(),DisplayData() are overriding methods.
7. Java program for implementing Interfaces
8. Java program on Multiple Inheritance.
9. Java program for to display ***Serial Number from 1 to N*** by creating two Threads
10. Java program to demonstrate the following exception handlings
    e. Divided by Zero
    f. Array Index Out of Bound
    g. File Not Found
    h. Arithmetic Exception
    i. User Defined Exception
11. Create an Applet to display different shapes such as Circle, Oval, Rectangle, Square and Triangle.
12. Write a program to create ***Book (ISBN,Title, Author, Price, Pages, Publisher)***structure and store book details in a file and perform the following operations
    j. Add book details
    k. Search a book details for a given ISBN and display book details, if available
    l. Update a book details using ISBN
    m. Delete book details for a given ISBN and display list of remaining Books

RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from otherswork and shall encourage self/independent and group learning)

**A. Measurable**

1. Assignments (in writing and doing forms on the aspects of syllabuscontent and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individualactivity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real- time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

**B. General**

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Problem-solving exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports like "Creating Text Editor in C".
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work.

| B Sc | Semester: IV | Credits: 4 |
|---|---|---|
| Course: 5 | OPERATING SYSTEMS | Hrs/Wk: 4 |

**Aim and objectives of Course:**

- This course aims to introduce the structure and organization of a file system. It emphasizes various functions of an operating system like memory management, process management, device management, etc.

**Learning outcomes of Course:**

Upon successful completion of the course, a student will be able to:

- Know Computer system resources and the role of operating system in resourcemanagement with algorithms
- Understand Operating System Architectural design and its services.
- Gain knowledge of various types of operating systems including Unix andAndroid.
- Understand various processmanagement concepts including scheduling, synchronization, and deadlocks.
- Have a basic knowledge about multithreading.
- Comprehend different approaches for memory management.
- Understand and identify potential threats to operating systems and the securityfeatures design to guard against them.
- Specify objectives of modern operating systems and describe how operatingsystems have evolved over time.
- Describe the functions of a contemporary operating system

Detailed Syllabus: (Five units with each unit having 12 hours of class work)

**UNIT I:**

What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Multiprogramming Systems, Batch Systems, Time Sharing Systems; Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real time Systems.

**UNIT II:**

Processor and User Modes, Kernels, System Calls and System Programs, System View of the Process and Resources, Process Abstraction, Process Hierarchy, Threads, Threading Issues, Thread Libraries; Process Scheduling, Non-Preemptive and Preemptive Scheduling Algorithms.

**UNIT III:**

**Process Management**: Deadlock, Deadlock Characterization, Necessary andSufficient Conditions for Deadlock, Deadlock Handling Approaches: Deadlock Prevention, Deadlock Avoidance and Deadlock Detection and Recovery. Concurrent and Dependent Processes, Critical Section, Semaphores, Methods for Inter- process Communication; Process Synchronization, Classical Process Synchronization Problems: Producer-Consumer, Reader-Writer.

**UNIT IV:**

**Memory Management**: Physical and Virtual Address Space; MemoryAllocation Strategies– Fixed and -Variable Partitions, Paging, Segmentation, Virtual Memory.

**UNIT V:**

**File and I/O Management, OSsecurity :** Directory Structure, File Operations, File Allocation Methods, Device Management, Pipes, Buffer, Shared Memory, Security Policy Mechanism, Protection, Authentication and Internal Access Authorization Introduction to Android Operating System, Android Development Framework, AndroidApplication Architecture, Android Process Management and File System, SmallApplication Development using Android Development Framework.

**TEXT BOOKS:**

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and GregGagne (7th Edition) Wiley India Edition.
2. Operating Systems: Internals and Design Principles by Stallings (Pearson)

**REFERENCES:**

1. Operating Systems by J. Archer Harris (Author), Jyoti Singh (Author) (TMH)
2. Online Resources for UNIT V

| B Sc | Semester: IV | Credits: 1 |
|---|---|---|
| Course: 5(L) | Operating Systems Lab using C/Java | Hrs/Wk: 2 |

Details of Lab Syllabus: **Operating Systems Lab using C/Java**

1. Write a program to implement Round Robin CPU Scheduling algorithm
2. Simulate SJF CPU Scheduling algorithm
3. Write a program the FCFS CPU Scheduling algorithm
4. Write a program to Priority CPU Scheduling algorithm
5. Simulate Sequential file allocation strategies
6. Simulate Indexed file allocation strategies
7. Simulate Linked file allocation strategies
8. Simulate MVT and MFT memory management techniques
9. Simulate Single level directory File organization techniques
10. Simulate Two level File organization techniques
11. Simulate Hierarchical File organization techniques
12. Write a program for Bankers Algorithm for Dead Lock Avoidance
13. Implement Bankers Algorithm Dead Lock Prevention.
14. Simulate all Page replacement algorithms.
    a) FIFO
    b) LRU
    c) LFU
15. Simulate Paging Techniques of memory management

RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from otherswork and shall encourage self/independent and group learning)

**A. Measurable**

1. Assignments (in writing and doing forms on the aspects of syllabus contentand outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity

**B. General**

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Problem-solving exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports like "Creating Text Editor in C".
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work.

| B. Sc | Semester – V (Skill Enhancement Course- Elective) | Credits:4 |
|---|---|---|
| Course: 6A | 2D Design | Hrs/Wk:4 |

**Learning Outcomes:**

Students at the successful completion of the course will be able to:

1. Understand the need, scope, and concepts in 2D animation
2. Identify various facilities required to set up a character and object animation
3. Comprehend various factors to create 2D objects
4. Learn skills related to choosing and drawing a background and foreground designing

**Syllabus:** ***(Total Hours: 90 including Teaching, Lab, Field Training and unit tests, etc.)***

**UNIT I:**

Introduction to 2D Animation Software, Project Creation, Creating Scenes in software, About Saving, About Server, User Interface, Menus, Toolbars, Workspaces, Documentation

**UNIT II:**

Layers and Columns, Layers, Cloning Layers, About Groups, Drawing, About Brush tool, Brush presets, Creating a pencil, About Shape tools, Stamp Tools, Eraser Tool, Drawing Space, Isometric Perspective

**UNIT III:**

Painting and Colors, Color swatches, Palettes, Painting, Dirt Cleanup, Gradient and texture, Paperless Animation, Rough Animation, Tools, Onionskin, About art layers, Scene Staging, Layer Position, Animation Tools, Multiplane

**UNIT IV:**

Digital Animation, Pegs, Keyframes, Controls, Functions, Velocity, Morphing Animation, Creating Morphing, Hints, Morphing quality, Importing & Scanning, Multi-layers PSD, About FLA, PSD Layouts

**UNIT V:**

Camera Set-up and Animation, Character Rigging, Tig Types, Models, Character Breakdown, Z Nudging, Cut-out Animation, Deformations, Effects, Sound, Rendering & Exporting, Library & Templates

**TEXT & REFERENCES BOOKS:**

1. Harmony20 Advanced - toon boom harmony 20 advanced user guide 2021
2. Harmony17 Premium - Getting Started Guide, 2020
3. *Web resources suggested by the Teacher concerned and the college Librarian including reading material*

**Co-Curricular Activities:**

**a) Mandatory:** (*Training of students by the teacher in field related skills)*

1. Seminar/Workshop on related topics
2. RVJ(Reflective Visual Journal) on the theory and particles
3. Production/ Live related 2D project
4. Industry trip

**b) Suggested Co-Curricular Activities:**

1. Training of students by a related field expert
2. Group discussions, Quiz, Debates, etc
3. Preparation of videos and PPT for the subject related presentations
4. Collection of material on the topics
5. Invited lectures and presentations on related topics

**2D Design Lab**

1. Tracing the Character
2. Bouncing Ball
3. Morphing
4. Camera Animation
5. Lip Sync for given dialogue
6. Add Light and Tone for the environment
7. Create a 2D animation story within 30sec

| B. Sc | Semester – V (Skill Enhancement Course- Elective) | Credits:4 |
|---|---|---|
| Course: 7A | 2D Game | Hrs/Wk:4 |

**Learning Outcomes:**

Students at the successful completion of the course will be able to:

1. Understand the need, scope, and concepts in 2D Game
2. Identify various facilities required to set up a character and object animation
3. Comprehend various factors to create 2D objects
4. Learn skills related to choosing and drawing a background and foreground designing

**Syllabus:** ***(Total Hours: 90 including Teaching, Lab, Field Training and unit tests, etc.)***

**UNIT I:**

Introduction to the 2D game, History of Physical game, History of computer games, Commercial 2D games, Game engines, Future of games

**UNIT II:**

Development of game, Functionality provided by a game engine, Console programming, Game Physics, Collision Detection, and resolution, Deformable bodies

**UNIT III:**

Gaming in harmony, Game asset creation, Game rigging guidelines, Game cutter, Game animation tips, Animating multiple sequences, Separate scenes, Separating using scene markers

**UNIT IV:**

Exporting to unity, Setting anchors and props, Exporting sprite, Exporting Easel JS, Working in Unity, Unity interface, About game objects, Props to anchors in Unity, Working with audio in Unity

**UNIT V:**

Scripting guide, Creating scripts, Script packaged with Harmony, Script Syntax, External script editor, Storing scripts in a custom directory

**REFERENCE &TEXT BOOKS:**

1. Harmony20 Advanced - toon boom harmony 20 advanced user guide 2021
2. Harmony17 Premium - Getting Started Guide, 2020
3. Advanced Game Development with Programmable Graphics Hardware, Alan Watt and Fabio Policarpo, A K Peters.
4. Game Programming Gems 1-6, Mark DeLoura, Charles River Media.
5. AI Game Programming Wisdom 1-3, Steve Rabin, Charles River Media.

Web resources suggested by the Teacher concerned and the college Librarian including reading material

**Co-Curricular Activities:**

1. Seminar/Workshop on related topics
2. RVJ(Reflective Visual Journal) on the theory and particles
3. Production/ Live related Game
4. Industry trip

**Suggested Co-Curricular Activities:**

1. Training of students by a related field expert
2. Group discussions, Quiz, Debates, etc
3. Preparation of videos and PPT for the subject related presentations
4. Collection of material on the topics
5. Invited lectures and presentations on related topics

**2D Game Lab:**

1. 2D Game character design
2. 2D Game assets
3. 2D Game level design
4. Playable game with user interface
5. Upload in the play store

| B. Sc | Semester – V (Skill Enhancement Course-Elective) | Credits:4 |
|---|---|---|
| Course: 6B | 3D iClone | Hrs/Wk:4 |

**Learning Outcomes**

- Students at the successful completion of the course will be able to:
- Understand the need, scope, and concepts in 3D Animation
- Identify various facilities required to set up a 3D character model and animation
- Comprehend various factors to create 3D objects
- Learn skills related to choosing and drawing a background and foreground designing

**Syllabus:** ***(Total Hours: 90 including Teaching, Lab, Field Training and unit tests, etc.)***

**UNIT I:**

Introduction to iClone, Main Menu, Environment, Camera Toolbar, Physics Toolbar, Timeline panel, Scene manager, PDR Environment setup, Time, 2D Background section, Snap to grid, Texture and editor

**UNIT II:**

3D Real-time Viewer, Render options, Drag and Drop, Image and Video, Audio, System Requirements, Video memory usage, Visual Enhancements, Performance Notes, Loading files, Real-time rendering

**Unit III:**

Material and Texture, Lights and Shadows, Opcity, Creating Animation, Removing all animation, Body proportions, Applying Cloth, Show or hide Inner Meshes, RL Head, Crazy talk8, Environmental Settings, Clone Cloth, Gloves and Shoes, Actor.

**UNIT IV:**

Clone Bone, Creating ahead, Creating a Face, Photo enhancement, Facial Features, Full head morph, Motion puppet panel, Exaggeration and Speed, Puppeteeing Principles for Body puppet panel, Multilayer recording, Puppet to Timeline Clip.

**UNIT V:**

IK and FK, Toolbars for morph creator, Physics characters, Rigid Body, Soft Cloth, Dynamic, Kinematic, Creating moto with hinge, Moving and Rotating Spring effect, Rendering.

**REFERENCE & TEXT BOOK:**

1. Web resources suggested by the Teacher concerned and the college Librarian including reading material

**Co-Curricular Activities:**

1. Seminar/Workshop on related topics
2. RVJ(Reflective Visual Journal) on the theory and particles
3. Production/ Live projects
4. Industry trip

5. Online training with industry experts

**Suggested Co-Curricular Activities:**

1. Training of students by a related field expert
2. Group discussions, Quiz, Debates, etc
3. Preparation of videos and PPT for the subject related presentations
4. Collection of material on the topics
5. Invited lectures and presentations on related topics

**3D iClone Lab:**

1. Modeling - Human Character
2. Texturing and Lighting any one Internal / External set
3. 360 degree light setup any character
4. Multi-pass render
5. Rigg the character

| B. Sc | Semester – V (Skill Enhancement Course- Elective) | Credits:4 |
|---|---|---|
| Course: 7B | 3D Blender | Hrs/Wk:4 |

**Learning Outcomes**

Students at the successful completion of the course will be able to:

1. Understand the process and methods of 3D creation and Softwares
2. Identify various facilities required to set up a 3D character model and animation
3. Comprehend various factors to create 3D objects
4. Learn skills related to demonstrating the 3D works

**Syllabus:** ***(Total Hours: 90 including Teaching, Lab, Field Training and unit tests, etc.)***

**UNIT I:**

Introduction to software, The screen setup, the user preferences window, Working with viewports, Moving around in 3D space, window and button control, creating viewports, working with basic meshes, using the main modifier to manipulate meshes, edit mode- mesh editing, the tool shelf, proportional editing, joining/ separating meshes, boolean operations,

**UNIT II:**

Blender Render Engines, The classic rendering engine, The cycles render engine, Tweaking cycles for speed & quality, Materials and Textures, Basic material settings, Basic texture settings, Using images and movies as textures, Displacement mapping, Materials and Textures in cycles,

**UNIT III:**

Setting up a world, Using color, mist and textures, Using an image in the background, Cycles world settings, Lighting and Cameras, Camera settings and options, Using nodes for depth-of-field, Green screen (chroma key), and more, Lighting types and settings, Indirect lighting, Basic setup options, Rendering movies and images, network rendering,

**UNIT IV:**

Lighting and shadows, Reflection (mirror) and refraction (transparency), Animation Basics, Basic key-framing and auto key-framing, Working with the graph editor and dope sheet, Animating mates, lamps and world settings.

**UNIT V:**

Adding 3D text, Blender 3d text settings, Converting to a mesh, NURBS and Meta shape basic, Using NURBS to create lofted shapes, Liquid and droplet effects using meta shapes, Modifiers, Basic mesh modifiers, simulation modifiers

**REFERENCES & TEXT BOOKS:**

1. Blender Basics Classroom Tutorial Book, fifth edition by James Chronister
2. Blender Basics Classroom Tutorial book, fourth edition by James Chronister

*Web resources suggested by the Teacher concerned and the college Librarian including reading material*

**Co-Curricular Activities:**

1. Seminar/Workshop on related topics
2. RVJ(Reflective Visual Journal) on the theory and particles
3. Production/ Live projects
4. Industry trip
5. Online training with industry experts

**Suggested Co-Curricular Activities:**

6. Training of students by a related field expert
7. Group discussions, Quiz, Debates, etc
8. Preparation of videos and PPT for the subject related presentations
9. Collection of material on the topics
10. Invited lectures and presentations on related topics

**3D Blender Lab:**

1. Create a Bike model
2. Create a basic Robo model
3. Create a Landscape Light hose model
4. Apply texture and material for the light hose model
5. Apply ray trace on any character
6. Create and animate any company logo

| B. Sc | Semester – V (Skill Enhancement Course- Elective) | Credits:4 |
|---|---|---|
| Course: 6C | Game Level Design | Hrs/Wk:4 |

**Learning Outcomes**

Students at the successful completion of the course will be able to:

1. Understand the process and methods of Game design
2. Identify various facilities required to create a game level in the different divisors
3. Comprehend various factors to create levels
4. Learn skills related to demonstrating and exposing the game on different platforms

**Syllabus:** ***(Total Hours: 90 including Teaching, Lab, Field Training and unit tests, etc.)***

**UNIT I:**

Introducing Unreal Engine, Understanding the Gameplay Framework, Coordinates, Transforms, Units, and Organization, working with Static Mesh Actors,

**UNIT II:**

Applying Lighting and Rendering, Using Materials, using Audio System Elements, Creating Landscapes and Foliage, World Building, Crafting Effects with Particle Systems, Using Skeletal Mesh Actors,

**UNIT III:**

Matinee and Cinematics, Learning to work with Physics, Introducing blueprint visual scripting system, Working with Level blueprints, Working with blueprint classes, Using Editable variables and the construction script,

**UNIT IV:**

Making key input events and spawning actors, Making an action encounter, Creating an arcade shooter, Input systems and pawns

**UNIT V:**

Obstacles and Pickups, Working with UMG, Making an executable, Working with mobile, Using touch, Using a device motion data, Advanced packaging settings

**REFERENCES & TEXT BOOKS:**

1. Unreal Engine 4 game development, Aram Cookson, Ryan DowlingSoka, Clinton Crumpler
2. Unreal Engine 4 game development essentials

**References Links**

https://www.raywenderlich.com/771-unreal-engine-4-tutorial-for-beginners-getting-started

**https://docs.unrealengine.com/4.27/en-US/**

*Web resources suggested by the Teacher concerned and the college Librarian including reading material*

**Co-Curricular Activities:**

1. Seminar/Workshop on related topics
2. RVJ(Reflective Visual Journal) on the theory and particles
3. Production/ Live projects
4. Industry trip
5. Online training with industry experts

**Suggested Co-Curricular Activities:**

1. Training of students by a related field expert
2. Group discussions, Quiz, Debates, etc
3. Preparation of videos and PPT for the subject related presentations
4. Collection of material on the topics
5. Invited lectures and presentations on related topics

**Game Level Design Lab:**

1. Create a game model with the logo
2. Apply the texture and light of the created character
3. Create a one-level game with the playable mode
4. Create motion graphics using unreal
5. Show the work nodes

| B. Sc | Semester – V (Skill Enhancement Course- Elective) | Credits:4 |
|---|---|---|
| Course: 7C | Game Programming and Coding | Hrs/Wk:4 |

**Learning Outcomes**

Students at the successful completion of the course will be able to:

1. Understand the process and methods of Game Programming
2. Identify various facilities required to upload your game in the play station/ play store
3. Comprehend various factors to develop a game
4. Learn skills related to demonstrating and exposing the game on different platforms
5. Compose 2D and 3D dynamic worlds enhanced with special effects including sounds, and evaluate game performance in those world

**Syllabus:** ***(Total Hours: 90 including Teaching, Lab, Field Training and unit tests, etc.)***

**UNIT I:**

What is game programming really like, the Gamers, The hard work, The Dark side, What is a Game, Game Logic, Game view for the human player, Game Views for AI Agents, Use DirectX

**UNIT II:**

Coding Tidbits and Style that saved me, Smart Code design practice, Smart Pointers and Naked pointers, Memory correctly, Grab Bag of useful stuff, Building your game, Creating a project, Multiplatform projects

**UNIT III:**

Game Initialization and shutdown, Game code App, Game Actors and component Architecture, Creating actors and components, Data Sharing, Direct Access, Controlling the Main Loop, A Hybrid technique, Loading and Caching game data

**UNIT IV:**

Programming Input Devices, User interface programming, Screen Elements, Game event management, Scripting with Lua, C/C++ scripting Language, Python, comments,Lua Development and Debugging

**UNIT V:**

Game Audio, Sound Processes, Some Random Notes, 3D Graphics basics, 3D Graphics Pipeline, 3D vertex and pixel shaders, 3D scenes, Collision and simple physics, An introduction to Game AI, Network programming for Multiplayer Games, Introduction to multiprogramming, Game of teapot wars, Debugging and profiling your game, Driving to the finish

**REFERENCES & TEXT BOOKS:**

1. Game coding complete fourth edition, Mike McShaffry
2. Ibahari, J. & Albahari, B. (2017). C# 7.0 in a Nutshell: The Definitive Reference (7th edition). Sebastopol, CA: O'Reilly, ISBN: 978-1491987650

**References Links**

- https://docs.unity3d.com/Manual/index.html
- Steering behavior for characters: http://red3d.com/cwr/steer
- Gamasutra: news, ideas: http://www.gamasutra.com
- Research in games: http://game.itu.dk/index.php/About
- Research in games: http://game.itu.dk/index.php/About
- Unity game engine: https://unity3d.com/
- Cry game engine: http://cryengine.com/

*Web resources suggested by the Teacher concerned and the college Librarian including reading material*

**Co-Curricular Activities:**

1. Seminar/Workshop on related topics
2. RVJ(Reflective Visual Journal) on the theory and particles
3. Production/ Live projects
4. Industry trip
5. Online training with industry experts
6. Exbiti the project

**Suggested Co-Curricular Activities:**

1. Training of students by a related field expert
2. Group discussions, Quiz, Debates, etc
3. Preparation of videos and PPT for the subject related presentations
4. Collection of material on the topics
5. Invited lectures and presentations on related topics
6. Design the own sound using different instrumental

**Game Programming and Coding Lab:**

1. Design and Develop a complete one level game
2. Gaming components in a programming platform
3. Upload game in the play store or play station

| B. Sc | Semester: V (Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 6A | Cinematography & Editing | Hrs/Wk: 4 |

**Learning Outcomes**

Students at the successful completion of the course will be able to:

1. Understand history for cinematography
2. Identify various facilities required to Shoot and edit the film
3. Learn different techniques of capturing the film and techniques of editing
4. Develop the script and shooting techniques

Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training and internal exams, etc.)

**UNIT I:** Writing with motion, The frame, The lens, Point-of-view, Shooting methods, Overlapping or Triple-Take method, Visual language, Miscellaneous rules of composition, Language of the lens,The leans and the Frame, Image control at the lens

**UNIT II:** Visual storytelling, Lighting as storytelling, Cinematic continuity, Shooting for editing,The Six types of cuts, Lighting basics, Motivated Light, Lighting for high def video, Lighting sources, Xenons, soft lights, Color- Correction Fluoresents, Day Exteriors

**UNIT III:** HD Cinematography, Types of video sensors, Digital video, Controlling the HD image, Exposure, Camera movement, Camera Mounting, The crab dolly, Cranes, Color in visual storytelling, Image control, Optics & focus, Set operations, Technical issues, film formats

**UNIT IV:** Digital Video editing, Timeframe, Analog and digital video, Video standard formats, Video broadcast, Streaming video, Video capturing, Digital media, Clips with device control, Usingthe Tools,

**Unit - V:** Start the magic (editing), Effects and integration, Working with Audio, Applying Audio Effects, Superimposing and compositing, Creating Titles, Render and Exporting video, Export formats

**REFERENCES**:

1. Digital Video Editing, Chandrabhanu Pattanayak
2. Digital Video for dummies, Keith Underdahl
3. Filmmaker's Handbook by Steven Ascher & Edward Pincus
4. Cinematography: Theory & Practice by Blain Brown
5. Basics of Video Lighting by Des Lyver, Graham Swainson

*Web resources suggested by the Teacher concerned and the college Librarian including reading material*

**Co-Curricular Activities:**

*a)* **Mandatory:** (*Training of students by the teacher in field related skills)*

1. Seminar/Workshop on related topics
2. RVJ(Reflective Visual Journal) on the theory and particles
3. Production/ Live related 2D project

4. Industry trip
5. Film studios visiting

**b) Suggested Co-Curricular Activities:**

1. Training of students by related field experts.
2. Skill Development through Group discussions, Quiz, Debates, etc
3. Preparation of videos and PPT's for the subject related presentations
4. Collection of material on the topics using Internet
5. Invited lectures and presentations on related topics

| B. Sc | Semester: V (Skill Enhancement Course - Elective) | Credits: 1 |
|---|---|---|
| Course: 6A | Cinematography & Editing Lab | Hrs/Wk: 2 |

**Cinematography & Editing Lab:**

1. Creating the script and shooting the video
2. Making 30-sec Advatagement
3. Making a Shot film with special effects
4. Remix song (old movie video to new movie audio)
5. Sound Mix (old movie and new movie audios)

| B. Sc | Semester: V (Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 7A | Photography & Image Editing | Hrs/Wk: 4 |

**Learning Outcomes**

Students at the successful completion of the course will be able to:

1. Understand the techniques and tips of the photography
2. Identify various facilities required to Shoot and edit the Image
3. Learn different techniques of capturing the Images and modifying in software
4. Develop the method of basic image editing techniques
5. Create the concept of digital output and produce the final product

**Syllabus:** ***(Total Hours: 90 including Teaching, Lab, Field Training and internal exams, etc.)***

**UNIT I:** Making of photography, Digital cameras and images, Taking photos, Image sensors, images cleaning, Digital workflow, Image formats, Storing images, Color Management, Color Models and spaces, Controlling Exposure

**UNIT II:** Controlling Sharpness, Image stabilization, Focusing, Depth of Field, Capturing light & Color, White Balance, Color Balance and time of day, Understanding Lenses, Macro mode and macro lenses, On-camera flash photography

**UNIT III:** Studio Photography, Using stones, Using diffusers, The main light, The fill light, The rim light, Displaying & Sharing photos on Screen, Slide Shows, File formats, Publishing your photos

**UNIT IV:** Scanning and Image Editing, Digital retouching, Image enhancement, Image size, Retouching tools, Layers, Applying selective effects to images, Filters with masks, Digital darkroom effects

**UNIT V:** Digital output, Placing phots, Document creation, Posting photos on the web page, Printers, Output devices, Proofing, Printing Quality, Printing sizes

**REFERENCES:**

1. The textbook of Digital Photography second edition, Dennis P. Curtin

*resources suggested by the Teacher concerned and the college Librarian including reading material*

**Co-Curricular Activities:**

***a)*** **Mandatory:** (*Training of students by the teacher in field related skills)*

1. Seminar/Workshop on related topics
2. RVJ (Reflective Visual Journal) on the theory and particles
3. Event Photography of any function
4. Industry trip
5. Photography studios visiting

**b) Suggested Co-Curricular Activities:**

1. Training of students by related field experts.
2. Skill Development through Group discussions, Quiz, Debates, etc
3. Preparation of videos and PPT's for the subject related presentations
4. Collection of material on the topics using Internet
5. Invited lectures and presentations on related topics

| B. Sc | **Semester: V** (Skill Enhancement Course - Elective) | Credits: 1 |
|---|---|---|
| Course: 7A | **Photography & Image Editing Lab** | Hrs/Wk: 2 |

**Photography & Image Editing Lab:**

1. Nature photography with Landscape
2. Create a story with 6 image
3. Capture 10 different expressions (like sad, happy, etc)
4. Capture Sunrise and Sunset
5. Work on light effect on any subject

| B. Sc | Semester: V (Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 6B | Match moving | Hrs/Wk: 4 |

**Learning Outcomes**

Students at the successful completion of the course will be able to:

1. Understand the techniques and tips of collecting track data
2. Identify various facilities required to Shoot live-action footage and track points
3. Learn different techniques to match live footage and CGI footage
4. Develop the method and different techniques of Matchmoving
5. Create environments to match the footage

**Syllabus:** ***(Total Hours: 90 including Teaching, Lab, Field Training and internal exams, etc.)***

**UNIT I:** Introduction to software, The main window, Environment concept, Creating a new project, New Sequence, Navigation within the sequence, Cache movie, Point group, point, the fieldof view, Dummy objects, Creating preview movie

**UNIT II:** Automatic Motion tracking, Spline area mattes, Manual Motion tracking, Image controls, Camera Adjustment, Stabilizing, There dimensional camera motion path, Postfilter, Fixedcamera position, Deviation Value, Distorted point model, Lens Distortion

**UNIT III:** Fisheye lenses, Warp Distort, Zooming, Fixed camera position, Matchmoving NOn- Rigid Objects, Tracking points in mocap projects, Valid and invalid screen points, Camera models,Extracting overall movement, Tracking, Search pattern and area, Maretracking, Natural markers, Camera Adjustment

**UNIT IV:** Working with 2d mode, Working with 3D mode, Browsing the footage, Track window, Parameters window, Timeline Window, Importing footage, Cropping an image sequence,2D Tracking, Automatic, Supervised, Keypoint placing, Troubleshooting the tracker, Camera solving,

**UNIt V:** Working with 3D objects, Export file formats, Maya exporting, Exporting a project, Max script export, Cinema 4D export, motion Capture module, Building and tracking a Mocap group

**REFERENCES:**

1. Matchmover User Guide, Autodesk, Using audio and video for educational purposes, Deakin.
2. 3D Equalizer version 3 release 5 manual, Science.D.Visions

*Web resources suggested by the Teacher concerned and the college Librarian includingreading material*

**Co-Curricular Activities**:

*a)* **Mandatory:** *(Training of students by the teacher in field related skills)*

1. Seminar/Workshop on related topics
2. RVJ(Reflective Visual Journal) on the theory and particles
3. Awareness on the Matchmoving with live shoots
4. Industry trip

**b) Suggested Co-Curricular Activities:**

1. Training of students by related field experts.
2. Skill Development through Group discussions, Quiz, Debates, etc
3. Preparation of videos and PPT's for the subject related presentations
4. Collection of material on the topics using Internet
5. Invited lectures and presentations on related topics

| B. Sc | Semester: V (Skill Enhancement Course - Elective) | Credits: 1 |
|---|---|---|
| Course: 6B | Match moving Lab | Hrs/Wk: 2 |

**Match Moving Lab:**

1. Shoot live-action footage duration of 30 sec
2. Create a 3D set or any model using 3D software
3. Match live and CGI alignment of duration of 30 sec
4. Do the color correction of Matchmoving footage using compositing softwares.

| B. Sc | Semester: V (Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 7B | Visual Effects with soundEditing | Hrs/Wk: 4 |

**Learning Outcomes**

Students at the successful completion of the course will be able to:

1. Understand the different techniques to add effects and sound
2. Identify various facilities shoot and record the sound
3. Learn and exposer the Visual effects and sound outputs
4. Develop the method to shoot the Live footages
5. Create dialogues and sound-related footages

**Syllabus:** ***(Total Hours: 90 including Teaching, Lab, Field Training and internal exams, etc.)***

**UNIT I:** Learning Compositing software, The workspace, Panes & Desktops, Node and networks, Parameters, Channels, Transform and edit, Modeling tools, Shaders & Materials, UVs & Textures, Rendering, Character Rigging

**UNIT II:** Fx, Dynamic Simulations, Cloud FX and Volumes, Terrain and Heightfields, Digital Assets, Tool Building, Engine, Sharing with other applications, Animation, Visual Effects, Game Development tools, Gamedve, VR pipeline, Interactive Experiences, File management

**UNIT III:** Explore the Houdini UI, Add the soccerball Geometry, Create a Realistic Soccerball, The for-each node, Set up UVs, Materials, Shaders, Rig the Soccerball, Animate a bouncing ball, Add motion FX, Lights, Camera, Action, Render the Shot

**UNIT IV:** Basics of FL Studio, Sampling and using.was samples, Using the playlist, Tempos and their effects, FL Generators, Install plugins, Personalizing your FL Studio, Recording on FL studio, Piano roll, Graph Edition, Mixer, Saving, Bouncing Down Deats, Creating a Beat, Eqing and Mixing, Wave Traveller

**UNIT V:** Audition setup, Interface, Waveform editing, Effects, Effect categories, Stereo imagery effects, Time and pitch effects, Audio restoration, Mastering, Sound Design, Creating rain sound, Babbling, Creating and recording files, Multitrack session, Automation, Video Soundtracks, The essential sound panel

**REFERENCES:**

1. Houdini Foundations for film, TV and Gamedev, Robert Magee
2. Adobe Audition CC Classroom in a Book, Second Edition, Maxim Jago

Reference Weblinks https://documentation.3delightcloud.com/display/3DfH/Introduction The Complete Guide to FL Studio for Beginners - EDMProd

*Web resources suggested by the Teacher concerned and the college Librarian including reading material*

**Co-Curricular Activities:**

*a)* **Mandatory:** (*Training of students by the teacher in field related skills)*

1. Seminar/Workshop on related topics
2. RVJ(Reflective Visual Journal) on the theory and particles
3. Awareness on the Matchmoving with live shoots
4. Industry trip

**b) Suggested Co-Curricular Activities:**

1. Training of students by related field experts.
2. Skill Development through Group discussions, Quiz, Debates, etc
3. Preparation of videos and PPT's for the subject related presentations
4. Collection of material on the topics using Internet
5. Invited lectures and presentations on related topics

| B. Sc | Semester: V (Skill Enhancement Course - Elective) | Credits: 1 |
|---|---|---|
| Course: 7B | Visual Effects with sound Editing Lab | Hrs/Wk: 2 |

**Visual Effects with Sound Editing Lab :**

1. Shoot live-action footage duration of 30 sec
2. Create a 3D set or any model using 3D software
3. Match live and CGI alignment of the duration of 30 sec
4. Do the color correction of Matchmoving footage using compositing software

| B. Sc | Semester: V (Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 6C | AR & VR | Hrs/Wk: 4 |

**Learning Outcomes**

Students at the successful completion of the course will be able to:

1. Understand the different techniques to know the AR & VR
2. Identify various devices to play AR & VR
3. Learn and exposure the effects of VR
4. Develop the method to shoot the Live footage and create an AR
5. Create face expression and assesses for the living objects in AR

**Syllabus:** ***(Total Hours: 90 including Teaching, Lab, Field Training and internal exams, etc.)***

**UNIT I:** What is virtual reality, A history of virtual reality, Overview of various realities, Forms ofreality, Reality systems, Immersion, Presence, reality trade-offs, Illusions of presence, The basics design guidelines, VR is communications, Objective reality, Perceptual models and processes, Distal and proximal stimuli, Sensation vs Perception

**UNIT II:** Afference and Efference, Iterative p[ercetual processing, Visceral, Behavioral, reflective and Emotional processes, Mental models, Neuro-Linguistic Programming, Perceptual Modalities, Sight, Hearing, Touch, Smell and Taste, Multimodal Perceptions, Perception of Space and Time, Perceptual Stability, Attention and Action, Perception Design Guidelines, Motion Sickness

**UNIT III:** Adverse Health Effects, Eye Strain, Seizures and aftereffects, Hardware Challenges, Negative effects of latency, Measuring Sickness, Factors that contribute to adverse effects, Reducing Adverse effects, Health effects, Environmental Design, Affecting Behavior, Transitioning to VR Content Creation, Design Guidelines, VR Interaction, Input Devices, Interaction Patterns and Techniques

**UNIT IV:** Augmented reality and historical issues, Internet of things, Shifts in Digital Innovation dynamics, Extended reality and abstract objects, A Methodological framework for AR, Ontologicalproblems in AR, Actually is Augmented Reality

**UNIT V:** Epistemology of Augmented Reality, Source of new types, Negative knowledge, Imagine not knowing, Implications of Augmented Reality, New challenge in education, Teaching AR

**REFERENCES:**

1. Virtual Reality, Steven M. LaValle
2. Augmented Reality, Jose Maria Ariso, D Gruyter
3. The VR Book Human-Centered Design for Virtual Reality, Jason Jerald, Ph.D

*Web resources suggested by the Teacher concerned and the college Librarian including reading material*

**Co-Curricular Activities:**

*a)* **Mandatory:** (*Training of students by the teacher in field related skills)*

1. Seminar/Workshop on related topics
2. RVJ(Reflective Visual Journal) on the theory and particles
3. Awareness on the Matchmoving with live shoots

4. Industry trip

**b) Suggested Co-Curricular Activities:**

1. Training of students by related field experts.
2. Skill Development through Group discussions, Quiz, Debates, etc.
3. Preparation of videos and PPT's for the subject related presentations.
4. Collection of material on the topics using Internet.
5. Invited lectures and presentations on related topics.

| B. Sc | Semester: V (Skill Enhancement Course - Elective) | Credits: 1 |
|---|---|---|
| Course: 6C | AR & VR Lab | Hrs/Wk: 2 |

**AR & VR Lab :**

1. Create an Epic Games with a wild roller coaster ride through VR in the livingroom
2. Create a 30 Live + CGI short related to VR Views
3. Create a Face tracking app and develop it to play
4. Create a room model and fit CGI alignment using AR

| B. Sc | Semester: V (Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 7C | UI & UX | Hrs/Wk: 4 |

**Learning Outcomes**

Students at the successful completion of the course will be able to:

1. Understand the different techniques to know the UI & UX
2. Identify various game and software UI & UX
3. Learn and develop the UI & UX of any game or software
4. Develop the method to create UX experience
5. Create face expression and assesses for UI and UX

**Syllabus:** ***(Total Hours: 90 including Teaching, Lab, Field Training and internal exams, etc.)***

**UNIT I:** What is UI, Seeing UI in Action, UI shapes UX, Ux of Learning UX, Personas, User Scenarios, Prioritizing top task, Plunging ahead with a plan, Understanding visual hierarchy, UI Patterns, Visual Organization, Applying UI Patterns

**UNIT II:** Understanding web UI elements, Principles of UI, The essence of interface, Input Controls, Navigation, Animations, Default settings, Guided Actions, Visual Clarity, Language Clarity, Maya Principle, Takeaway, Understanding Visual Elements of UI

**UNIT III:** Visual Principles, Style Guides, Mood Boards, Design Studio Exercise, Graphic Arts, Usability, Interaction Design, Visual Design, Game using Unity Engine, Understanding Web UI Elements & Principles, Visual elements of UI, Visual Clarity, Language Clarity, Design studio exercise

**UNIT IV:** Scene Generator, Tracking system, Display, Ar Devices, Mobile AR, Ar for game Development using unity, Vuforia AI, Add Target, Build Game for required platform

**UNIT V:** Color palette, Typography, Contartast, Web UI elements, Mobile Elements, Web Page transitions, Mood boards, Design studio exercise, Wireframing

**REFERENCES:**

1. UX Storytellers connecting the dots,Jan Jursa, Stephen Kover and Jutta Gunewald
2. UI design from the experts WEB UI DESIGN BEST PRACTICES, Dominik Pacholczyk
3. The VR Book Human-Centered Design for Virtual Reality, Jason Jerald, Ph.D

*Web resources suggested by the Teacher concerned and the college Librarian including reading material*

**Co-Curricular Activities:**

***a)*** **Mandatory:** (*Training of students by the teacher in field related skills)*

1. Seminar/Workshop on related topics
2. RVJ (Reflective Visual Journal) on the theory and particles
3. Awareness on the Matchmoving with live shoots
4. Industry trip

**b) Suggested Co-Curricular Activities:**

1. Training of students by related field experts.
2. Skill Development through Group discussions, Quiz, Debates, etc
3. Preparation of videos and PPT's for the subject related presentations
4. Collection of material on the topics using Internet
5. Invited lectures and presentations on related topics

| B. Sc | Semester: V (Skill Enhancement Course - Elective) | Credits: 1 |
|---|---|---|
| Course: 7C | UI & UX Lab | Hrs/Wk: 2 |

**UI & UX Lab :**

1. Create an Epic Games with a wild roller coaster ride through VR in the livingroom
2. Create a 30 Live + CGI short related to VR Views
3. Create a Face tracking app and develop it to play
4. Create a room model and fit CGI alignment using AR

| B Sc | Semester :V(Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 6A | Web Interface Designing Technologies | Hrs/Wk: 4 |

**Learning Outcomes:** Students after successful completion of the course will be able to:

1. Understand and appreciate the web architecture and services.
2. Gain knowledge about various components of a website.
3. Demonstrate skills regarding creation of a static website and an interface to dynamic website.
4. Learn how to install word press and gain the knowledge of installing various plugins to use in their websites.

**Syllabus:** *(Total Hours: 90 including Teaching, Lab, and Field training, Unit tests etc.)*

**UNIT I:** (10 hours)

**HTML:** Introduction to web designing, difference between web applications and desktop applications, introduction to HTML, HTML structure, elements, attributes, headings, paragraphs, styles, colours, HTML formatting, Quotations, Comments, images, tables, lists, blocks and classes, HTML CSS, HTML frames, file paths, layout, symbols, HTML responsive.

**UNIT II:** (10 hours)

**HTML forms**: HTML form elements, input types, input attributes, HTML5, HTML graphics, HTML media – video, audio, plug INS, you tube.

**HTML API'S:** Geo location, Drag/drop, local storage, HTML SSE.

**CSS:** CSS home, introduction, syntax, colours, back ground, borders, margins, padding, height/width, text, fonts, icons, tables, lists, position, over flow, float, CSS combinators, pseudo class, pseudo elements, opacity, tool tips, image gallery, CSS forms, CSS counters, CSS responsive.

**UNIT III:** (10 hours)

**Client side Validation:** Introduction to JavaScript - What is DHTML, JavaScript, basics, variables, string manipulations, mathematical functions, statements, operators, arrays, functions. Objects in JavaScript - Data and objects in JavaScript, regular expressions, exception handling. DHTML with JavaScript - Data validation, opening a new window, messages and confirmations, the status bar, different frames, rollover buttons, moving images.

**UNIT IV:** (10 hours)

**Word press:** Introduction to word press, servers like wamp, bitnami e.tc, installing and configuring word press, understanding admin panel, working with posts and pages, using editor, text formatting with shortcuts, working with media-Adding, editing, deleting media elements, working with widgets, menus.

**UNIT V:** (10 hours)

Working with themes-parent and child themes, using featured images, configuring settings, user and user roles and profiles, adding external links, extending word press with plug-ins. Customizing the site, changing the appearance of site using css , protecting word press website from hackers.

**REFERENCES**

1. Chris Bates, Web Programming Building Internet Applications, Second Edition, Wiley (2007)
2. Paul S.WangSanda S. Katila, an Introduction to Web Design plus Programming, Thomson (2007).
3. Head First HTML and CSS, Elisabeth Robson, Eric Freeman, O'Reilly Media Inc.
4. An Introduction to HTML and JavaScript: for Scientists and Engineers, David R. Brooks. Springer, 2007
5. Schaum's Easy Outline HTML, David Mercer, Mcgraw Hill Professional.
6. Word press for Beginners, Dr.Andy Williams.
7. Professional word press, Brad Williams, David damstra, Hanstern.
8. Web resources:
    a. http://www.codecademy.com/tracks/web
    b. http://www.w3schools.com
    c. https://www.w3schools.in/wordpress-tutorial/
    d. http://www.homeandlearn.co.uk
9. Other web sources suggested by the teacher concerned and the college librarianincluding reading material.

**Co-Curricular Activities**

*a)* **Mandatory:** *(Training of students by teacher in field related skills: (lab: 10 + field: 05) :*

1. **For Teacher**: Field related training of students by the teacher in laboratory/field for not less than 15 hours on identifying the case study to build a website, designing the format, structure, menus, submenus etc for a website and finally to build a website.
2. **For Student**: Students shall (individually) search online and visit any of the agencies like hotels, hospitals, super bazaars, organizations, etc. where there is a need for a website and identify any one case study and submit a hand-written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages. Example: Choosing a firm or business to develop a website, identifying various business entities to be included in the website, identifying menu bar and content to be placed in their websites.
3. Max marks for Fieldwork/Project work/Project work/Project work/Project work/Projectwork Report: 05.
4. Suggested Format for Fieldwork/Project work/Project work/Project work/Project work: *Title page, student details, index page, details of place visited, observations, findings andacknowledgements.*
5. Unit tests (IE).

**b) Suggested Co-Curricular Activities**

1. Build a website with 10 pages for the case study identified.
2. Training of students by related industrial experts.
3. Assignments
4. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
5. Presentation by students on best websites.

| B Sc | Semester :V(Skill Enhancement Course - Elective) | Credits: 1 |
|---|---|---|
| Course: 6A | Web Interface Designing Technologies Lab | Hrs/Wk: 2 |

**Web Interface Designing Technologies – PRACTICAL SYLLABUS**

**Learning Outcomes:**

On successful completion of this practical course, student shall be able to:

1. Create a basic website with the help of HTML and CSS.
2. Acquire the skill of installing word press and various plugins of Word press.
3. Create a static website with the help of Word press.
4. Create an interface for a dynamic website.
5. Apply various themes for their websites using Word press.

**Practical (Laboratory) Syllabus**: *(30 hrs.)*

**HTML and CSS:**

1. Create an HTML document with the following formatting options:
   (a)Bold, (b) Italics, (c) Underline, (d) Headings (Using H1 to H6 heading styles), (e) Font (Type, Size and Color), (f) Background (Colored background/Image in background), (g) Paragraph, (h) Line Break, (i) Horizontal Rule, (j) Pre tag

2. Create an HTML document which consists of:

   (a) Ordered List (b) Unordered List (c) Nested List (d) Image

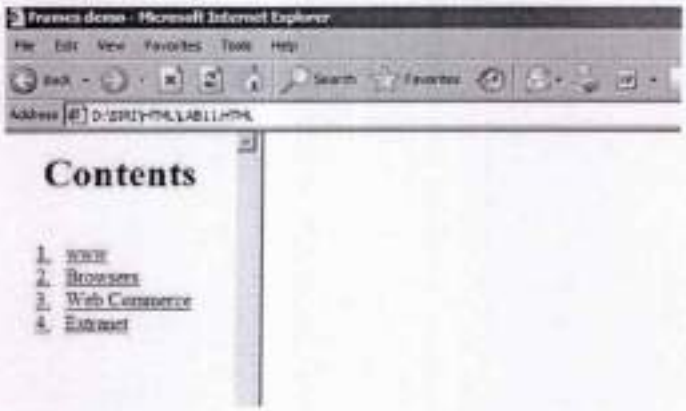
3. Create a Table with four rows and five columns. Place an image in one column.
4. **Using "table" tag, align the images as follows:**


5. Create a menu form using html.
6. Style the menu buttons using css.
7. Create a form using HTML which has the following types of controls:

(a) Text Box (b) Option/radio buttons (c) Check boxes (d) Reset and Submit buttons

8. Embed a calendar object in your web page.
9. Create an applet that accepts two numbers and perform all the arithmetic operationson them.
10. Create nested table to store your curriculum.
11. Create a form that accepts the information from the subscriber of a mailing system.
12. Design the page as follows:


13. Create a help file as follows:




14. Create a webpage containing your bio data (assume the form and fields).
15. Write a html program including style sheets.
16. Write a html program to layers of information in web page.
17. Create a static webpage.

**Word press:**

1. Installation and configuration of word press.
2. Create a site and add a theme to it.20 Create a child theme
3. Create five pages on COVID – 19 and link them to the home page. .
4. Create a simple post with featured image.
5. Add an external video link with size 640 X 360.
6. Create a user and assign a role to him.
7. Create a login page to word press using custom links
8. Create a website for your college.

| B Sc | Semester :V(Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 7A | Web Applications Development using PHP& MYSQL | Hrs/Wk: 4 |

**Learning Outcomes:**

Students after successful completion of the course will be able to:

1. Write simple programs in PHP.
2. Understand how to use regular expressions, handle exceptions, and validate data usingPHP.
3. Apply In-Built functions and Create User defined functions in PHP programming.
4. Write PHP scripts to handle HTML forms.
5. Write programs to create dynamic and interactive web based applications using PHPand MYSQL.
6. Know how to use PHP with a MySQL database and can write database driven webpages.

**Syllabus:** *(Total Hours: 90 including Teaching, Lab, and Field training, Unit tests etc.)*

**UNIT I:** (10 hours)

The Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output. Working with Functions: What is function?, Calling functions, Defining Functions, Returning the values from User-Defined Functions, Variable Scope, Saving state between Function calls with the static statement, more about arguments.

**UNIT II:** (10 hours)

Working with Arrays: What are Arrays? Creating Arrays, Some Array-Related Functions. Working with Objects: Creating Objects, Object Instance Working with Strings, Dates and Time: Formatting strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

**UNIT III:** (10 hours)

Working with Forms: Creating Forms, Accessing Form Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, and Working with File Uploads. Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsetting Variables, Using Sessions in an Environment with Registered Users.

**UNIT IV:** (10 hours)

Working with Files and Directories: Including Files with inclue(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using popen(), Running Commands with exec(), Running Commands with system() or passthru().

Working with Images: Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input.

**UNIT V:** (10 hours)

Interacting with MySQL using PHP: MySQL Versus MySQLi Functions, Connecting to MySQL with PHP, Working with MySQL Data. Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

**REFERENCES:**

1. Julie C. Meloni, SAMS Teach yourself PHP MySQL and Apache, Pearson Education (2007).
2. Steven Holzner , PHP: The Complete Reference, McGraw-Hill
3. Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5, Third EditionO'reilly, 2014
4. Xue Bai Michael Ekedahl, The web warrior guide to Web Programming, Thomson(2006).
5. Web resources:
   e. http://www.codecademy.com/tracks/php
   f. http://www.w3schools.com/PHP
   g. http://www.tutorialpoint.com
6. Other web sources suggested by the teacher concerned and the college librarianincluding reading material.

**Co-Curricular Activities:**

*a)* **Mandatory:** *(Training of students by teacher in field related skills: (lab: 10 + field: 05) :*

1. **For Teacher**: Field related training of students by the teacher in laboratory/field for not less than 15 hours on demonstrating various **interactive and dynamic websites** available online, addressing the students on identifying the case study to build an interactive and database driven website, forms to be used in website, database to be maintained, reports to be produced, etc.
2. **For Student**: Students shall (individually) search online and visit any of the agencies like malls, hotels, super bazaars, etc. where there is a need for an interactive and database driven website and submit a hand-written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages. Example: Choosing a firm or business to develop a website, identifying forms to be placed in the websites, back end databases to be maintained and reports to be generated and placed in the websites.
3. Max marks for Fieldwork/Project work/Project work/Project work/Project work/Projectwork Report: 05.
4. Suggested Format for Fieldwork/Project work/Project work/Project work/Project work: *Title page, student details, index page, details of place or websites visited, structure of thewebsite and acknowledgements.*
5. Unit tests (IE).

**b) Suggested Co-Curricular Activities**

1. Arrange expert lectures by IT experts working professionally in the area of web contentdevelopment
2. Assignments (in writing or implementing contents related to syllabus or outside the syllabus. Shall be individual and challenging)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation by students on best websites.
5. Arrange a webpage development competition among small groups of students.

| B Sc | Semester :V(Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 7A | Web Applications Development using PHP& MYSQL Lab | Hrs/Wk: 4 |

**Web Applications Development using PHP & MYSQL–PRACTICAL SYLLABUS**

**Learning Outcomes:**

On successful completion of this practical course, student shall be able to:

1. Write, debug and implement the Programs by applying concepts and error handling techniques of PHP.
2. Create an interactive and dynamic website.
3. Create a website with reports generated from a database.
4. Write programs to create an interactive website for e-commerce sites like online shopping, etc.

**Practical (Laboratory) Syllabus:** *(30 hrs.)*

1. Write a PHP program to Display "Hello"
2. Write a PHP Program to display the today's date.
3. Write a PHP program to display Fibonacci series.
4. Write a PHP Program to read the employee details.
5. Write a PHP program to prepare the student marks list.
6. Write a PHP program to generate the multiplication of two matrices.
7. Create student registration form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page.
8. Create Website Registration Form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page.
9. Write PHP script to demonstrate passing variables with cookies.
10. Write a program to keep track of how many times a visitor has loaded the page.
11. Write a PHP application to add new Rows in a Table.
12. Write a PHP application to modify the Rows in a Table.
13. Write a PHP application to delete the Rows from a Table.
14. Write a PHP application to fetch the Rows in a Table.
15. Develop an PHP application to implement the following Operations
    - i. Registration of Users.
    - ii. Insert the details of the Users.
    - iii. Modify the Details.
    - iv. Transaction Maintenance.
        - a) No of times Logged in
        - b) Time Spent on each login.
        - c) Restrict the user for three trials only.
        - d) Delete the user if he spent more than 100 Hrs of transaction.
16. Write a PHP script to connect MySQL server from your website.
17. Write a program to read customer information like cust-no, cust-name, item- purchased, and mob-no, from customer table and display all these information in table format on output screen.
18. Write a program to edit name of customer to "Kiran" with cust-no =1, and to delete record with cust-no=3.
19. Write a program to read employee information like emp-no, emp-name, designation and salary from EMP table and display all this information using table format in your website.
20. Create a dynamic web site using PHP and MySQL.

| B Sc | Semester :V(Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 6B | Internet of Things | Hrs/Wk: 4 |

**Learning Outcomes:** Students after successful completion of the course will be able to:

1. Appreciate the technology for IoT
2. Understand various concepts, terminologies and architecture of IoT systems.
3. Understand various applications of IoT
4. Learn how to use various sensors and actuators for design of IoT.
5. Learn how to connect various things to Internet.
6. Learn the skills to develop simple IOT Devices.

**Syllabus:** *(Total Hours: 90 including Teaching, Lab, Field training, Unit tests etc.)*

**UNIT I:** (10 hours)

Fundamentals of IoT: Introduction, Definitions & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, About Things in IoT, The Identifiers in IoT, About the Internet in IoT, IoT frameworks, IoT and M2M.

**Applications of IoT:** Home Automation, Smart Cities, Energy, Retail Management, Logistics, Agriculture, Health and Lifestyle, Industrial IoT, Legal challenges, IoT design Ethics, IoT in Environmental Protection.

**UNIT II:** (10 hours)

Sensors Networks : Definition, Types of Sensors, Types of Actuators, Examples and Working, IoT Development Boards: Arduino IDE and Board Types, RaspberriPi Development Kit, RFID Principles and components, Wireless Sensor Networks: History and Context, The node, Connecting nodes, Networking Nodes, WSN and IoT.

**UNIT III:** (10 hours)

Wireless Technologies for IoT: WPAN Technologies for IoT: IEEE 802.15.4, Zigbee, HART, NFC, Z-Wave, BLE, Bacnet And Modbus. IP Based Protocols for IoT IPv6, 6LowPAN, LoRA, RPL, REST, AMPQ, CoAP, MQTT.Edge connectivity and protocols.

**UNIT IV:** (10 hours)

Arduino Simulation Environment: Arduino Uno Architecture, Setting up the IDE, Writing Arduino Software, Arduino Libraries, Basics of Embedded C programming for Arduino, Interfacing LED, push button and buzzer with Arduino, Interfacing Arduino with LCD.

Sensor & Actuators with Arduino: Overview of Sensors working, Analog and Digital Sensors, Interfacing of Temperature, Humidity, Motion, Light and Gas Sensors with Arduino, Interfacing of Actuators with Arduino, Interfacing of Relay Switch and Servo Motor with Arduino.

**UNIT V:** (10 hours)

Developing IOT's: Implementation of IoT with Arduino, Connecting and using various IoT Cloud Based Platforms such as Blynk, Thingspeak, AWS IoT, Google Cloud IoT Core etc. Cloud Computing, Fog Computing, Privacy and Security Issues in IoT.

**REFERENCES:**

1. Internet of Things - A Hands-on Approach, ArshdeepBahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
2. Vijay Madisetti and ArshdeepBahga, "Internet of Things (A Hands-onApproach)", 1st Edition, VPT, 2014
3. Daniel Minoli, — "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", ISBN: 978-1-118-47347-4, Willy Publications
4. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press
5. Open source software / learning websites
    a. https://github.com/connectIOT/iottoolkit
    b. https://www.arduino.cc/
    c. https://onlinecourses.nptel.ac.in/noc17_cs22/course
    d. http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html
    e. Contiki (Open source IoT operating system)
    f. Ardudroid (open source IoT project)
    g. https://blynk.io (Mobile app)
    h. IoT Toolkit (smart object API gateway service reference implementation)
6. Other web sources suggested by the teacher concerned and the college librarian including reading material.

**Co-Curricular Activities**:

***a)* Mandatory:** *(Training of students by teacher in field related skills: (lab: 10 + field: 05) :*

1. **For Teacher**: Field related training of students by the teacher in laboratory/field for not less than 15 hours on identifying the case study for the IoT, design an IoT solution, build physical IoT device, connect it to a mobile app and deploy the IoT device.
2. **For Student**: Students shall (individually) search online and visit any of the places like aquaculture farms, agencies using IOT devices, etc to identify problems for IoT solution and submit a hand-written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages. Example: Choosing a Problem for IoT solution (agriculture, aquaculture, smart home appliances, testing moisture levels, oxygen levels, etc), reasons why IoT solution is feasible for the said problem, material required, Design and architecture for the proposed IoT device, method of implementation and how to connect the device to mobile.
3. Max marks for Fieldwork/Project work/Project work/Project work/Project work/Projectwork Report: 05.
4. Suggested Format for Fieldwork/Project work/Project work/Project work/Project work: *Title page, student details, index page, details of websites searched, place visited, observations, findings, proposed IOT problem, and design of the IOT device, implementation and acknowledgements.*
5. Unit tests (IE).

**b) Suggested Co-Curricular Activities**

1. Training of students by related industrial experts.
2. Assignments
3. Preparation and presentation of power-point slides, which include videos, animations, pictures, graphics, etc by the students.
4. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
5. Field visits to identify the problems for IoT solutions.

| B Sc | Semester :V(Skill Enhancement Course - Elective) | Credits: 1 |
|---|---|---|
| Course: 6B | Internet of Things Lab | Hrs/Wk: 2 |

**Internet of Things – PRACTICAL SYLLABUS**

**Learning Outcomes:**

On successful completion of this practical course, student shall be able to:

1. Acquire the skills to design a small IoT device.
2. Connect various sensors, actuators, etc to Arduino board.
3. Connect the things to Internet
4. Design a small mobile app to control the sensors.
5. Deploy a simple IoT device.

**Practical (Laboratory) Syllabus**: *(30 hrs)*

1. Understanding Arduino UNO Board and Components
2. Installing and work with Arduino IDE
3. Blinking LED sketch with Arduino
4. Simulation of 4-Way Traffic Light with Arduino
5. Using Pulse Width Modulation
6. LED Fade Sketch and Button Sketch
7. Analog Input Sketch (Bar Graph with LEDs and Potentiometre)
8. Digital Read Serial Sketch (Working with DHT/IR/Gas or Any other Sensor)
9. Working with Adafruit Libraries in Arduino
10. Spinning a DC Motor and Motor Speed Control Sketch
11. Working with Shields
12. Design APP using Blink App or Things peak API and connect it LED bulb.
13. Design APP Using Blynk App and Connect to Temperature, magnetic Sensors.

| B Sc | Semester :V(Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 7B | Application Development using Python | Hrs/Wk: 4 |

**Learning Outcomes:** Students after successful completion of the course will be able to:

1. Understand and appreciate the web architecture and services.
2. Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
3. Demonstrate proficiency in handling Strings and File Systems.
4. Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
5. Interpret the concepts of Object-Oriented Programming as used in Python.
6. Apply concepts of Python programming in various fields related to IOT, Web Services and Databases in Python.

**Syllabus:** *(Total Hours: 90 including Teaching, Lab, Field training, Unit tests etc.)*

**UNIT I:** (10 hours)

**Python basics, Objects-** Python Objects, Standard Types, Other Built-in Types, Internal Types, Standard Type Operators, Standard Type Built-in Functions, Categorizing the Standard Types, Unsupported Types

**Numbers** - Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Operators, Built-in Functions, Related Modules

**Sequences** - Strings, Lists, and Tuples, Mapping and Set Types

**UNIT II:** (10 hours)

**Files:** File Objects, File Built-in Function [ open() ], File Built-in Methods, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution, Persistent Storage Modules, Related Modules

**Exceptions:** Exceptions in Python, Detecting and Handling Exceptions, Context Management, Exceptions as Strings, Raising Exceptions, Assertions, Standard Exceptions, Creating Exceptions, Why Exceptions (Now)?, Why Exceptions at All?, Exceptions and the sys Module, Related Modules

**Modules:** Modules and Files, Namespaces, Importing Modules, Importing Module Attributes, Module Built-in Functions, Packages, Other Features of Modules

**UNIT III:** (10 hours)

**Regular Expressions:** Introduction, Special Symbols and Characters, Res and Python Multithreaded Programming: Introduction, Threads and Processes, Python, Threads, and the Global Interpreter Lock, Thread Module, Threading Module, Related Modules

**UNIT IV:** (10 hours)

**GUI Programming:** Introduction, Tkinter and Python Programming, Brief Tour of Other GUIs, Related Modules and Other GUIs

**Web Programming:** Introduction, Wed Surfing with Python, Creating Simple Web Clients, Advanced Web Clients, CGI-Helping Servers Process Client Data, Building CGI Application, Advanced CGI, Web (HTTP) Servers

**UNIT V:** (10 hours)

**Database Programming:** Introduction, Python Database Application Programmer's Interface (DBAPI), Object Relational Managers (ORMs), Related Modules

**REFERENCES:**

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson.
2. Think Python, Allen Downey, Green Tea Press.
3. Introduction to Python, Kenneth A. Lambert, Cengage.
4. Python Programming: A Modern Approach, Vamsi Kurama, Pearson.
5. Learning Python, Mark Lutz, O' Really.
6. Web sources suggested by the teacher concerned and the college librarian including reading material.

**Co-Curricular Activities**:

*a)* **Mandatory:** *(Training of students by teacher in field related skills: (lab: 10 + field: 05)*

1. **For Teacher**: Training of students by the teacher in laboratory/field for not less than 15 hours on field related skills like building an IOT device with the help of Python.
2. **For Student**: Students shall (individually) identity the method to link their IOT project done in Paper 7A with Python and submit a hand-written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages. It should include a brief report on the selected case study of IOT device, algorithm and Python program to operate the IOT device.
3. Max marks for Fieldwork/Project work/Project work/Project work/Project work/Projectwork Report: 05.
4. Suggested Format for Fieldwork/Project work/Project work/Project work/Project work: *Title page, student details, index page, design of the IOT device, implementation of Python program to connect the IOT device, findings and acknowledgements.*
5. Unit tests (IE).

**b) Suggested Co-Curricular Activities**

1. Training of students by related industrial experts.
2. Assignments
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Presentation by students on best websites.

| B Sc | Semester :V(Skill Enhancement Course - Elective) | Credits: 1 |
|---|---|---|
| Course: 7B | Application Development using Python Lab | Hrs/Wk: 2 |

**Application Development Using Python– PRACTICAL SYLLABUS**

**Learning Outcomes:**

On successful completion of this practical course, student shall be able to:

1. Implement simple programs in Python
2. Implement programs related to various data structures like lists, dictionaries, etc.
3. Implement programs related to files.
4. Implement applications related to databases, Web services and IOT.

**Practical (Laboratory) Syllabus**: *(30 hrs.)*

1. Write a menu driven program to convert the given temperature from Fahrenheit toCelsius and vice versa depending upon user's choice.

2. Write a python program to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign gradesaccording to the following criteria :
   Grade A: Percentage >=80
   Grade B: Percentage>=70 and <80 Grade C: Percentage>=60 and <70 Grade D: Percentage>=40 and <60 Grade E: Percentage<40

3. Write a python program to display the first n terms of Fibonacci series.

4. Write a python program to calculate the sum and product of two compatible matrices.

5. Write a function that takes a character and returns True if it is a vowel and False otherwise.

6. Write a menu-driven program to create mathematical 3D objects
   I. curve
   II. sphere
   III. cone
   IV. arrow
   V. ring
   VI. Cylinder.

7. Write a python program to read n integers and display them as a histogram.

8. Write a python program to display sine, cosine, polynomial and exponential curves.

9. Write a python program to plot a graph of people with pulse rate p vs. height h. Thevalues of P and H are to be entered by the user.
10. Write a python program to calculate the mass m in a chemical reaction. The mass

m (in gms) disintegrates according to the formula m=60/ (t+2), where t is the time in hours. Sketch a graph for t vs. m, where t>=0.

11. A population of 1000 bacteria is introduced into a nutrient medium. The population pgrows as follows:

$$P(t) = (15000(1+t))/(15+e)$$

12. Where the time t is measured in hours. WAP to determine the size of the population atgiven time t and plot a graph for P vs t for the specified time interval.

13. Input initial velocity and acceleration, and plot the following graphs depicting equations of motion:
    VII. velocity wrt time (v=u+at)
    VIII. distance wrt time ( s=u*t+0.5*a*t*t)

    IX. distance wrt velocity ( s=(v*v-u*u)/2*a )

14. Write a program that takes two lists and returns True if they have at least one commonmember.

15. Write a Python program to print a specified list after removing the 0th, 2nd, 4th and5th elements.

16. Write a program to implement exception handling.

17. Try to configure the widget with various options like: bg="green", family="times",size=20.

18. Write a Python program to read last 5 lines of a file.

19. Design a simple database application that stores the records and retrieve the same

20. Design a database application to search the specified record from the database.

21. Design a database application to that allows the user to add, delete and modify therecords.

| B Sc | Semester :V(Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 6C | Data science | Hrs/Wk: 4 |

**Learning Outcomes:** Students after successful completion of the course will be able to:

1. Develop relevant programming abilities.
2. Demonstrate proficiency with statistical analysis of data.
3. Develop the ability to build and assess data-based models.
4. Demonstrate skill in data management
5. Apply data science concepts and methods to solve problems in real-world contextsand will communicate these solutions effectively

**Syllabus:** *(Total Hours: 90 including Teaching, Lab, Field training, Unit tests etc.)*

**UNIT I:** (10 hours)

**Introduction:** The Ascendance of Data, What is Data Science? , Finding key Connectors, Data Scientists You May Know, Salaries and Experience, Paid Accounts, Topics of Interest, Onward.

**Python:** Getting Python, The Zen of Python, Whitespace Formatting, Modules, Arithmetic, Functions, Strings, Exceptions, Lists, Tuples, Dictionaries, Sets, Control Flow, Truthiness, Sorting, List Comprehensions, Generators and Iterators, Randomness, Object – Orienting Programming, Functional Tools, enumerate, zip and Argument Unpacking, args and kwargs, Welcome to Data Sciencester!

**Visualizing Data:** matplotlib, Bar charts, Line charts, Scatterplots.

**Linear Algebra:** Vectors, Matrices

**UNIT II:** (10 hours)

**Statistics:** Describing a Single Set of Data, Correlation, Simpson's Paradox, some Other Correlation Caveats, Correlation and Causation.

**Probability:** Dependence and Independence, Conditional Probability, Bayes's Theorem, Random Variables, Continuous Distributions, The Normal Distribution, The Central Limit Theorem.

**Hypothesis and Inference:** Statistical Hypothesis Testing, Example: Flipping a Coin, Confidence Intervals, P-hacking, Example: Running an A/B Test, Bayesian Inference.

**Gradient Descent:** The Idea behind Gradient Descent, Estimating the Gradient, Using the Gradient, Choosing the Right Step Size, Putting It All Together, Stochastic Gradient Descent.

**UNIT III:** (10 hours)

**Getting Data:** stdin and stdout, Reading Files – The Basics of Text Files, Delimited Files, Scraping the Web - HTML and the parsing Thereof, Example: O'Reilly Books About Data, Using APIs – JSON ( and XML), Using an Unauthenticated API, Finding APIs.

**Working with Data**: Exploring Your Data, Exploring One-Dimensional Data, Two Dimensions Many Dimensions, Cleaning and Munging, Manipulating Data, Rescaling, Dimensionality Reduction.

**Machine Learning:** Modeling, What Is Machine Learning? Over fitting and under fitting, Correctness, The Bias-Variance Trade-off, Feature Extraction and Selection

**UNIT IV:** (10 hours)

**K-Nearest Neighbors:** The Model, Example: Favorite Languages, The Curse of Dimensionality.

**Naive Bayes**: A Really Dumb Spam Filter, A More Sophisticated Spam Filter,Implementation, Testing Our Model.

**Simple Linear Regression:** The Model, Using Gradient Descent, Maximum Likelihood Estimation.

**Multiple Regression:** The Model, Further Assumptions of the Least Squares Model, Fittingthe Model, Interpreting the Model, Goodness of Fit.

**UNIT V:** (10 hours)

**Logistic Regression:** The Problem, The Logistic Function, Applying the Model, Goodness of Fit Support Vector Machines.

**Decision Trees:** What Is a Decision Tree? Entropy, The Entropy of a Partition, Creating a Decision Tree, Putting It All Together, Random Forests.

**Neural Networks:** Perceptron, Feed-Forward Neural Networks And Back propagation,Example: Defeating a CAPTCHA.

**Clustering:** The Idea, The Model, Example: Meetups , Choosing k, Example: Clustering Colors, Bottom-up Hierarchical Clustering.

**REFERENCES:**

1. Data Science from Scratch by Joel Grus O'Reilly Media
2. Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", O'Reilly, 2nd Edition, 2018.
3. Jake VanderPlas, "Python Data Science Handbook: Essential Tools for Working with Data", O'Reilly, 2017.
4. Web resources:
    a. https://www.edx.org/course/analyzing-data-with-python
    b. http://math.ecnu.edu.cn/~lfzhou/seminar/[Joel_Grus]_Data_Science_from_Scratch_First_Princ.pdf
5. 9. Other web sources suggested by the teacher concerned and the college librarian including reading material.

**Co-Curricular Activities:**

*a)* **Mandatory:** *(Training of students by teacher in field related skills: (lab:10 + field: 05):*

1. **For Teacher:** Field related training of students by the teacher in laboratory/field for not less than 15 hours on identifying, analyzing and presenting the data and then to predict the future instances.
2. **For Student**: Students shall (individually) search online and visit any of the agencies like Statistical cell, weather forecasting centers, pollution control boards, manufacturing industries, agriculture departments, etc. to observe the manual process going on to collect the data, maintain the data, present the data and to predict the data for future instances and submit a hand-written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages.
3. Max marks for Fieldwork/Project work/Project work/Project work/Project work/Projectwork Report: 05.

4. Suggested Format for Fieldwork/Project work/Project work/Project work/Project work: *Title page, student details, index page, details of place visited, observations, findings andacknowledgements.*
5. Unit tests (IE).

**b) Suggested Co-Curricular Activities**

1. Training of students by related industrial experts.
2. Assignments
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Presentation by students in related topics.

| B Sc | Semester :V(Skill Enhancement Course - Elective) | Credits: 1 |
|---|---|---|
| Course: 6C | Data science Lab | Hrs/Wk: 2 |

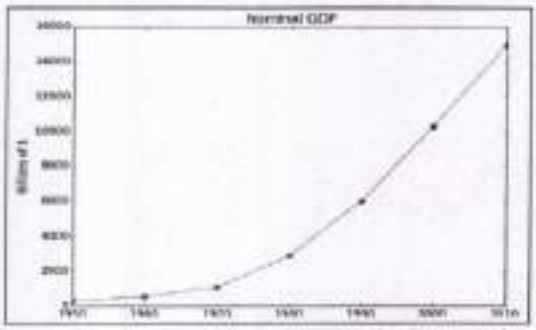
## Course 6C: Data Science – PRACTICAL SYLLABUS

**Learning Outcomes:** On successful completion of this practical course, student shall beable to:

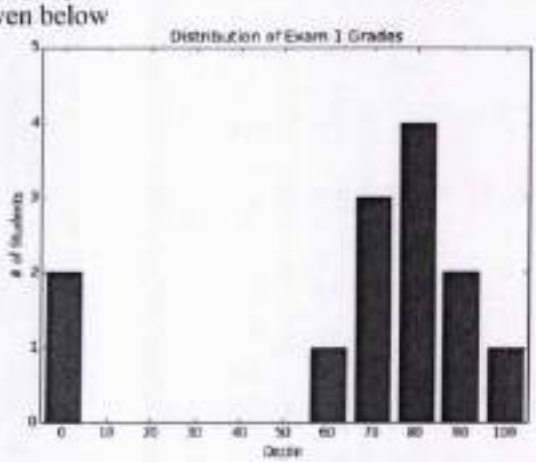
1. Apply data science solutions to real world problems.
2. Implement the programs to get the required data, process it and present the outputs using Python language.
3. Execute statistical analyses with Open source Python software.

**Practical (Laboratory) Syllabus:** *(30 hrs.)*

1. Write a Python program to create a line chart for values of year and GDP as givenbelow




2. Write a Python program to create a bar chart to display number of students secureddifferent grading as given below




3. Write a Python program to create a time series chart by taking one year month wisestock data in a CSV file
4. Write a Python program to plot distribution curve
5. Import a CSV file and perform various Statistical and Comparison operations on rows/columns. Write a python program to plot a graph of people with pulse rate p vs.height h. The values of P and H are to be entered by the user.
6. Import rainfall data of some location with the help of packages available in R Studioand plot a chart of your choice.

| B Sc | Semester :V(Skill Enhancement Course - Elective) | Credits: 4 |
|---|---|---|
| Course: 7C | Python for Data science | Hrs/Wk: 4 |

**Learning Outcomes:** Students after successful completion of the course will be able to:

1. Identify the need for data science and solve basic problems using Python built-in data types and their methods.
2. Design an application with user-defined modules and packages using OOP concept
3. Employ efficient storage and data operations using NumPy arrays.
4. Apply powerful data manipulations using Pandas.
5. Do data pre-processing and visualization using Pandas

**Syllabus:** *(Total Hours: 90 including Teaching, Lab, Field training, Unit tests etc.)*

**UNIT I:** (10 hours)

Introduction to Data Science - Why Python? - Essential Python libraries - Python Introduction- Features, Identifiers, Reserved words, Indentation, Comments, Built-in Data types and their Methods: Strings, List, Tuples, Dictionary, Set - Type Conversion- Operators. Decision Making- Looping- Loop Control statement- Math and Random number functions. User defined functions - function arguments & its types.

**UNIT II:** (10 hours)

User defined Modules and Packages in Python- Files: File manipulations, File and Directory related methods - Python Exception Handling. OOPs Concepts -Class and Objects, Constructors – Data hiding- Data Abstraction-Inheritance.

**UNIT III:** (10 hours)

NumPy Basics: Arrays and Vectorized Computation- The NumPy ndarray- Creating ndarrays- Data Types for ndarrays- Arithmetic with NumPy Arrays- Basic Indexing and Slicing - Boolean Indexing-Transposing Arrays and Swapping Axes.

Universal Functions: Fast Element-Wise Array Functions- Mathematical and Statistical Methods-Sorting- Unique and Other Set Logic.

**UNIT IV:** (10 hours)

Introduction to pandas Data Structures: Series, Data Frame and Essential Functionality: Dropping Entries- Indexing, Selection, and Filtering- Function Application and Mapping- Sorting and Ranking.

Summarizing and Computing Descriptive Statistics- Unique Values, Value Counts, and Membership. Reading and Writing Data in Text Format

**UNIT V:** (10 hours)

Data Cleaning and Preparation: Handling Missing Data - Data Transformation: Removing Duplicates, Transforming Data Using a Function or Mapping, Replacing Values, Detecting and Filtering Outliers- String Manipulation: Vectorized String Functions in pandas.

Plotting with pandas: Line Plots, Bar Plots, Histograms and Density Plots, Scatter or Point Plots.

**REFERENCES:**

1. Y. Daniel Liang, "Introduction to Programming using Python", Pearson, 2012.
2. Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", O'Reilly, 2nd Edition, 2018.
3. Jake VanderPlas, "Python Data Science Handbook: Essential Tools for Working with Data", O'Reilly, 2017.
4. Wesley J. Chun, "Core Python Programming", Prentice Hall, 2006.
5. Mark Lutz, "Learning Python", O'Reilly, 4th Edition, 2009.
6. Web resources:
    a. https://www.edx.org/course/python-basics-for-data-science
    b. https://www.edx.org/course/analyzing-data-with-python
    c. https://www.coursera.org/learn/python-plotting?specialization=data-science-python
    d. https://www.programmer-books.com/introducing-data-science-pdf/
    e. https://www.cs.uky.edu/~keen/115/Haltermanpythonbook.pdf
7. Other web sources suggested by the teacher concerned and the college librarian including reading material.

**Co-Curricular Activities:**

***a)* Mandatory:** *(Training of students by teacher in field related skills: (lab:10 + field: 05):*

1. **For Teacher**: Field related training of students by the teacher in laboratory/field for not less than 15 hours on collecting the data, analyzing the data and presenting the data using Python language with some real time data.
2. **For Student**: Students shall (individually) visit any of the agencies like Agriculture dept, statistical cell, irrigation department, Ground water department, CPO office, Rural Water Supply and Sanitation department etc or search online to get real time data like Aids database, weather forecasting database, social networking data, etc and identify any one database, implement and present the necessary charts in Python language and submit a hand- written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages. Example: Identifying a database, get the data, present the data inrequired charts and to predict the future instances if possible.
3. Max marks for Fieldwork/Project work/Project work/Project work/Project work Report:05.
4. Suggested Format for Fieldwork/Project work/Project work/Project work/Project work: *Title page, student details, index page, and details of place visited, observations, method of data collection, database identified, and implementation in Python language, other findingsand acknowledgements.*
5. Unit tests (IE).

**b) Suggested Co-Curricular Activities**

1. Training of students by related industrial experts.
2. Assignments
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Presentation by students on the topics within and outside the syllabus.

| B Sc | Semester :V(Skill Enhancement Course - Elective) | Credits: 1 |
|---|---|---|
| Course: 7C | Python for Data science Lab | Hrs/Wk: 2 |

**Python for Data Science – PRACTICAL SYLLABUS**

**Learning Outcomes:** On successful completion of this practical course, student shall beable to:

1. Implement simple programs in Python.
2. Implement programs related to various structures like arrays, lists, Data frames, etc.
3. Implement programs related to files.
4. Implement applications related to data science.

**Practical (Laboratory) Syllabus**: *(30 hrs.)*

1. Perform Creation, indexing, slicing, concatenation and repetition operations onPython built-in data types: Strings, List, Tuples, Dictionary, Set
2. Apply Python built-in data types: Strings, List, Tuples, Dictionary, Set and theirmethods to solve any given problem.
3. Handle numerical operations using math and random number functions
4. Create user-defined functions with different types of function arguments.
5. Create packages and import modules from packages.
6. Perform File manipulations- open, close, read, write, append and copy from onefile to another.
7. Write a program for Handle Exceptions using Python Built-in Exceptions
8. Write a program to implement OOP concepts like Data hiding and DataAbstraction.
9. Create NumPy arrays from Python Data Structures, Intrinsic NumPy objects andRandom Functions.
10. Manipulation of NumPy arrays- Indexing, Slicing, Reshaping, Joining andSplitting.
11. Computation on NumPy arrays using Universal Functions and Mathematicalmethods.
12. Load an image file and do crop and flip operation using NumPy Indexing.
13. Create Pandas Series and Data Frame from various inputs.
14. Import any CSV file to Pandas Data Frame and perform the following:
    (a) Visualize the first and last 10 records
    (b) Get the shape, index and column details
    (c) Select/Delete the records (rows)/columns based on conditions.
    (d) Perform ranking and sorting operations.
    (e) Do required statistical operations on the given columns.
    (f) Find the count and uniqueness of the given categorical values.
    (g) Rename single/multiple columns

15. Import any CSV file to Pandas Data Frame and perform the following:
    (a) Handle missing data by detecting and dropping/ filling missing values.
    (b) Transform data using apply () and map() method.
    (c) Detect and filter outliers.
    (d) Perform Vectorized String operations on Pandas Series.
    (e) Visualize data using Line Plots, Bar Plots, Histograms, Density Plotsand Scatter Plots.

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