# P.K.R. ARTS COLLEGE FOR WOMEN

**(Accredited with 'A' Grade by NAAC)**
**An Autonomous Institution – Affiliated to Bharathiar University**
**No.21 Pariyur Road, Gobichettipalayam – 638476.**

## DEPARTMENT OF COMPUTER SCIENCE

## Bachelor of Science – Information Technology

## RULES AND REGULATIONS

**SCHOLASTIC COURSES**
**AND**
**CO-SCHOLASTIC COURSES**

***For the candidates admitted from the Academic Year***
***2023-2024 and onwards***
***Under CBCS PATTERN***

**CONTENTS**

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No: 21, Pariyur Road, Gobichettipalayam-638 476.

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**MEETING OF BOARD OF STUDIES IN COMPUTER SCIENCE**
**Academic year 2023 – 2024**
**Agenda**

**Date** : 06.07.2023 **Time** : 10.am **Venue** : Department of Computer Science

1. Confirm the minutes of the sixth meeting of the Board of studies held on 23.07.2022.
2. Approve the action taken on the resolutions passed in the previous meeting of the academic council held on 30.07.2022.

| **UNDER GRADUATE PROGRAMME (B.Sc C/S, BCA, B.Sc IT, B.Sc AI&ML)** | |
|---|---|
| **S.No 3 to 8 for I-UG (B.Sc C/S, BCA, B.Sc IT)** | **BATCH(2023-2026 and Onwards)** |

3. Approve the change of pattern of Examinations with Internal 25 marks and External 75 marks in lieu of 50 : 50 respectively for the academic year 2023-2024 and onwards.
4. Approve the removal / Scrap of minimum pass mark in the continuous internal assessment for the academic year 2023-2024 and onwards.
5. Approve the inclusion of Language courses (Tamil – III, Tamil – IV, English – III, English – IV) in the respective Semester - III and IV for the academic year 2023-2024 and onwards.
6. Approve the language courses like Tamil are also to be given additional language courses in their opted language in the first four semesters like Tamil language for the academic year 2023-2024 and onwards.
7. Approve the inclusion of Naan Mudhalvan Courses in the curriculum as skill enhancement courses and Part II English – II added with Effective English for all UG programmes for the academic year 2023-2024 and onwards.
8. Ratify the changes of External Examinations pattern into Internal Examinations pattern for Foundation Courses, Ability Enhancement, Non- Major Elective and Skill Enhancement Course for the academic year 2023-2024 and onwards.

| **S.No 9 to 12 for II-UG (B.Sc C/S, BCA, B.Sc IT)** | **BATCH (2022-2025 and Onwards)** |
|---|---|

9. Approve the inclusion of Tamil – III, English – III in semester III, and Tamil – IV, English – IV in Semester IV for the batch 2022 -2023 only with additional language inclusion III and IV.
10. Ratification of revision of course scheme and scheme of examination of the academic year 2022-2023 semester III to VI (for UG Programmes, Semester III & IV for PG programme) and 2023-2024.
11. Approve the inclusion of Naan Mudhalvan Courses as skill enhancement courses in semester IV and Semester VI for the batch 2022-2023 only.

12. Ratify the change of External Examination pattern into Internal Examination Pattern for Ability Enhancement Courses, Non- Major Elective and Skill Enhancement Course for the students admitted in 2022-2023 only.

| **S.No 13 to 16 for I-UG (AI&ML)** | **BATCH (2023-2026 and Onwards)** |
|---|---|

13. Approve the course scheme and scheme of examinations for all the Six semesters.
14. Approve the detailed syllabi for Part I to Part VI for B.Sc AI & ML Programme
15. Approve the question paper pattern for both CIA and ESE- Theory, Practical and Project courses for semester I to VI
16. To approve the rules and regulations for the students admitted in Artificial Intelligence and Machine Learning programme from 2023-2024 and onwards.

| **POST GRADUATE PROGRAMME & PG DIPLOMA PROGRAMME** |
|---|
| **S.No 17 and 19 for I-MCA(2023-2025 and Onwards) & PGDCA(2023-2024 and Onwards)** |

17. Approve to change the pattern of Examination with Internal 25 marks and External 75 marks instead of 50:50 respectively for PG programmes for the academic year 2023-2024 and onwards.
18. Ratify the change of External Examinations pattern into internal pattern for Ability Enhancement for the academic year 2023–2024 and onwards.
19. Approve the syllabus, rules and regulations for PGDCA programme

20. Ratify the removal / inclusion / modification/ introduction in the course Structure, Course schemes and the scheme of Examinations (if any) ( along with mapping of CO's and PO's statements) for the students admitted in either UG/PG Programmes for the academic years 2021 -2022, 2022-2023 (UG Programmes) & 2022 - 2023 (PG Programmes).
21. Consider and recommend the revision of the minor changes such as shifting of courses in the programmes and the modifications in their courses.
22. Recommend fresh panel of members for QP setting and panel of Examiners of UG and PG programmes for theory and practical examinations and Central Valuation.
23. Any other items

**CHAIRPERSON**

## Department of Computer Science
## Board Members

| Particulars | Name and Designation | Signature |
|---|---|---|
| Chairman | Dr. P.M.Gomathi<br>Associate Professor & Head<br>Department of Computer Science<br>P.K.R. Arts College for Women<br>Gobichettipalayam | P.M.G 6/7/23 |
| Faculty Members | Ms.P.Vijayalakshmi<br>Assistant Professor in Computer Science<br>P.K.R. Arts College for Women<br>Gobichettipalayam.<br>Mobile No: 9894737369<br>Mail Id:vijuswamy@gmail.com | 6/7/23 |
| | Dr.T.B.Saranya Preetha<br>Assistant Professor in Computer Science<br>P.K.R. Arts College for Women<br>Gobichettipalayam.<br>Mobile No: 9715757785<br>Mail Id:saranyapreethatb@pkrarts.org | 6/7/2023 |
| | Ms.R.Anushiya<br>Assistant Professor in Computer Science<br>P.K.R. Arts College for Women<br>Gobichettipalayam.<br>Mobile No: 7639038190<br>Mail Id:anushiyar@pkrarts.org | 6/7/2023 |
| | Dr.M.Banu Priya<br>Assistant Professor in Computer Science<br>P.K.R. Arts College for Women<br>Gobichettipalayam.<br>Mobile No: 9487965589<br>Mail Id:banupriyam@pkrarts.org | 6/7/2023 |
| | Dr.M.Saranya<br>Associate Professor in Computer Science<br>P.K.R. Arts College for Women<br>Gobichettipalayam.<br>Mobile No: 9965286595<br>Mail Id:saranyacs@pkrarts.org | 6/7/23 |
| Expert 1 | Dr.N.Jayachandra<br>Head & Associate Professor<br>Department of Computer Science<br>Lady Doak College,Madurai.<br>Mobile No: 9976938424<br>Mail Id: jayachandra@ldc.edu.in | ABSENT |
| Expert 2 | Dr.A.Vijaya<br>Assistant Professor and Head,<br>Sri Meenakshi Govt Arts College for Women<br>(Autonomous),<br>Goripalayam, Madurai-625002<br>Mobile No: 9244217777<br>Mail Id: vijayakathiravan1977@gmail.com | ABSENT |

| | | |
|---|---|---|
| University Nominee | Dr.C.R.Sakthivel<br>Department of Computer Science,<br>Sri Ramakrishana Misssion Vidhalaya College of Arts and Science,<br>Coimbatore – 641020<br>Mobile No: 9360772859, 9443099122<br>Maid Id: crsakthivel@gmail.com | |
| Industrialist | R Mylsamy MCA, PGDCA.,<br>Center head,<br>Software Training Division<br>Sri Krishna I-Tech and Management Solutions Pvt Ltd,<br>#408, Cross Cut Road, Gandhipuram,<br>Coimbatore - 641 012.<br>Mobile : 9865636371,7904508727<br>Mail id : mylsamy@srikrishnaitech.com | |
| Alumnae | Dr.G.Dona Rashmi<br>Assistant Professor/ computer applications<br>Kongunadu Arts and Science College<br>Coimbatore<br>Mobile No: 9715887735<br>Mail Id: donamca08@gmail.com | |
| Student Member | R.Srinigha<br>II M.C.A<br>Mobile:9361009827<br>E Mail Id: srinigharajendran@gmail.com | |

**P.K.R. ARTS COLLEGE FOR WOMEN (AUTONOMOUS)**
**(Accredited with 'A' grade by NAAC - Affiliated to Bharathiar University, Coimbatore)**
**GOBICHETTIPALAYAM – 638 476.**

## VISION

To make a centre of excellence in higher education by imparting value based quality education to rural women, to empower and make them economically independent, and socially committed to the task of building a strong nation.

## MISSION

Empowering the rural women by inculcating the core values of truth and righteousness and by ensuring quality in the teaching-learning process along with co-curricular and extra-curricular activities for their economic independence, social commitment and national development.

## GOALS AND OBJECTIVES

- The college had been founded by the tillers of the soil, aimed at providing access to higher education for women students of the rural areas, who do not have the facilities of their urban counterparts.
- To provide quality education to empower the rural women.
- To impart value based education and prepare the women students to uphold the rich cultural heritage and secular ideals of the nation.
- To awaken the social consciousness among students and motivate them to serve society with the motive of establishing an egalitarian system.
- To provide opportunities to develop the overall personality of the students and thus enabling them to face challenges in the competitive global scenario.

## CORE VALUES OF THE INSTITUTION

- Education
- Enlightenment
- Discipline
- Service

## PROGRAMME EDUCATIONAL OBJECTIVES

1. To provide value-based quality education with theoretical and applied skills for rural women.
2. To facilitate personality development opportunities for students to face life's challenges in today's competitive scenario.
3. To empower rural women and make them economically independent through employability and entrepreneurship.
4. To awaken social consciousness of the students through community engagement for active contribution to the society.
5. To equip the students to become morally, ethically and socially responsible for building a strong nation.

## PROGRAMME OUTCOMES

1. **Disciplinary knowledge**: Demonstrate critical and systematic proficiency about the breadth and depth of the basic and emerging trends in the arts and science streams appropriate to the programme.
2. **Communication skills**: Communicate ideas clearly and effectively through verbal and non-verbal forms to specialist and non-specialist audiences with professionalism and multi-disciplinary approach.
3. **Critical thinking, problem solving and analytical reasoning:** Apply appropriate knowledge and skills to identify, formulate, critically analyse and substantially conclude with simple solutions to problems.
4. **Research skills and reflective thinking:** Explore real-time scenarios, analyse and interpret data and information, articulate and support findings with evidences incorporating economic and business practices to reach valid conclusion.
5. **Teamwork and Leadership skills for interpersonal competence:** Ability to interact, communicate and collaborate in a trans-disciplinary context.
6. **Continuous autonomous learning and digital literacy:** Ability to find, evaluate and compose clear information for self-directed learning through conventional and digital media.
7. **Social consciousness with concern for environment**: Capability to synthesise the economic, legal, social, environment, health, safety and cultural dimensions of the society with moral and ethical reasoning and promote equity through sustainable development practices.

# GRADUATE ATTRIBUTES

1. Disciplinary knowledge.
2. Communication skills.
3. Critical thinking, problem solving and analytical reasoning.
4. Research skills and reflective thinking.
5. Teamwork and Leadership skills for interpersonal competence.
6. Continuous autonomous learning and digital literacy.
7. Social consciousness with concern for environment.

# DEPARTMENT OF COMPUTER SCIENCE

## VISION

To create a genre of IT professionals equipped with high degree of technical skills driven by moral values.

## MISSION

Imparting knowledge, skills and ethics to the younger generation, in the dynamic environment, to meet the global challenges and enhance competency.

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# B.Sc Information Technology (2023-2026)

## Programme Specific Outcomes (PSOs)

On successful completion of B.Sc. Information Technology Programme, the students would be able to

**PSO1:** acquire the core and theoretical knowledge in multiple programming languages that lays the foundation for recent technology

**PSO2:** write programming codes and present extensive technical reports and documentations

**PSO3:** critically think, analyze, design and develop IT based solutions for the needs and requirements of the industry, business and society at large.

**PSO4:** employ analytical reasoning and reflective thinking to evaluate the hardware and software aspects relevant to the Information Technology practice

**PSO5:** apply ethical principles and commit to professional and social responsibilities and collaborate in a team proficiently as IT Professional

**PSO6:** use ICT enabled learning resources and infrastructure.

**PSO7:** engage in independent and lifelong learning for continued professional development in various areas for career and higher studies.

# RULES AND REGULATIONS FOR STUDENTS ADMITTED FROM

# 2023-24 & ONWARDS

P.K.R. Arts College founded in the year 1994 with the vision to make the college a "**Centre of Excellence"** in higher education by imparting value based quality education to rural women, to empower and make them economically independent and socially committed to the task of building a strong nation. Ever since its inception the college took steps to inculcate the core values of truth and righteousness through right kind of teaching and learning methods and grown to leap and bounds.

As per the expectations of UGC on the Autonomous colleges, our college has initiated the following measures for the quality improvement of its functioning:

1. To Re-structure and design the course curricula;
2. To Inculcate research culture amongst the students and teachers;
3. Promote healthy practices such as community service, extension services, projects, etc. for the benefit of the society

The P.K.R. Arts College for Women follows the UGC, TANSCHE and Bharathiar University guidelines of CBCS pattern in framing Course Scheme and scheme of examinations for the students admitted in various UG and PG Programmes from the Academic year 2017-18 and onwards.

## DEFINITION OF TERMS:

### Choice Based Credit System (CBCS):

CBCS is a flexible system of learning that permits students to,

- Learn at their own pace,
- Choose electives from a wide range of elective courses offered by the departments
- Adopt an inter-disciplinary approach in learning, and
- Undergo additional courses and acquire more than the required number of credits
- Make best use of the expertise of available faculty

**Programme:**

The term ***"Programme"*** is used to refer to the Bachelor or Master level of study offered in P.K.R. Arts College for Women. For e.g. B.A. Programme indicates Bachelor of Arts and B.Sc., Programme indicates, Bachelor of Science and M.Sc., Programme indicates, Master of Science.

**Branch:**

The term ***"branch"*** is used to refer to the subject specialization under the Bachelors or Masters Level of study offered in P.K.R. Arts College for Women. For e.g. B.A. Tamil Literature indicates, the Bachelor of Arts, specializing Tamil Literature and M.Sc., - Mathematics, indicates Master of Science, specializing in Mathematics.

**Duration:**

The total study periods of various programmes are:

- Undergraduate (Bachelors) programmes : (B.A. or B.Sc or B.Com or BCA or BBA): Three years (Six semesters)
- Postgraduate (Masters) programme (M.A. or M.Sc, M.Com & M.B.A): Two years (Four semesters) and M.C.A. Regular stream (Two years – Four Semesters).

**Curriculum:**

The term "curriculum" indicates the various components of the programme and branch of study.

**Course:**

The term "course" is used to refer to the specific subject or the paper of the particular Programme and branch of study.

**Course Scheme:**

Course scheme denotes the course outline or the components of the particular Programme and branch of study.

**Scheme of examinations:**

Scheme of examination indicates the contact hours allotted for each course, the duration of End Semester Examination, marks details for CIA and ESE and the credit score specified for each course.

**Syllabus:**

The subject content of each course is referred to as "Syllabus".

**Semester:**

The term "semester" denotes the start and the end of teaching period of the Academic year. The college adopts two semester pattern of an Academic Year. The duration of each semester is roughly around six months period but not less than 90 working days. The semester is subdivided as (ODD and EVEN) spanning six months (odd semester is from June to November and Even semester is from December to May).

**Credit system:**

It is a system of assigning weightage to each one of the courses and components of the curriculum of a programme and branch of study in terms of the weightage of the teaching learning process of that particular course. The weightage is given in terms of credit points.

**Credit point:**

Credit point is the numerical weightage given to the particular course of study. The student learner should obtain the mandatory minimum credit points specified for each programme and branch of study to earn her degree. The student learner may also earn additional credits by the way of completing extra courses (subjects).

**Courses offered:**

- B.A (Tamil Literature)
- B.A (English Literature)
- B.Sc (Mathematics)
- B.Sc (Physics)
- B.Sc (Computer Science)
- B.C.A (Computer Application)
- B.Sc (Information Technology)
- B.Com (Commerce)

- B.Com (Computer Applications)
- B.Com (Professional Accounting)
- B.B.A (Business Administration)

**Credits to be earned:**

All Undergraduate Programmes : **140** credits

**Duration:**

Duration for all the UG programmes is THREE (03) years.

**COMPONENTS: FOR UG PROGRAMMES:**

**Scholastic Courses:**

**Part: I** : Tamil/Hindi/French/Malayalam/Kannada/Sanskrit

**Part: II** : English

**Part: III** : This part consists of…

a) Core courses
b) Core: Allied courses
c) Elective courses
(CBCS - Discipline Specific Elective courses / Open Elective Course)

**Part: IV**: Following are the components coming under Part: IV

***A: Foundation:***

i) Environmental studies - offered during semester I
ii) Yoga and Ethics - offered during semester II

***B: Skill Enhancement:***

i) Courses offered by the respective departments - offered during semesters IV, & VI
ii) Life Skills (Jeevan Kaushal) (Curriculum as recommended by UGC) – offered during semester V by all the departments

***C: Ability Enhancement:***

Course I: Information Security - offered during semester III

Course II : Consumer Rights - offered during semester IV

***D: Non-Major Electives:***

i) Indian Women and Society / Advanced Tamil - offered during semester III

**Part V** : Following are the components coming under Part: V

i) Proficiency Enhancement:

Self Study - offered during semester V

ii) Competency Enhancement :

There are 3 components in this:

a) NSS / YRC / RRC / CCC / PHYSICAL EDUCATION / OTHERS - to be completed during Semester I – VI by the candidate.
b) Students Social activity (Curriculum related) - to be completed during Semester I – VI by the candidate.
c) Professional Grooming - - to be completed during Semester I – IV by the candidate.

**ADMISSION NORMS:**

The eligibility conditions and the guidelines issued by the Bharathiar University in admitting students are followed for all the UG Programmes offered in P.K.R. Arts College for Women.

**EXAMINATION AND EVALUATIONS:**

**Requirement for appearing End Semester Examinations:**

**Attendance: (as per the norms and guidelines of Bharathiar University)**

i)A candidate is eligible to appear for the End Semester examinations in any semester, if:

- She secures not less than 75% of attendance in the number of working days during the semester.
- Her progress has been satisfactory
- Her conduct has been satisfactory

ii). Candidates who earn attendance between 65% and 75% are ineligible to appear for the current semester examinations. However, the Principal may condone the lack

of attendance of those students on the following grounds and permit them to write End Semester Examinations, after the payment of condonation fee:

* Prolonged illness
* Major Surgery
* Accident which demands a long rest

The cause of the long period of absence should be informed with supportive documents to the Principal within a week's time and get the leave sanctioned.

iii). Candidates who earn attendance between 55% and 64% are ineligible to appear for the current semester examinations. However, they can write arrear subjects, if any. They are permitted to continue their studies in the next semester; while continuing in the next semester, they have to compensate and earn combined attendance of 75% or more by taking the average of the attendance earned in the current and the previous semester.

iv). Candidates who earn attendance below 55% are not eligible to appear for the current semester examinations and also have to discontinue the course and rejoin in the same semester in the next academic year, if vacancy is available, with proper approval from the Bharathiar University and the Principal through the Head of the Department concerned. These candidates are eligible to write arrear subjects, if any.

v). Students having a minimum of 75% of attendance in the Practical classes alone will be eligible to submit their record note books and appear for CIA and ESE practical examinations.

vi). Students shall be permitted to appear for the practical examinations only with the submissions of bonafide records.

**Scheme of examinations:**

i). All End Semester Examinations (theory and practical) shall be conducted twice a year, in November / December and in April / May. All failed candidates shall be governed by the regulations and syllabus in force at the time of their subsequent appearances.

ii). Additional supplementary End Semester Examinations in final semester subjects and Special Supplementary End Semester Examinations for students who have failed in only one subject up to V semester (UG Programmes) are conducted in June / July every year to facilitate the final year students who have failed to score passing minimum to go for higher studies or seek job early.

**RULES TO BE FOLLOWED BY STUDENTS DURING EXAMINATION:**

1. A candidate entering the examination hall must possess hall-ticket and identity card issued by the Principal, else she will be denied admission to write the examination.
2. Candidates have to occupy their allotted seats 10 minutes before the commencement of examination and maintain discipline and silence inside the examination hall. They have to give due attention to the instructions given by the Hall Superintendent before the commencement and also during the examination.
3. No candidate will be permitted to enter examination hall after 30 minutes from the commencement of examination. Similarly, no candidate will be permitted to leave the exam hall before 30 minutes from the commencement of examination.
4. A candidate who leaves the examination hall will not be permitted to re-enter the hall under any account.
5. Candidates are expected to bring their own pens, pencils, eraser, geometrical instruments, non-programmable calculators etc., and will not be allowed to borrow from others.
6. Candidates should use only blue or black ink or ball-point pen while answering their papers. Only for drawing diagrams or chart, colour pens / sketch pens are allowed.
7. Clark's mathematical table, Statistical table and Compound present value table will be supplied to candidates on request and the same should be returned immediately after use, without any scribbling. However, the candidates will be allowed to use their own mathematical and statistical tables / data sheets/graph sheets which are uncommon and specifically required to answer a particular paper after obtaining permission from Chief/Hall Superintendent. Such sheets or tables with any scribbling will not be permitted.
8. Candidates are prohibited from possessing study material in any form or mobile phone or and any such Electronics/ Communication instruments inside the examination hall. Mere possession of such materials inside the examination hall itself will be considered as the material meant for malpractice and will lead to disciplinary actions.
9. Candidates must verify and satisfy themselves that they have received correct question paper before they start answering for questions. Question paper not relevant should be returned to the hall superintendent at once.
10. Candidates are not allowed to write beyond the time prescribed for the examinations.
11. Rough work, if any, must be done by the candidates on the bottom of the page itself. Candidates can reserve, if necessary, one fourth of the page at the bottom exclusively

for the purpose. No separate answer book for rough work will be supplied to candidates. Rough work carried out of by a candidate will become part and parcel of the answer paper.

12. Candidates are forbidden from asking questions or clarifications of any kind from the fellow student or Hall Superintendent during the examination.
13. Candidates should not detach any sheet from the main answer book or smuggle out additional sheet or main book.
14. Candidates should handover the answer books personally to the Hall superintendent, before leaving the examination hall.
15. Candidates should not write their Register number anywhere else (except in the specified space) on the first page of Answer Book. Writing the name or making any appeal in the answer book or any other identifiable marking will be treated as an attempt to influence the examiner. Hence, any such act will attract disciplinary measures.
16. The students who indulge in any malpractice while writing examination will be immediately referred to the Chief Superintendent for the initiation of appropriate disciplinary action.
17. In case of impersonation, the accused will be handed over to police authorities for investigation and necessary action.
18. In the event of public holiday being declared after the publication of timetable, the examinations will not be postponed or cancelled. The examinations will be conducted as scheduled unless otherwise notified.
19. Any letter or telegram or phone call to a candidate shall not in any case be delivered / informed to the candidate until he/she completes examination.
20. Candidates with disabilities and who could not write examination by themselves shall submit a request to the Principal in the beginning of the Academic Year with the support of documentary evidences for alternate arrangements.

**Transitory positions:**

The candidate who have completed the course of study (THREE YEARS IN CASE OF UG PROGRAMMES) but have arrears will be permitted to take up the examinations only under the regulations in force at the time.

**Facility to appear in an examination already passed:**

The Candidates who have passed examinations may be permitted to appear again (Only once) for the end semester examinations of that course or courses under the regulations and syllabi in force then, with a view to improve their performance(s). If they do not show improvement, their previous marks shall be the final marks in all records (such candidates should not have applied for their Degree certificate in Convocations held in between). Also such reappearances shall be permitted only once at the examination(s) conducted in the college in the next two semesters only.

**Provision to re-total the answer book:**

Candidates who desire to have their answer books re-totaled shall apply to the controller of Examinations, remitting the prescribed fees within 10 calendar days from the date of publication of results. Where the marks obtained in the re-totaling are higher than the marks awarded earlier, the Controller of Examinations shall issue the revised mark sheets after withdrawing the previous one.

**Provision to appeal for re-evaluation of End Semester Examination Marks:**

Candidates who desire to have their answer books revalued shall apply to the Controller of Examinations, remitting the prescribed fees within 10 calendar days from the date of publication of results (The date mentioned in the Mark sheet). If the revalued marks are higher to the extent of getting a passing minimum and more than the marks awarded earlier, then the COE shall issue the revised mark sheet after withdrawing the mark sheet issued previously. If the revalued marks are higher than the marks awarded earlier but not to the extent of getting a passing minimum, then the first valuation marks shall be the final marks. The principles of moderation formulated in the Results Passing Board for the respective examination shall be applied for the revaluation cases also.

**Transparency system:**

Under this system, the photo copy of the answer script written by the student is issued on request. The procedure is that the candidate who desires to get the Photo copy of her answer script shall apply to the COE, remitting the prescribed fee within 10 calendar days from the date (noted in the mark sheet) of publication of results. On a specific day, the candidates who have applied for this facility will be given with the photo copy of the answer

script and would be directed to discuss the issues with the subject experts who are specially appointed for the purpose. The students may scrutinize the answers script, discuss with the subject expert, get clarifications and if they are not convinced with the marks awarded then they may go for applying for revaluation. Such a request shall be made within 3 calendar days. The procedure followed for the revaluation is applied to this category also.

**Passing Minimum:**

A candidate who secures not less than 40% marks in ESE of various components shall be declared to have passed the examination in that course (subject).

**Classification of successful candidates and grading system:**

No candidate shall be eligible for classification or grading unless, the candidate

- has undergone the prescribed course of study for the prescribed period
- has passed / completed all the courses (subjects) / components prescribed for the programme
- has earned the credit points prescribed for the programme.

**Part: I & II**

Candidates who have passed Part: I (Tamil / Hindi / French / Kannada / Malayalam Sanskrit) and Part: II English Courses (subjects) and securing 60% and above and 50% to 59.99% within three years from the date of admission, shall be declared to have passed in I & II classes respectively and all other successful candidates shall be declared to have passed the examinations in III class**.**

**Part: III**

Candidates who have passed all the Part: III examinations in FIRST ATTEMPT within the study period of the respective semester and securing 75% and above in aggregate of Part: III shall be declared to have passed the Part: III examination in first class with distinction. All other candidates who have passed Part: III subjects and securing 60% & above, 50% to 59.9% and 40% to 49.9% shall be declared to have passed the Part: III examinations in First, Second and Third class respectively.

## GRADING SYSTEM

Based on the guidelines of Bharathiar University on grading system the following grading System for the students admitted from 2017-18 & onwards.

**Conversion of Marks to Grade Points and Letter Grade:**

| RANGE OF MARKS | GRADE POINT | LETTER GRADE | DESCRIPTION |
|---|---|---|---|
| 90 - 100 | 9.0 -10.0 | O | Outstanding |
| 80 - 89 | 8.0 – 8.9 | D+ | Excellent |
| 75 - 79 | 7.5 – 7.9 | D | Distinction |
| 70 - 74 | 7.0 – 7.4 | A+ | Very Good |
| 60 - 69 | 6.0 – 6.9 | A | Good |
| 50 - 59 | 5.0 – 5.9 | B | Average |
| 40 - 49 | 4.0 – 4.9 | C | Satisfactory |
| 00-39 | 0.0 | U | Reappear |
| Absent | 0.0 | AAA | Absent |

**Classification:**

| CGPA | GRADE | CLASSIFICATION OF FINAL RESULT |
|---|---|---|
| 9.5 – 10.0 | O+ | First class – Exemplary* |
| 9.0 and above but below 9.5 | O | |
| 8.5 and above but below 9.0 | D++ | First class with Distinction |
| 8.0 and above but below 8.5 | D+ | |
| 7.5 and above but below 8.0 | D | |
| 7.0 and above but below 7.5 | A+ | First Class |
| 6.5 and above but below 7.0 | A+ | |
| 6.0 and above but below 6.5 | A | |
| 5.5 and above but below 6.0 | B+ | Second Class |
| 5.0 and above but below 5.5 | B | |
| 4.5 and above but below 5.0 | C+ # | Third Class |
| 4.0 and above but below 4.5 | C # | |
| 0.0 and above but below 4.0 | U | Re-appear |

**# Applicable only to U.G. Programmes**

*** Applicable for the students who have passed the Part: III examinations in FIRST APPEARANCE within the study period of the respective semesters.**

- Cumulative Grade Point Average (CGPA) and final classifications are to be made for the students who have passed all courses (subjects) / completed all components prescribed for the programme
- Part-III components alone are considered for CGPA.
- Part-I, Part-II, Part-IV & Part-V are not to be considered for finding the CGPA or for the classification of Part—III
- The maximum marks per course (subject) are to be fixed at 100.
  (if it is less or more than 100, it should be converted to 100)
- Grade point average – For a semester: (GPA): = $\sum$**CGP / C**

  Where C = Credits earned for the course in any semester

  G = Grade Point obtained for the course in any semester

  $$GPA = \frac{\text{Sum of the multiplication of grade points by the credits of the courses}}{\text{Sum of the credits of the courses in a semester}}$$

- Cumulative Grade Point Average – For the entire programme: (CGPA) is calculated by using the formula:

  $$CGPA = \frac{\sum \mathbf{CGP}}{\sum \mathbf{C}}$$ Where C = Credit Point, GP= Grade Point

  $$\mathbf{CGPA} = \frac{\text{Sum of the multiplication of grade points by the credits of the entire programme}}{\text{Sum of the credits of the courses of the entire programme}}$$

- **CGPA is given only in Consolidated mark statement / Grade sheet.**

**Ranking:**

- Candidates who have passed all the courses (subjects) or completed all the components prescribed for the UG programme within the period of study are only eligible for Ranking
- Ranking is based on the marks scored in Part-III subjects only.
- Candidates passing the Part-III subjects in First Attempt within the study period of respective semesters are only eligible for ranking.
- In case of Reappearance, the first appearance mark is only considered for ranking.
- Candidates absenting for the courses (subjects) prescribed in Part-III and getting higher marks in the subsequent appearances will not be considered for Ranking.

**MALPRACTICE AND PUNISHMENT**

**Punishment for malpractice committed during End Semester Examinations**.

The students, who indulge in any malpractice, while writing examination, will be directed to report to Chief Superintendent. The chief superintendent will review and forward the case to Controller of Examinations and the CoE in turn will submit the details to Examination Committee for the initiation of appropriate disciplinary proceedings.

| NATURE OF MALPRACTICE | NATURE OF PUNISHMENT | LEVEL OF PUNISHMENT |
|---|---|---|
| **Making an appeal** in any form inside the answer script | **Warning** may be given and if repeated the examination taken by the candidate will be cancelled | LEVEL: I |
| **Possession** of mobile phone / study materials / incriminating materials in any form | The **particular examination** taken by the candidate will be **cancelled** | LEVEL: II |
| **Aiding / Passing / Referring / Copying** from mobile phone / study material | The **particular examination** and a**ll t**he **examinations** written already in this semester including Arrear will be **cancelled and** may be permitted to write subsequent semester examinations | LEVEL: III |
| **Insubordinate behavior** or threatening the | The **particular examination** and a**ll t**he **examinations** written already in this | LEVEL:IV |

| | | |
|---|---|---|
| Invigilator | semester will be **cancelled** and also will be **debarred** from appearing for the **ONE subsequent semester examinations** | |
| **Inserting** previously written answers | The **particular examination** and a**ll t**he **examinations** written already in this semester will be **cancelled** and also will be **debarred** from appearing for the **TWO subsequent semester examinations** | LEVEL: V |
| Case of **Impersonation** | The **particular examination** and a**ll t**he **examinations** written already in this semester will be **cancelled** and will be **expelled** **From the college and the matter will be referred to the Police if necessary for further action.** | LEVEL: VI |

**B.Sc – Information Technology**
**Programme Structure**
**CBCS – 2023-24& Onwards**

| Category | Component | No. of Courses | Credit(s) / Course | Total Credits | Proposed Semester |
|---|---|---|---|---|---|
| **Part – I** | Tamil/Hindi/French/Kannada/Malayalam/Sanskrit | 4 | 3 | 12 | I – IV |
| **Part – II** | English | 4 | 3 | 12 | I – IV |
| **Part – II** | Effective English | 2 | 1 | 1 | II |
| **Part - III** | **Core Courses**<br>*(Core Theory /Core Practical/ Core Allied/ Elective/Open Elective)* | 23 | 2/3/4/5 | 89 | I - VI |
| **Part - III** | Project Work | 2 | 5 | 5 | To be done in V & VI Semester, ESE in Semester VI |
| **Part –IV** | **A. Foundation Courses:**<br>i. Environmental Studies<br>ii. Yoga and Ethics | <br>1<br>1 | <br>2<br>2 | 4 | <br>I<br>II |
| | **B. Ability Enhancement Courses:**<br>i. Information Security<br>ii. Consumer Rights | <br>1<br>1 | <br>2<br>2 | 4 | <br>III<br>IV |
| | **C. Skill Enhancement Courses:**<br>i. Programming in PHP –Practical / Naan Mudhalvan Course<br>ii. Life Skills<br>iii. Digital Marketing / Naan Mudhalvan Course | <br>1<br>1<br>1 | <br>2<br>2<br>2 | 6 | <br>IV<br>V<br>VI |
| | **D. Non-Major Elective:**<br>i. Indian Women and Society / Advanced Tamil | 1 | 2 | 2 | III |
| **Part –V** | **A. Proficiency Enhancement**<br>i. Case Tools(Self Study)<br>**B. Competency Enhancement:**<br>i. NSS/YRC/RRC/CCC/PHY.EDU/OTHERS<br>ii. Professional Grooming<br>iii. Students Social Activity | 1<br>1<br>1<br>1 | 2<br>1<br>1<br>1 | 5 | V<br>Sem I to VI<br>Sem I to VI<br>Sem I to VI |

**Total Marks : 3700 Total Credits : 140**

# UG SCHEME OF EXAMINATIONS 2023-24

***(For students admitted in 2023-24 & onwards)***
***(For branches offering Part-I and Part-II for two semesters)***

**P.K.R. ARTS COLLEGE FOR WOMEN (Autonomous)**
**Gobichettipalayam – 638 476.**
**BACHELOR OF INFORMATION TECHNOLOGY**
**Programme Scheme and Scheme of Examinations**
***(For students admitted in 2023 - 2024 & onwards***
**CBCS Pattern: 2023-2024**

***Scholastic Courses:***

| Category | Component | Course Code | Course Title | Contact Hrs/ week | Exam hrs. | Max. Marks | | | Credit |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | CIA | ESE | Total | |
| **SEMESTER- I** | | | | | | | | | |
| Part I | Language: I | 23LTU01/ 23LHU01/ 23LFU01/ 23LKU01/ 23LMU01/ 23LSU01 | Tamil- I/ Hindi-I/ French-I/ Kannada-I/ Malayalam-I / Sanskrit-I | 4 | 3 | 25 | 75 | 100 | 3 |
| Part II | English: I | 23LEU01 | English - I | 4 | 3 | 25 | 75 | 100 | 3 |
| Part III | Core : I | 23ITU01 | Programming in C | 5 | 3 | 25 | 75 | 100 | 4 |
| Part III | Core : II Practical : I | 23ITU02 | Programming in C-Practical | 5 | 3 | 40 | 60 | 100 | 4 |
| Part III | Core : III | 23ITU03 | Digital Computer Fundamentals | 5 | 3 | 25 | 75 | 100 | 4 |
| Part III | Core : IV Allied : I | 23ITU04 | Mathematical Structures for Computer Science | 5 | 3 | 25 | 75 | 100 | 3 |
| Part IV | Foundation : I | 23FCU01 | Environmental Studies | 2 | 3 | 50 | - | 50 | 2 |
| | | | **TOTAL** | **30** | | | | **650** | **23** |
| **SEMESTER-II** | | | | | | | | | |
| Part I | Language: II | 23LTU02/ 23LHU02/ 23LFU02/ 23LKU02/ 23LMU02/ 23LSU02 | Tamil- II/ Hindi-II/ French-II/ Kannada-II/ Malayalam-II/ Sanskrit-II | 4 | 3 | 25 | 75 | 100 | 3 |
| Part II | English: II | 23LEU02 | English - II | 4 | 3 | 25 | 25 | 50 | 4 |
| | | 23LEEU03 | Effective English | 2 | - | 25 | 25 | 50 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Part III | Core : V | 23ITU05 | Programming in Java | 5 | 3 | 25 | 75 | 100 | 4 |
| Part III | Core : VI Practical : II | 23ITU06 | Programming in Java – Practical | 4 | 3 | 40 | 60 | 100 | 4 |
| Part III | Core : VII Practical : III | 23ITU07 | Linux –Practical | 4 | 3 | 40 | 60 | 100 | 2 |
| Part III | Core : VIII Allied : II | 23ITU08 | Discrete Mathematics | 5 | 3 | 25 | 75 | 100 | 3 |
| Part IV | Foundation : II | 23FCU02 | Yoga and Ethics | 2 | 3 | 50 | - | 50 | 2 |
| | | | **TOTAL** | **30** | | | | **650** | **22** |
| **SEMESTER-III** | | | | | | | | | |
| Part I | Language: III | 23LTU03/ 23LHU03/ 23LFU03/ 23LKU03/ 23LMU03/ 23LSU03 | Tamil- III/ Hindi-III/ French-III/ Kannada-III/ Malayalam-III/ Sanskrit-III | 4 | 3 | 25 | 75 | 100 | 3 |
| Part II | English: III | 23LEU03 | English- III | 4 | 3 | 25 | 75 | 100 | 3 |
| Part III | Core : IX | 23ITU09 | Data Structures | 5 | 3 | 25 | 75 | 100 | 4 |
| Part III | Core : X | 23ITU10 | Web Technology | 5 | 3 | 25 | 75 | 100 | 4 |
| Part III | Core : XI Practical : IV | 23ITU11 | Web Technology – Practical | 4 | 3 | 40 | 60 | 100 | 4 |
| Part III | Core : XII Allied : III | 23ITU12 | PC Hardware | 4 | 3 | 25 | 75 | 100 | 3 |
| Part IV | Ability Enhancement : I | 231AEU01 | Information Security | 2 | 3 | 50 | - | 50 | 2 |
| Part IV | Non - Major Elective : I | 23NMU01A /23NMU01B | Indian Women and Society/ Advanced Tamil | 2 | 3 | 50 | - | 50 | 2 |
| | | | **TOTAL** | **30** | | | | **700** | **25** |
| **SEMESTER-IV** | | | | | | | | | |
| Part I | Language: IV | 23LTU04/ 23LHU04/ 23LFU04/ 23LKU04/ 23LMU04/ 23LSU04 | Tamil- IV/ Hindi-IV/ French-IV/ Kannada-IV/ Malayalam-IV/ Sanskrit-IV | 4 | 3 | 25 | 75 | 100 | 3 |
| Part II | English: IV | 23LEU04 | English- IV | 4 | 3 | 25 | 75 | 100 | 3 |
| Part III | Core : XIII | 23ITU13 | Relational Database Management Systems | 6 | 3 | 25 | 75 | 100 | 4 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Part III | Core : XIV Practical : V | 23ITU14 | SQL and PL/SQL - Practical | 6 | 3 | 40 | 60 | 100 | 4 |
| Part III | Core : XV Allied : IV | 23ITU15 | Microprocessor and Assembly Language Programming | 5 | 3 | 25 | 75 | 100 | 3 |
| Part IV | Skill Enhancement: I | 23SEITU01 /23SEU01 | Programming in PHP – Practical / Naan Mudhalvan Course | 3 | 3 | 50 | - | 50 | 2 |
| Part IV | Ability Enhancement : II | 23AEU02 | Consumer Rights | 2 | 3 | 50 | - | 50 | 2 |
| | | | **TOTAL** | **30** | | | | **600** | **21** |
| **SEMESTER-V** | | | | | | | | | |
| Part III | Core: XVI | 23ITU16 | Programming in Python | 6 | 3 | 25 | 75 | 100 | 5 |
| Part III | Core: XVII Practical: VI | 23ITU17 | Programming in Python – Practical | 6 | 3 | 40 | 60 | 100 | 4 |
| Part III | Core: XVIII | 23ITU18 | Project Work | 6 | - | - | - | - | - |
| Part III | Core: XIX Elective: I | 23ITU19A/ 23ITU19B/ 23ITU19C/ | Data Mining/ Operating System/ Cloud Computing Techniques | 5 | 3 | 25 | 75 | 100 | 5 |
| Part III | Core: XX Open Elective | **** | (Opted by the students offered by other Departments) | 4 | 3 | 25 | 75 | 100 | 2 |
| Part IV | Skill Enhancement: II | 23SEU02 | Life Skills (Jeevan Kaushal) | 3 | 3 | 50 | - | 50 | 2 |
| Part V | Proficiency Enhancement | 23PEITU01 | Case Tools (Self Study) | - | 3 | - | 100 | 100 | 2 |
| | | | **TOTAL** | **30** | | | | **550** | **20** |
| **SEMESTER –VI** | | | | | | | | | |
| Part III | Core: XXI | 23ITU20 | Programming in VB.NET | 6 | 3 | 25 | 75 | 100 | 5 |
| Part III | Core: XXII Practical: VII | 23ITU21 | Programming in VB.NET - Practical | 6 | 3 | 40 | 60 | 100 | 4 |
| Part III | Core: XVIII | 23ITU18 | Project Work | 5 | 3 | 20 | 80 | 100 | 5 |
| Part III | Core: XXIII Elective: II | 23ITU22A/ 23ITU22B/ 23ITU22C | Computer Networks & Cryptography/ Big data Analytics/ Informatics | 5 | 3 | 25 | 75 | 100 | 5 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Part III | Core: XXIV Elective: III | 23ITU23A/ 23ITU23B/ 23ITU23C/ | Artificial Intelligence / Green Computing/ Software Project Management | 5 | 3 | 25 | 75 | 100 | 5 |
| Part IV | Skill Enhancement: III | 23SEITU03 / 23SEU03 | Digital Marketing / Naan Mudhalvan Course | 3 | 3 | 50 | - | 50 | 2 |
| | | | **TOTAL** | **30** | | | | **550** | **26** |
| Part V | Competency Enhancement | | NSS / YRC / RRC / CCC / PHYSICAL EDUCATION | | SEMESTERS I – VI | | | | 1 |
| | | | Professional Grooming | | SEMESTERS I – VI | | | | 1 |
| | | | Students Social Activity (Related to the Curriculum) | | SEMESTERS I -VI | | | | 1 |
| **Total Marks:3700** | | | | | **Total Credits:140** | | | | |

**Syllabus**

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : I | 23ITU01 | PROGRAMMING IN C | 60 | 4 |

**Contact hours per week: 5**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| First | I | 25 | 75 | 100 |

**Preamble**

To learn about the C programming language concepts.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the basics of C Tokens, Operators, Array and Files | K1 |
| CO2 | Summarize the concepts of input and output functions, decision making and looping, string functions, and pointers | K2 |
| CO3 | Classify Arrays and functions | K3 |
| CO4 | Analyse the functions of Pointers, Structures and files | K4 |
| CO5 | Determine the usage of pointers and files | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply;K4 – Analyze;K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 1 | 1 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 1 | 1 |
| **CO3** | 9 | 9 | 9 | 9 | 9 | 3 | 1 |
| **CO4** | 9 | 9 | 9 | 9 | 9 | 3 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 3 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 39 | 14 | 9 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 3.76 | 1.19 | 0.87 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; - High correlation between COs and POs**.

**COURSE CONTENT:**

**UNIT I Overview of C (12 Hours)**

History of C – Importance of C – Constants, Variables and Data Types – Character Set – C Tokens – Keywords and Identifiers – Constants - Variables – Data Types –Declaration of Variables – Declaration of Storage Class – Assigning values to Variables – Defining Symbolic Constants – Declaring Variable as Constant – Operators and Expressions – Managing Input and Output Operations.

**UNIT II Control structures (12 Hours)**

Decision Making and Branching – Decision Making and Looping – Sample programs.

**UNIT III Arrays and Strings (12 Hours)**

Introduction – OneDimensional Arrays – Declaration of One Dimensional Arrays - Initialization of OneDimensional Arrays - Two Dimensional Arrays – Initialization of Two Dimensional Arrays – Character Arrays and Strings – Declaring and Initializing String Variables – Reading and Writing Strings – String Handling Functions.

**UNIT IV Function, Structure and Union (12 Hours)**

User Defined Functions – Need for User defined function – Elements of User Defined Functions – Definition of Function – Category of Functions-Recursion –Structure and Unions –Defining a Structure – Declaring a Structure Variables – Accessing Structure Members – Structure Initialization – Unions.

**UNIT V Pointers and Files (12 Hours)**

Understanding Pointers – Accessing the Address of Variables – Declaring the Pointer Variable – Accessing a Variable Through its Pointer – Pointer Expression – Pointer and Arrays - File Management in C – Defining and Opening a File - Closing the File – Input and Output Operations on Files – Sample Programs.

**TEXT BOOK:**

1. E.Balagurusamy, Programming in ANSI C ,3rd Edition, Tata McGraw-Hill, 2004.

**REFERENCE BOOKS:**

1.Ashok N Kamthane, Programming with ANSI and Turbo C, Pearson, 2002.
2.EBalagurusamy, Computing Fundamentals & C Programming, Tata McGraw-Hill, Second Reprint 2008.

**WEB REFERENCES:**

1. https://www.tutorialspoint.com/cprogramming/index.htm
2. https://www.w3schools.com/c/
3. https://www.programiz.com/c-programming/online-compiler/
4. https://www.unf.edu/~wkloster/2220/ppts/cprogramming_tutorial.pdf
5. https://techniyojan.com/2019/12/c-programming-basics-notes.html

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : II PRACTICAL : I | 23ITU02 | PROGRAMMING IN C-PRACTICAL | 60 | 4 |

**Contact hours per week: 5**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| First | I | 40 | 60 | 100 |

**Preamble**

To learn about the C programming language concepts.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Define the basics of arithmetic operations using C tokens. | K1 |
| CO2 | Choose the True/ False statements for checking ODD / EVEN numbers. | K2 |
| CO3 | Calculate simple interest, Employee pay Bill, area of shapes and factorial value | K3 |
| CO4 | Experiment matrix addition | K4 |
| CO5 | Validating the file operations | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 3 | 9 | 9 | 3 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 3 | 3 |
| **CO3** | 9 | 9 | 9 | 9 | 9 | 3 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 9 | 3 | 9 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 3 | 9 |
| **Total Contribution of COs to POs** | 45 | 45 | 39 | 45 | 45 | 15 | 39 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.43 | 2.99 | 4.34 | 1.28 | 3.75 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**Practical List**

1. Evaluate the expression which performs all arithmetic operations in mixed mode.
2. Create a Program to calculate simple interest.
3. Evaluate and Check the given number is odd or even - using if else/switch case/conditional operator methods.
4. Construct a program to Print all prime numbers between any two given limit.
5. Design a Program to find the sum of the digits of a number.
6. Create a Program to calculate gross salary of an employee [using formula: gross Sal = basic_sal+hra+da].
7. Create a program to finding area of a square, rectangle, circle using switch case.
8. Generate a program to arrange the given set of numbers in ascending and descending order.
9. Create a program to calculating Matrix addition.
10. Generate a Mark list processing using Structure.
11. Create a program to Calculate the factorial value using recursive function.
12. Create a Program to perform various file operations – Add and Finding no of records in the file.

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : III | 23ITU03 | DIGITAL COMPUTER FUNDAMENTALS | 60 | 4 |

**Contact hours per week: 5**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| First | I | 25 | 75 | 100 |

**Preamble**

To understand the fundamentals behind digital logic design and the course includes fundamentals of Boolean algebra, Combinational, Sequential circuits, Input-Output organization and Memory organization.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the basic computer components and micro-operations | K1 |
| CO2 | Explain number conversions, Boolean algebra and logic circuits | K2 |
| CO3 | Ultilize the components of register, input/output and Flip flops | K3 |
| CO4 | Analyse the Boolean expressions using Boolean algebra | K4 |
| CO5 | Evaluate the storage concepts using digital logic | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply;K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 3 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 3 | 1 |
| **CO4** | 9 | 9 | 3 | 3 | 3 | 3 | 1 |
| **CO5** | 9 | 9 | 3 | 3 | 3 | 1 | 1 |
| **Total Contribution of COs to POs** | 45 | 45 | 33 | 33 | 27 | 25 | 15 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.06 | 2.19 | 2.61 | 2.13 | 1.44 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I Number System and Logic gates (12 Hours)**

Number System and Binary Codes: Decimal- Binary- Octal- Hexadecimal – Binary Addition- Multiplication- Division- Complements- Floating point representation- BCD- Excess3- Gray Code. Digital Logic: The Basic Gates – NOR, NAND, XOR Gates.

**UNIT II Boolean Algebra (12 Hours)**

Boolean Algebra – Karnaugh Map – Canonical Form 1 – Construction and Properties – Don't Care Combinations - Product of Sum, Sum of Products, Minimization in SOP using Karnaugh Map- Minimization in POS using Karnaugh Map.

**UNIT III Combinational Circuits (12 Hours)**

Arithmetic and logic combinational circuits: Half adder – Full adder- Half subtractor- Full subtractor-Data handling combinational circuits: Multiplexers – Demultiplexers – Decoder-Encoder.

**UNIT IV Sequential Circuits (12 Hours)**

Flip flops: RS, JK, D, and T Flip-Flops – Master-Slave JK Flip-Flops. Registers: Shift Registers – Shift-left Register-Shift-right Register.

**UNIT V Counters (12 Hours)**

Counters: Asynchronous counter - Synchronous Counter-Ring counter-Synchronous Up/Down Counter. Memory Unit-Read only Memories-Random access Memories-Cache Memory.

**TEXT BOOKS:**

1.V.K. Puri, Digital Electronics Circuits and Systems, TMH.
2. Albert Paul Malvino, Donald P Leach, Digital principles and applications, TMH, 1996.
3. M. Morris Mano, Computer System Architecture, PHI.

**REFERENCE BOOK:**

1. Thomas C. Bartee, Digital Computer Fundamentals, TMH

**WEB REFERENCES:**

1. https://docs.google.com/file/d/0ByN6aMrh7fkSbDdKdV9vQURXRFU/edit?resourcekey=0-7OMoitUf4Divd09opqW6lA
2. https://poojavaishnav.files.wordpress.com/2015/05/mano-m-m-computer-system-architecture.pdf
3. http://www.scientificlib.com/en/Books/DigitalElectronicsCircuitsAndSystems.html
4. https://scilab.in/textbook_companion/generate_book/1238
5. https://www.shahucollegelatur.org.in/Department/Studymaterial/sci/it/BCA/FY/digielec.pdf

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-IV | FOUNDATION : I | 23FCU01 | ENVIRONMENTAL STUDIES | 24 | 2 |

**Contact hours per week: 2**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| First | I | 50 | - | 50 |

**Preamble**

To bring about an awareness of a variety of environmental concerns and to create a pro-environmental attitude and a behavioural pattern in society that is based on creating sustainable lifestyle

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Define environment, ecosystem, biodiversity, environmental pollution and social issues. | K1 |
| CO2 | Explain the natural resources, types of ecosystem, geographical classification of India, causes of environmental pollution and the problems related to the society. | K2 |
| CO3 | Identify the information related to environment and the resources to protect it. | K3 |
| CO4 | Analyze the classification of natural resources, energy flow in the ecosystem, threats to biodiversity, disaster management and the role of information technology in environment and human | K4 |
| CO5 | Assess the environmental issues with a focus on sustainability. | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 1 | 3 |
| **CO3** | 9 | 9 | 9 | 9 | 1 | 1 | 3 |
| **CO4** | 9 | 9 | 9 | 9 | 1 | 1 | 3 |
| **CO5** | 9 | 9 | 3 | 3 | 1 | 1 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 39 | 39 | 9 | 7 | 15 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.43 | 2.59 | 0.87 | 0.60 | 1.44 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I** **(4 Hours)**

Environment: Definition, Components, Segments and Types. Natural Resources: Meaning, Components: (1. Forest-Meaning, Importance and Types 2. Water- Meaning, Types and Problems 3. Mineral- Meaning and Classification 4.Food-Meaning and Problems 5.Energy-Meaning, Forms and Types 6.Land- Meaning, Structure and Functions, Components), Classification: Renewable and Non-Renewable Resources, Role of an Individual in Conservation of Natural Resources.

**UNIT II** **(5 Hours)**

Ecosystems – Definition, Features, Structure and Function of an Ecosystem, Producers, Consumers and Decomposers, Energy Flow in the Ecosystem (Water,Carbon,Nitrogen,Oxygen and Energy), Food Chains, Food Webs and Ecological Pyramids.

Introduction Types, Characteristics Features, Structure and Function of the following Ecosystem:

- Forest Ecosystem
- Grassland Ecosystem
- Desert Ecosystem
- Aquatic Ecosystems (Ponds, Streams, Lakes, Rivers, Ocean, Estuaries)

**UNIT III** **(5 Hours)**

Biodiversity and its Conservation-Introduction – Definition – Genetic, Species and Ecosystem Diversity, Bio geographical Classification of India -Value of Biodiversity – Consumptive Use, Productive Use, Social, Ethical, Aesthetic and Option Value- Biodiversity at Global, National and Local Levels- India as a Mega-Diversity Nation- Hot-Spots of Biodiversity- Threats to Biodiversity – Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts- Endangered and Endemic Species of India Conservation of Biodiversity – In-situ and Ex-situ and Conservation of Biodiversity.

**UNIT IV** **(5 Hours)**

Environmental Pollution: Definition, Causes, Effects, control measures and Prevention Acts for Air, Water, Soil, Noise, Thermal Pollutions and Nuclear Hazards. Solid Waste Management: Meaning, Causes, effects and control measures of urban and industrial wastes. Disaster Management: Meaning, Types of Disasters: floods, earthquake, cyclone and landslides. Environmental Ethics: Issues and possible solutions- Climate change, global warming, acid rain, ozone layer depletion, nuclear - accidents and holocaust. Consumerism and waste products, Public Awareness.

**Unit V** **(5 Hours)**

Social Issues and the Environment: From Unsustainable to Sustainable development- Urban problems related to energy- Water conservation, rain water harvesting, watershed management- Resettlement and rehabilitation of people; its problems and concerns.

Human Population and the Environment**:** Population growth and distribution- Population explosion – Family Welfare Programme-Environment and human health- HIV/AIDS- Role of Information Technology in Environment and human health- Medical transcription and bio-informatics.

**REFERENCE BOOKS**

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
2. BharuchaErach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad
3. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
4. Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
5. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001,
6. Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p
7. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
8. Down to Earth, Centre for Science and Environment (R)
9. Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev.,
10. Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p
11. Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural
12. History Society, Bombay (R)
13. Heywood, V.H &Waston, R.T. 1995. Global Biodiversity Assessment,Cambridge Univ. Press 1140p.

1. Jadhav, H &Bhosale, V.M. 1995. Environmental Protection and Laws, Himalaya Pub. House, Delhi 284 p.
2. Mckinney, M.L. & School, R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition. 639p.
3. Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
4. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
5. Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
6. Rao M N. &Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Publ.Co. Pvt. Ltd. 345p.
7. Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
8. Survey of the Environment, The Hindu (M)
9. Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science (TB)

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : V | 23ITU05 | PROGRAMMING IN JAVA | 60 | 4 |

**Contact hours per week: 5**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| First | II | 25 | 75 | 100 |

**Preamble**

To understand the basic programming constructs of Java Language.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Outline the basic concepts of Java Programming Language | K1 |
| CO2 | Explain the concepts of tokens, control structures and looping, arrays, applet programming and Exception handling | K2 |
| CO3 | Apply java programming for practical solutions | K3 |
| CO4 | Analyze wide range of Applications by using java programming | K4 |
| CO5 | Determine the usage of all given concepts in the development of programming solutions | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 3 | 9 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 3 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 33 | 33 | 39 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 3.19 | 2.82 | 3.75 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

## COURSE CONTENT:

**UNIT I Fundamentals of Object-Oriented Programming (12 Hours)**

BasicConcepts of Object-Oriented Programming–Benefits of Object-Oriented Programming –Application of Object-Oriented Programming. Java Evolution: Features –How Java differs from C and C++.Overview of Java: Simple Java Program –Structure –Java Tokens – Statements –Java Virtual Machine.

**UNIT II Control Structures (12 Hours)**

Constants, Variables, Data Types -Operators and Expressions –Decision Making and Branching: If, If..Else, Nested If, Switch,? : Operator -Decision Making and Looping: While, Do, For –Jumps in Loops -Labeled Loops –Classes, Objects and Methods.

**UNIT III Arrays, Strings and Vectors (12 Hours)**

Arrays, Strings and Vectors –Interfaces: Multiple Inheritance –Packages: Putting Classes together –Multithreaded Programming.

**UNIT IV Programming with JAVA (12 Hours)**

Applet Programming – Graphics Programming.

**UNIT V Managing Input / Output Files in Java (12 Hours)**

Concepts of Streams-Stream Classes –Byte Stream Classes –Character Stream Classes – Using Streams –I/O Classes –File Class –I/O Exceptions -Creation of Files.

**TEXT BOOK:**

1.E. Balagurusamy, Programming with Java a Primer,3rd Edition, TMH.

**REFERENCE BOOKS:**

1. Patrick Naughton &Hebert Schildt, The Complete Reference Java 2, 3rd Edition,TMH.
2. John R. Hubbard,Programmingwith Java, 2nd Edition, TMH.

**WEB REFERENCES:**

1. https://www.javatpoint.com/java-basics
2. https://www.w3schools.com/java/
3. https://www.softwaretestinghelp.com/java-basics-and-core-java-concepts/
4. https://www.iitk.ac.in/esc101/share/downloads/javanotes5.pdf
5. https://www.cp.eng.chula.ac.th/books/wp-content/uploads/sites/5/2018/01/java101.pdf

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : VI PRCATICAL : II | 23ITU06 | PROGRAMMING IN JAVA -PRACTICAL | 48 | 4 |

**Contact hours per week: 4**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| First | II | 40 | 60 | 100 |

**Preamble**

To understand the basic programming constructs of Java Language.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Outline the basic concepts of Java Programming Language | K1 |
| CO2 | Explain the concepts of Arrays and String | K2 |
| CO3 | Summarizes the concepts of Inheritance | K3 |
| CO4 | Demonstrate the interface and threads. | K4 |
| CO5 | Applying the java programming techniques in graphics and applets. | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply;K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 3 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 3 | 9 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 3 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 39 | 33 | 33 | 39 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.59 | 3.19 | 2.82 | 3.75 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation;9- High correlation between COs and POs.**

**Practical list**

1. Design a Java Program to define a class, define instance methods for setting and Retrieving values of instance variables and instantiate its object

2. Demonstrate a Java Program to demonstrate use of subclass

3. Create a Java Program to implement array of objects

4. Construct a Java program to practice using String class and its methods

5. Apply a Java program to practice using String Buffer class and its methods

6. Design a Java Program to implement multilevel inheritance by applying various access controls to its data members and methods

7. Generate a program to demonstrate use of implementing interfaces

8. Apply a program to Implementing Thread based applications

9. Create a program using Applet to display a message in the Applet

10. Design an applet program working with Colors and Fonts

11. Construct a program using Applet for configuring Applets by passing parameters

12. Design programs for using Graphics class
    - to display basic shapes and fill them
    - draw different items using basic shapes
    - set background and foreground colors

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : VII | 23ITU07 | LINUX - PRACTICAL | 48 | 2 |

**Contact hours per week: 4**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| First | II | 40 | 60 | 100 |

**Preamble**

To understand the basic concept of linux adminstration

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Remember the shortcuts of bash | K1 |
| CO2 | Outline the steps of linux installation | K2 |
| CO3 | Train User management in Linux | K3 |
| CO4 | Analyse the Linux operating system functionalities | K4 |
| CO5 | Examine the Linux operating system functionalities | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO5** | 9 | 9 | 9 | 3 | 9 | 9 | 9 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 42 | 45 | 45 | 45 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.79 | 4.34 | 3.84 | 4.33 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**Practical List**

1. Illustrate a program to change mode of file permissions
2. Write a shell program to count number of characters, words and lines in a given file
3. Write a shell program to display all the files and directory
4. Write a simple shell program to use grep command
5. Write a shell program to check the given string is palindrome or not
6. Joining two or more files and creating a combined file
7. Develop a program which says Good morning, Good Evening, Good afternoon depending on the present time
8. Write a program which takes two file names and if their contents are same then second one will be deleted
9. Design a program to lock your terminal till you enter a password
10. Create a program to calculate factorial value

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-IV | FOUNDATION : II | 23FCU02 | YOGA AND ETHICS | 24 | 2 |

**Contact hours per week: 2**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| First | II | 50 | - | 50 |

**Course Objective**

To enable the learners to acquire the knowledge on basic yogasanas and values and practice them in real life.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recollect the basic terminologies in yoga and value education | K1 |
| CO2 | Demonstrate the importance of yoga, mental exercises, principles of life and components of values. | K2 |
| CO3 | Apply the techniques of dynamic & mental exercises and philosophical values in real life | K3 |
| CO4 | Classify the different types of asanas, stages of mind, analysis of thought, ethical values and social values. | K4 |
| CO5 | Evaluate how the yoga and value education make a person strong both physically and mentally | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 3 | 1 | 1 | 3 |
| **CO2** | 9 | 9 | 9 | 3 | 3 | 1 | 3 |
| **CO3** | 9 | 9 | 9 | 3 | 3 | 3 | 3 |
| **CO4** | 9 | 9 | 9 | 3 | 3 | 3 | 3 |
| **CO5** | 9 | 9 | 9 | 3 | 3 | 3 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 15 | 13 | 11 | 15 |
| **Weighted Percentage of COs Contribution** | 2.58 | 2.67 | 2.80 | 1.00 | 1.25 | 0.94 | 1.44 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I YOGA AND HEALTH (5 Hours)**

**Theory:**

Yoga-Meaning- Importance of Yoga – Pancha Koshas - Benefits of Yoga-General Guidelines.

**Practice:**

Dynamic Exercise- Surya Namaskar-Basic Set of Asanas-Pranayama &Kriya.

**UNIT II ART OF NURTURING THE MIND (5 Hours)**

**Theory:**

Ten Stages of Mind-Mental Frequency – Methods for Concentration

Eradication of Worries- Benefits of Blessings- Greatness of Friendship- Individual Peace and World Peace

**Practice: -** Worksheet

**UNIT III PHILOSOPHY AND PRINCIPLES OF LIFE (5 Hours)**

Purpose and Philosophy of Life- Introspection – Analysis of Thought - Moralization of Desires- Neutralization of Anger.Vigilance and Anti- Corruption- Redressal mechanism - Urban planning and Administration.

**Practice -** Worksheet

**UNIT IV VALUE EDUCATION (Part-I) (5 Hours)**

Ethical Values: Meaning – Need and Significance- Types - Value education – Aim of education and value education.Components of value education: Individual values – Self discipline, Self Confidence, Self Initiative, Empathy, Compassion, Forgiveness, Honesty, Sacrifice, Sincerity, Self-control, Tolerance and Courage.

**Practice -** Worksheet

**UNIT V VALUE EDUCATION (Part-II) (4 Hours)**

Family Values -Constitutional or National values – Democracy, Socialism, Secularism, Equality, Justice, Liberty, Freedom and Fraternity.Social values – Pity and probity, self control, universal brotherhood.Professional values – Knowledge thirst, sincerity in profession, regularity, punctuality and faith.Religious values – Tolerance, wisdom, character.

**Practice -** Worksheet

**REFERENCE BOOKS:**

1 Vethathiri Maharishi (2015), 'Yoga for human excellence'- Sri Vethathiri Publications.

2. Value Education for human excellence- study material by Bharathiar University.

3. Value Education - Study Material by P.K.R Arts College for Women.

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : IX | 23ITU09 | DATA STRUCTURES | 60 | 4 |

**Contact hours per week: 5**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Second | III | 25 | 75 | 100 |

**Preamble**

This Paper offers the basic understanding and knowledge of different data structures, sorting algorithms and symbol tables.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall various data structures, algorithms and sorting methods | K1 |
| CO2 | Describe the basic concepts of data structures, sorting and symbol table | K2 |
| CO3 | Use appropriate data structures for varied problems | K3 |
| CO4 | Examine different data structures and algorithms to find best solution for the real time applications | K4 |
| CO5 | Recommend a specific data structure and sorting algorithm for an application. | K5 |

**K1 – Remember;K2 – Understand;K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 3 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 3 | 9 |
| **CO5** | 9 | 9 | 9 | 9 | 3 | 3 | 9 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 15 | 27 | 45 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 1.45 | 2.30 | 4.33 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I Introduction and Elementary Data Structure (12 Hours)**

Introduction - Data structure- Overview - Definition - How to create a program – Arrays - Ordered List –Sparse Matrices - Representation of Arrays - Stacks and Queues – Fundamentals - Evaluation of Expressions.

**UNIT II Linked List and Tree (12 Hours)**

Linked Lists - Singly Linked List - Linked Stacks and Queues – Polynomial Addition - Doubly Linked Lists and Storage Management. Trees: Basic Terminology - Binary Trees - Binary Tree Representation - Binary Tree Traversal.

**UNIT III Graph and its applications (12 Hours)**

Graphs-Introduction – Definition and Terminology - Graph Representation – Traversals - Connected components and spanning Trees - Shortest path - Transitive Closure.

**UNIT IV Internal Sorting (12 Hours)**

Internal Sorting- Insertion sort - Quick sort - Merge sort - Heap sort – Sorting on Several Keys.

**UNIT V Symbol Tables (12 Hours)**

Symbol Tables - Static Tree Tables - Dynamic Tree Tables - Hash Tables - Hashing Functions -Overflow Handling.

**TEXT BOOK:**

1. Ellis Horowitz, Sartaj Shani, (1994), Fundamentals of Data Structures, First Edition, Galgotia Publication.

**REFERENCE BOOKS**:

1. Seymour Lipschutz , Data Structures , Tata McGrawhill, Year 2006.
2. D. Samanta, “Classical Data Structure”, Prentice Hall India.
3. G A V PAI, Data Structures and Algorithns Concepts, Techniques Applications, McGraw Hill Education, New Delhi.

**WEB REFERENCES**

**1.**https://www.geeksforgeeks.org/data-structures/
**2.**https://www.javatpoint.com/data-structure-tutorial
**3.**https://www.youtube.com/watch?v=DFpWCl_49i0

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : X | 23ITU10 | WEB TECHNOLOGY | 60 | 4 |

**Contact hours per week: 5**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Second | III | 25 | 75 | 100 |

**Preamble**

To enable the students to learn the concepts of web technologies

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the basic terms in HTML, XML and PHP | K1 |
| CO2 | Explain the various HTML tags to develop a web page | K2 |
| CO3 | Apply the CSS to HTML and make your web page more attractive | K3 |
| CO4 | Analysethe usage of script languages in HTML program to make the webpage dynamic | K4 |
| CO5 | Examine the needs of XML and how it differs from HTML | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply;K4 – Analyze;K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| CO1 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| CO2 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| CO3 | 9 | 9 | 9 | 3 | 3 | 9 | 3 |
| CO4 | 9 | 9 | 3 | 3 | 3 | 3 | 1 |
| CO5 | 9 | 9 | 3 | 3 | 3 | 9 | 1 |
| Total Contribution of COs to POs | 45 | 45 | 33 | 27 | 27 | 39 | 23 |
| Weighted Percentage of COs Contribution to POs | 2.58 | 2.67 | 2.06 | 1.79 | 2.61 | 3.33 | 2.21 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs**

**COURSE CONTENT:**

**UNIT I** **Introduction to Web** **(12 Hours)**

Introduction: What is Internet? – History – Internet Services and Accessibility – Uses of the Internet – Protocols – Web Concepts. Internet Protocols: Internet Protocols – Host Names – Internet Applications and Application Protocols.

**UNIT II** **Web Programming** **(12 Hours)**

HTML: Introduction – SGML –Outline of an HTML Document – Head Section – Body Section – HTML Forms. Dynamic HTML: Introduction – Cascading Style Sheets (CSS) – Event Handling.

**UNIT III** **Adding Script Language** **(12 Hours)**

Javascript: Introduction – Language Elements –Objects of Javascript – Other Objects. VBScript: Introduction – Embedding VBScript Code in a HTML Document – Comments – Variables – Operators – Procedures – Conditional Statements – Looping Constructs – Objects and VbScript – Cookies.

**UNIT IV** **XML** **(12 Hours)**

XML : Introduction- HTML vs XML – Syntax of XML Document – XML Attributes – XML Validation – XML DTD – Building Blocks of XML Documents – DTD Elements –DTD Attributes - DTD Entities – DTD Validation – XSL – XSL Transformation – XML Namespace – XML Schema.

**UNIT V** **PHP** **(12 Hours)**

Introduction – Installing PHP – PHP Tags – Print and Echo Statements – Variables – Data Types – Constants – Operators – Control Statements – Looping Constructs – String Functions Numeric Functions – Arrays – User-defined Functions – Working with Forms – MySQL : Introduction to Database Systems –Accessing the Database with PHP.

**TEXT BOOK:**

1. N.P. Gopalan, J.Akilandeshwari "Web Technology A developers perspective ", PHI learning private Limited, Second Edition 2014.

**REFERENCE BOOK:**

1. Jon Duckett, "Beginning HTML, XHTML, CSS, Javascript " Wiley India.

**WEB REFERENCES:**

1. https://books.google.co.in/books?id=_qh2BAAAQBAJ&pg=PA1&source=gbs_toc_r&cad=3#v=onepage&q&f=false
2. https://www.youtube.com/watch?v=x3c1ih2NJEg
3. https://www.youtube.com/watch?v=x3c1ih2NJEg
4. https://www.youtube.com/watch?v=iE_kY2LVBKA
5. https://www.tutorialspoint.com/vbscript/vbscript_tutorial.pdf
6. https://www.sathyabama.ac.in/sites/default/files/course-material/2020-10/UNIT4.pdf
7. https://www.academia.edu/36373769/Web_Development_Using_PHP

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XI PRACTICAL : III | 23ITU11 | WEB TECHNOLOGY – PRACTICAL | 48 | 4 |

**Contact hours per week: 4**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Second | III | 40 | 60 | 100 |

**Preamble**

To enable the students to learn the concepts of web technologies

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Create a simple webpage using HTML, XML and PHP | K1 |
| CO2 | Design a dynamic webpage using various functions | K2 |
| CO3 | Apply the script languages to make your webpage more attractive | K3 |
| CO4 | Analyse the difference between the XML, XML and PHP language | K4 |
| CO5 | Develop real time web applications using HTML, XML and PHP | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO3** | 9 | 9 | 3 | 3 | 3 | 3 | 3 |
| **CO4** | 9 | 9 | 3 | 3 | 3 | 3 | 1 |
| **CO5** | 9 | 3 | 3 | 1 | 1 | 1 | 1 |
| **Total Contribution of COs to POs** | 45 | 39 | 27 | 25 | 19 | 19 | 17 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.31 | 1.68 | 1.66 | 1.83 | 1.62 | 1.63 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation;9- High correlation between COs and POs.**

**Practical List**

1. Design a web page for your college containing a description of the courses, departments, library, etc., (use formatting, links and list tags).
2. Create a student feedback form (use Textboxes, Radio buttons, Checkboxes, Select box and so on).
3. Create a web page using frame. Divide the page into two parts with navigation links on left hand side of page (width = 20%) and content in right hand side page (width = 80%). On clicking navigation the content should be shown on right side.
4. Design a web page of your home town with attractive background color, text, image, font etc (use internal CSS).
5. Create your resume using HTML tags and format it using inline CSS.
6. Develop a simple calculator using Javascript.
7. Create a DTD for a XML file of employee details.
8. Construct a PHP program to display today's date in dd-mm-yyyy format.
9. Develop a PHP script for login authentication.
10. Create a student Registration in PHP and Save and Display the student Records using MySQL.

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE: XII<br>ALLIED : III | 23ITU12 | PC HARDWARE | 48 | 3 |

**Contact hours per week: 4**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Second | III | 25 | 75 | 100 |

## Preamble

To understand the basic components of computer system.

## Course Outcomes

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the Hardware Components of a Computer System. | K1 |
| CO2 | Explain the functions of Hardware Components of a Computer | K2 |
| CO3 | Identify the peripheral devices outside computer. | K3 |
| CO4 | Classify the Hardware Components | K4 |
| CO5 | Examine the accurate components of Computer System | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply;K4 – Analyze; K5 – Evaluate**

## CO-PO MAPPING (COURSE ARTICULATION MATRIX)

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 3 | 3 | 3 | 3 | 3 |
| **CO2** | 9 | 9 | 3 | 3 | 3 | 3 | 3 |
| **CO3** | 9 | 9 | 3 | 3 | 3 | 3 | 3 |
| **CO4** | 9 | 9 | 3 | 1 | 3 | 3 | 3 |
| **CO5** | 9 | 9 | 3 | 1 | 3 | 3 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 15 | 11 | 15 | 15 | 15 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 0.93 | 0.73 | 1.45 | 1.28 | 1.44 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I Central Processing Unit and Ram (10 Hours)**

Central Processing Unit: What is CPU? – Function of the CPU – Identifying the Right CPU for any Motherboard. RAM:Types of RAM Technologies – RAM Packages.

**UNIT II Components of PC and Motherboard (14 Hours)**

Components of PC: Major Components of PC – Internal Components of PC- Motherboards**:** Features of Motherboard – Types of Motherboard.

**UNIT III BIOS, Harddrive and CD Media (9 Hours)**

BIOS: System BIOS - Harddrive: How Hard Drive Store Data - CD media: Understanding CD Media Technologies.

**UNIT IV Input Devices (7 Hours)**

Installing a Keyboard – Installing and Configuring a Mouse – Identifying Less Common Input Devices – Maintaining and Troubleshooting Input Devices.

**UNIT V Video and Sound (8 Hours)**

VIDEO: Selecting the Right Monitor – Selecting the Right Video Card. SOUND**:** How Sound Works in a PC – Choosing the Right Sound Card.

**TEXT BOOK**

1.Mike Meyers, "Introduction to PC Hardware and Troubleshooting" Tata MCGraw-Hill Edition

**REFERENCE BOOKS**

1.Zacker C. and Rourke J, PC Hardware the Complete reference, Tata MC Graw Hill Publishing Company Ltd, Newdelhi, 2006.
2. Mathivanan N, Microprocessor, PC Hardware and Interfacing, Prentice - Hall of India Pvt Ltd, Newdelhi, 2005

**WEB REFERENCES:**

1.https://www.youtube.com/watch?v=zltgXvg6r3k
2.https://www.tutorialsweb.com/computers/pc-motherboard.htm
3.https://www.javatpoint.com/what-is-bios
4.https://study.com/academy/lesson/computer-troubleshooting-definition-terminology.html
5.https://www.javatpoint.com/what-is-a-sound-card

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-IV | ABILITY ENHANCEMENT : I | 23AEU01 | INFORMATION SECURITY | 24 | 2 |

**Contact hours per week: 2**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Second | III | 50 | - | 50 |

**Preamble**

To learn about the basics of Information Security.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the fundamental concepts of Information Security, Risk and Security policies | K1 |
| CO2 | Discuss the concepts of Risks, vulnerabilities, ethical and privacy issues | K2 |
| CO3 | Apply the ideas in security planning and construct the policies | K3 |
| CO4 | Categorize the Privacy, Ethical Issues, Laws, Software Issues and Crimes | K4 |
| CO5 | Summarize Cryptography, cipher text and threats in information security | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 3 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 3 | 1 | 1 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 27 | 16 | 19 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 2.61 | 1.37 | 1.83 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I Introduction to Information Security (5 Hours)**

Information Security: Principles, Concepts and Definitions - The need for Information Security - Benefits of Information Security. The Security Problem in Computing: The Meaning of Computer Security - Computer Criminals.

**UNIT II Information Risk (4 Hours)**

Information Risk: Threats and Vulnerabilities of Information Systems – Introduction to Risk Management. Information Security Management Policy, Standards and Procedures.

**UNIT III Security Planning (5 Hours)**

Administering Security: Security Planning - Security Planning Team Members - Assuring Commitment to a Security Plan - Business Continuity Plan - Incident Response Plan - Organizational Security Policies, Physical Security.

**UNIT IV Privacy and Ethical Issues in Information Security (5 Hours)**

Legal Privacy and Ethical Issues in Information Security: Protecting Programs and Data - Information and the Law - Rights of Employees and Employers - Software Failures - Computer Crime - Ethical Issues in Information Security.

**UNIT V Cryptography (5 Hours)**

Cryptography: Introduction to Cryptography -What is Cryptography – Plain Text – Cipher Text – Substitution Ciphers - Transposition Ciphers.

**TEXT BOOK:**

1.Sumitra Kisan and D.ChandrasekharRao, Information Security Lecture Notes, Department of Computer Science and Engineering & Information Technology, Veer Surendra Sai University of Technology (Formerly UCE, Burla) Burla, Sambalpur, Odisha.

**REFERENCE BOOK**:

1.Andy Taylor (Editor), David Alexander, Amanda Finch & David Sutton, Information Security Management Principles An ISEB Certificate, The British ComputerSociety, 2008.

**WEB REFERENCES:**

1. https://www.imperva.com/learn/data-security/information-security-infosec/#:~:text=Information%20security%20protects%20sensitive%20information,financial%20data%20or%20intellectual%20property.
2. https://www.geeksforgeeks.org/what-is-information-security
3. https://www.techtarget.com/searchsecurity/definition/information-security-infosec
4. https://www.exabeam.com/information-security/information-security
5. https://www.sans.org/information-security

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-IV | NON - MAJOR ELECTIVE :I | 23NMU01A/ 23NMU01B | INDIAN WOMEN AND SOCIETY/ ADVANCED TAMIL | 24 | 2 |

**Contact hours per week: 2**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Second | III | 50 | - | 50 |

**Preamble**

To familiarize students with the specific cultural contexts of women in India

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Know women status in Indian society as an academic discipline | K1 |
| CO2 | Interpret the various roles of women, challenges and issues faced by them in the society | K2 |
| CO3 | Find out solutions to their legal issues and product themselves from the violence against women emphasize on women entrepreneurship for their empowerment | K3 |
| CO4 | Critically analyze the lifestyle and challenges of women | K4 |
| CO5 | Discuss the importance of women health and issues related to women in general | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 0 | 0 | 0 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 0 | 3 |
| **CO3** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO4** | 3 | 3 | 3 | 9 | 9 | 9 | 9 |
| **CO5** | 3 | 3 | 1 | 1 | 1 | 9 | 9 |
| **Total Contribution of COs to POs** | 33 | 33 | 31 | 37 | 22 | 27 | 30 |
| **Weighted Percentage of COs Contribution to POs** | 1.89 | 1.96 | 1.93 | 2.46 | 2.12 | 2.30 | 2.88 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I** **Historical Background** **(5 Hours)**

History of Women's status from Vedic times, Women's participation in India's Pre and Post Independence movement and Economic Independence, fundamental rights and importance of women in Modern Society

**UNIT II** **Role of Women (Challenges & Remedies)** **(5 Hours)**

Women in Family, Agriculture, Education, Business, Media, Defense, Research and Development, Sports, Civil Services, Banking Services, Social Work, Politics and Law

**UNIT III** **Women and Health** **(5 Hours)**

Women and health issues, Malnutrition, Factors leading to anemia, Reproductive maternal health and Infant mortality, Stress

**UNIT IV** **Issues of Women** **(5 Hours)**

Women's issues, Dowry Related Harassment and Dowry Deaths, Gender based violence against women, Sexual harassment, Loopholes in Practice to control women issues

**UNIT V** **Women Empowerment** **(4 Hours)**

Meaning, objectives, Problems and Issues of Women Empowerment, Factors leading to Women Empowerment, Role and Organization of National Commission for Women, Central and State Social Welfare Board for Women Empowerment, Reality of women empowerment in the era of globalization

**REFERENCE BOOKS**

| S.No | Authors | Title | Publishers | Year of Publication |
|---|---|---|---|---|
| 1 | Mala Khullar | Writing the Women's Movement: A Reader | Zubaan | 2005 |
| 2 | IAWS | The State and the Women's Movement in India | IAWS, Delhi | 1994 |
| 3 | Kosambi,Meera | Crossing Thresholds: Feminist Essays in Social History | Permanent Black | 2007 |
| 4 | TRowbotham, Sheila | Hidden from History: Women's Oppression and the Fight against It | Pluto Press, London | 1975 |
| 5 | Susheela Mehta | Revolution and the Status of Women | Metropolitan Book co.pvt ltd, New Delhi | 1989 |

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE: XIII | 23ITU13 | RELATIONAL DATABASE MANAGEMENT SYSTEMS | 72 | 4 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Second | IV | 25 | 75 | 100 |

**Preamble**

This course covers the basic concepts of database systems, relational database, queries and database design. It is designed to provide solutions related to the strategies for storing data and transaction management.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Explain the basic concepts of database system. | K1 |
| CO2 | Explain Normalization and Query language. | K2 |
| CO3 | Apply appropriate SQL queries and PL/SQL Programs for database application. | K3 |
| CO4 | Analyze different normal forms to design effective database design. | K4 |
| CO5 | Verify data in tables against appropriate constraints. | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO5** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 15 | 45 | 45 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 1.45 | 3.84 | 4.33 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I** **Introduction to Database System** **(12 Hours)**

Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams - Denormalization – Another Example of Normalization.

**UNIT II** **Oracle9i and Oracle Tables** **(15 Hours)**

Oracle9i: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - iSQL *Plus.

Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

**UNIT III** **Working with Table** **(15 Hours)**

Working with Table: Data Management and Retrieval: DML – Adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – Retrieving Data from Table – Arithmetic Operations – Restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.

**UNIT IV** **PL/SQL** **(15 Hours)**

PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.

**UNIT V** **PL/SQL Composite Data Types** **(15 Hours)**

PL/SQL Composite Data Types: Records – Tables – Varrays. Named Blocks: Procedures – Functions – Packages –Triggers – Data Dictionary Views.

**TEXT BOOK:**

1. DATABASE SYSTEMS USING ORACLE – Nilesh Shah, 2nd Edition, PHI.(UNIT-I:Chapters 1 & 2, UNIT-II:Chapters 3 & 4, UNIT-III:Chapters 5 & 6,UNIT-IV:Chapters 10 & 11, UNIT-V:Chapters 12, 13 & 14).

**REFERENCE BOOKS:**

1. Abraham Silberschatz, Henry F.Korth, S.Sudarshan, Database System Concepts, 5th Edition, TMH.
2. Alexis Leon, Mathews Leon , Fundamentals of Database Management Systems, VijayNicole Imprints Private Limited.

**WEB REFERENCES:**

1. https://www.astera.com/type/blog/relational-database-management-system/
2. https://docs.oracle.com/cd/A97630_01/server.920/a96524/toc.htm
3. https://www.youtube.com/watch?v=vs04JXcRwkY
4. https://www.oracletutorial.com/plsql-tutorial/

5. https://www.youtube.com/watch?v=xofpqdU3cD4

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XIV PRACTICAL : V | 23ITU14 | SQL AND PL/SQL - PRACTICAL | 72 | 4 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Second | IV | 40 | 60 | 100 |

## Preamble

This course covers the basic concepts of database systems, relational database, queries and database design. It is designed to provide solutions related to the strategies for storing data and transaction management.

## Course Outcomes

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the basic concepts of database system. | K1 |
| CO2 | Demonstratethe use of Queries. | K2 |
| CO3 | Apply appropriate SQL queries and PL/SQL Programs for database application. | K3 |
| CO4 | Examine different looping structures to design effective program | K4 |
| CO5 | Assess the data in tables against appropriate constraints. | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply;K4 – Analyze; K5 – Evaluate**

## CO-PO MAPPING (COURSE ARTICULATION MATRIX)

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO5** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 15 | 45 | 45 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 1.45 | 3.84 | 4.33 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs**

**Practical List**

1. Contruct a table Department with Dept Id as primary key , Dept name and Location name. Create a table Employee with Employee Id as primary key , Employee Name, Designation, Gender, Age, Date of Joining, Dept Id as foreign key and Salary and insert data in both the tables.

2. Extract queries using Comparison, Logical, Set, Sorting and Grouping operators to retrieve required data from the Employee table created in Question1.

3. Write queries using aggregate functions to summarize the data from the Employee table created in Question1 .

4. Extract Query to

A. Display the Employee id, employee name for all employees who earn more than the average salary.

B. Display the employees who have the highest salary

C. Display all employees who belong to a particular location

5. Construct tables for the library management system which demonstrate the use of primary key and foreign key. Master table should have the following fields: Accno, Title, Author and Rate. Transaction table should have the following fields: User id, Accno, Date of Issue and Date of Return. Create a Report(Select verb) with fields Accno, Title, Date of Issue for the given Date of Return with column formats

6. Create a Student table with following fields and Constraints.

Regno - Primary key
Name - Not null
Marks - Check marks between 0 to 100
Gender - Default value of Female
Aadhar card number -Unique

7. Write a PL/SQL program

A. To check whether a given character is letter or digit.

B. To convert a temperature in scale Fahrenheit to Celsius and vice versa.

8. Create a program in PL/SQL

A. To check whether a number is prime or not using goto statement with for loop.

B. To print the prime numbers between 1 to 50.

9.Create a PL/SQL to update the rate field by 20% more than the current rate in the inventory table which has the following fields: Prono, ProName and Rate. After updating the table a new field (Alter) called for Number of item and place for values for the new field without using PL/SQL block

10. Write a PL/SQL to split the student table into two tables based on result (One table for Pass and another for Fail). Use a cursor for handling records of the student table. Assume necessary fields and create a student details table

11. Create a database trigger on master and transaction tables which are based on an inventory management system for checking data validity. Assume the necessary fields for both tables

12. Construct a PL/SQL program to raise an Exception in the Bank Account Management table when the deposit amount is zero.

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XV<br>ALLIED : IV | 23ITU15 | MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING | 60 | 3 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Second | IV | 25 | 75 | 100 |

**Preamble**

To learn about the basic components of microprocrssor

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the fundamental concepts of microprocessor | K1 |
| CO2 | Demonstrate the functions of 8085 | K2 |
| CO3 | Identify the internal organization and operation of microprocessors/microcontrollers. | K3 |
| CO4 | Analyse the functions of Program 8085 Microprocessor | K4 |
| CO5 | Evaluate the microprocessors/microcontrollers-based systems | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply;K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 4.34 | 3.84 | 4.33 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs**

**COURSE CONTENT:**

**UNIT I 8085 Microprocessor Architecture & Microcomputer System (12 Hours)**
8085 Microprocessor Architecture & Microcomputer System: Evolution of Microprocessor, Microprocessor Architecture and its operations, Memory, Buses, Input/Output devices, ALU,Timing and Control Unit, registers,PinConfiguration,Intruction Cycle, Timing Diagram.

**UNIT II Introduction Set of Intel 8085 microprocessor (12 Hours)**
Introduction Set of Intel 8085 microprocessor: Instructions Classification, Instruction and Data Formats, Addressing Modes, Opcode and Operands, Instruction Word Size, Static and Dynamic Debugging.

**UNIT III Introduction to 8085 Instructions (12 Hours)**
Introduction to 8085 Instructions: Counters and Time delays, Stack, subroutine, Restart, Conditional Call and Return Instructions, Advanced subroutine concepts.

**UNIT IV Assembly Language Programming (12 Hours)**
Assembly Language Programming: Assembly Language, High-Level Language, Low- Level Language, Machine Language. Operations, Arithmetic Operations related to Memory, Logic Operations, and Branch. BCD to Binary and Binary to BCD Conversion, BCD Addition, BCD Subtraction, Multiplication.

**UNIT V Other Microprocessor (12 Hours)**
Other Microprocessor**:** Brief introduction of Intel Microprocessor: 80186, 8080, 80188, 80386, 80486. Microprocessor: Z80, Z800, Z8000.

**TEXT BOOK:**
1. Microprocessor Architecture, Programming and Applications with 8085/8080A – Ramesh S. Gaonkar, Wiley Eastern Limited.

**REFERENCE BOOK**
1. Fundamentals of Microprocessor and Microcomputers--B.RAM, Dhanpat Rai Pub.

**WEB REFERENCES :**

1. https://www.tutorialspoint.com/microprocessor/microprocessor_overview.htm
2. https://www.javatpoint.com/microprocessor-introduction
3. https://www.geeksforgeeks.org/introduction-of-microprocessor/

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-IV | SKILL ENHANCEMENT : I | 23SEITU01 | PROGRAMMING IN PHP –PRACTICAL | 36 | 2 |

**Contact hours per week: 2**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Second | IV | 50 | - | 50 |

**Preamble**

To learn about the basic components of PHP

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the basic concepts of PHPvariables | K1 |
| CO2 | Illustrate the concepts of control statements, looping statements, arrays | K2 |
| CO3 | Build applications usingfunctions, class | K3 |
| CO4 | Analyze the usage of scripts | K4 |
| CO5 | Examine the use of database connectivity | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 4.34 | 3.84 | 4.33 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**Practical List**

1. Demonstrate variables in php using different datatypes

2. Illustrate conditional statement
3. Create loop in php
4. Demonstrate Arrays in php
5. Develop a php program using string operations
6. Create functions
7. Construct  php program using Java Script
8. Design a form components in php
9. Develop a php program using class
10. Construct a php program to demonstrate database connectivity

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-IV | ABILITY ENHANCEMENT : II | 23AEU02 | CONSUMER RIGHTS | 24 | 2 |

**Contact hours per week: 2**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Second | IV | 50 | - | 50 |

**Preamble**

This paper seeks to familiarize the students with their rights and responsibilities as a consumer, the social framework of consumer rights and legal framework of protecting consumer rights.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Memorize the procedure of redress of consumer complaints, and the role of different agencies in establishing product and service standards | K1 |
| CO2 | Explain the Consumer Protection Law in India | K2 |
| CO3 | Impart sound practical grounding about the practice of consumer law and the procedure Followed | K3 |
| CO4 | Evaluate the regulations and legal actions that helps to protect consumers | K4 |
| CO5 | Analyse the knowledge and skills needed for a career in this field | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 1 | 0 | 1 |
| **CO2** | 9 | 9 | 9 | 9 | 1 | 0 | 1 |
| **CO3** | 9 | 9 | 9 | 3 | 3 | 1 | 1 |
| **CO4** | 9 | 3 | 1 | 1 | 3 | 3 | 3 |
| **CO5** | 9 | 1 | 3 | 0 | 9 | 9 | 9 |
| **Total Contribution of COs to POs** | 45 | 31 | 31 | 22 | 17 | 13 | 15 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 1.84 | 1.93 | 1.46 | 1.64 | 1.11 | 1.44 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I Conceptual Framework (8 Hours)**

Consumer and Markets: Concept of Consumer, Nature of markets: Liberalization and Globalization of markets with special reference to Indian Consumer Markets, E-Commerce with reference to Indian Market, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP), Fair Price, GST, labeling and packaging along with relevant laws, Legal Metrology. Experiencing and Voicing Dissatisfaction: Consumer buying process, Consumer Satisfaction/dissatisfaction-Grievances-complaint, Consumer Complaining Behaviour: Alternatives available to Dissatisfied Consumers; Complaint Handling Process: ISO 10000 suite.

**UNIT II The Consumer Protection Law in India (8 Hours)**

Objectives and Basic Concepts: Consumer rights and UN Guidelines on consumer protection, Consumer goods, defect in goods, spurious goods and services, service, deficiency in service, unfair trade practice, and restrictive trade practice. Organizational set-up under the Consumer Protection Act: Advisory Bodies: Consumer Protection Councils at the Central, State and District Levels; Adjudicatory Bodies: District Forums, State Commissions, and National Commission: Their Composition, Powers, and Jurisdiction (Pecuniary and Territorial), Role of Supreme Court under the CPA with important case law.

**UNITIII Grievance Redressal Mechanism under the Indian Consumer Protection Law (8 Hours)**

Grounds of filing a complaint; Limitation period; Procedure for filing and hearing of a complaint; Disposal of cases, Relief/Remedy available; Temporary Injunction, Enforcement of order, Appeal; Offences and penalties. Leading Cases decided under Consumer Protection law by Supreme Court/National Commission: Medical Negligence; Banking; Insurance; Housing & Real Estate; Electricity and Telecom Services; Education; Defective Products; Unfair Trade Practices.

**UNIT IV Role of Industry Regulators in Consumer Protection (6 Hours)**

i. Banking: RBI and Banking Ombudsman
ii. Insurance: IRDA and Insurance Ombudsman
iii. Telecommunication: TRAI
iv. Food Products: FSSAI
v. Electricity Supply: Electricity Regulatory Commission
vi. Real Estate Regulatory Authority

**UNIT V Contemporary Issues in Consumer Affairs (6 Hours)**

Consumer Movement in India:Evolution of Consumer Movement in India, Formation of consumer organizations and their role in consumer protection, Misleading Advertisements and sustainable consumption, National Consumer Helpline, Comparative Product testing, Sustainable consumption and energy ratings.Quality and Standardization: Voluntary and Mandatory standards; Role of BIS, Indian Standards Mark (ISI), Ag-mark, Hallmarking, Licensing and Surveillance; Role of International Standards: ISO an Overview.

**Note: Unit 2 and 3 refers to the Consumer Protection Act, 1986. Any change in law would be added appropriately after the new law is notified**

**Suggested Readings**:

1. Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. (2007) *Consumer Affairs,* Universities Press.
2. Choudhary, Ram Naresh Prasad (2005). *Consumer Protection Law Provisions and Procedure*, Deep and Deep Publications Pvt Ltd.
3. G. Ganesan and M. Sumathy. (2012). *Globalisation and Consumerism: Issues and Challenges*, Regal Publications
4. Suresh Misra and SapnaChadah (2012). Consumer Protection in India: Issues and Concerns, IIPA, New Delhi
5. Rajyalaxmi Rao (2012), *Consumer is King,* Universal Law Publishing Company
6. Girimaji, Pushpa (2002). *Consumer Right for Everyone* Penguin Books.
7. E-books :- www.consumereducation.in
8. Empowering Consumers e-book,
9. ebook, www.consumeraffairs.nic.in
10. *The Consumer Protection Act, 1986 and its later versions.* www.bis.org

**Articles**

1. Misra Suresh, (Aug 2017) "Is the Indian Consumer Protected? One India One People.
2. Raman Mittal, SonkarSumit and Parineet Kaur (2016) Regulating Unfair Trade Practices: An Analysis of the Past and Present Indian Legislative Models, Journal of Consumer Policy.
3. Chakravarthy, S. (2014). MRTP Act metamorphoses into Competition Act. CUTS Institute for Regulation and Competition position paper. Available online at www.cuts-international.org/doc01.doc.
4. Kapoor Sheetal (2013) "Banking and the Consumer" Akademos (ISSN 2231-0584)
5. Bhatt K. N., Misra Suresh and ChadahSapna (2010). Consumer, Consumerism and Consumer Protection, Abhijeet Publications.
6. Kapoor Sheetal (2010) "Advertising-An Essential Part of Consumer's Life-Its Legal and Ethical Aspects", Consumer Protection and Trade Practices Journal, October 2010.
7. Verma, D.P.S. (2002). Regulating Misleading Advertisements, Legal Provisions and Institutional Framework.Vikalpa.Vol. 26.No. 2. pp. 51-57.

**Periodicals**

1. Consumer Protection Judgments (CPJ) (Relevant cases reported in various issues)
2. Recent issues of magazines: International Journal on consumer law and practice, National Law School of India University, Bengaluru
3. '*Consumer Voice*', Published by VOICE Society, New Delhi.

**Websites:**

www.ncdrc.nic.in
www.consumeraffairs.nic.in
www.iso.org.
www.bis.org.in
www.consumereducation.in
www.consumervoice.in
www.fssai.gov.in
www.cercindia.org

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XVI | 23ITU16 | PROGRAMMING IN PYTHON | 72 | 5 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | V | 25 | 75 | 100 |

**Preamble**

The Paper offers the understanding of basic principles in python and skills to create computer programs for small scale usage.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall syntax and semantics of various programming constructs. | K1 |
| CO2 | Illustrate the process of structuring data using lists, tuples, and dictionaries | K2 |
| CO3 | Identify appropriate programming structure for a given problem. | K3 |
| CO4 | Convert an algorithm into a python program | K4 |
| CO5 | Infer the object oriented concepts in python | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 15 | 33 | 27 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 1.45 | 2.82 | 2.60 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I Basics and Functions (12 Hours)**

The way of the program: What is a program? - Running Python. - The first program.- Arithmetic operators - Values and types - Variables, expressions and statements: Assignment statements - Variable names - Expressions and statements - Script mode - Order of operations - String operations Comments – Debugging. Functions: Function calls - Math functions - Composition – Adding new functions – Definition and uses - Flow of execution - Parameters and arguments- Variables and parameters are local - Fruitful functions and void functions - Why functions?

**UNIT II Conditionals, Recursion, Iteration, Strings (15 Hours)**

Conditionals and Recursion: Floor division and modulus - Boolean expressions - Logical operators - Conditional execution - Alternative execution - Chained conditionals - Nested conditionals Recursion - Infinite recursion – Keyboard input. Fruitful functions: Return values Incremental development- Composition - Boolean functions. Iteration: Reassignment - Updating variables - The while statement - break - Square roots - Strings: String is a sequence - Traversal with a for loop - String slices - Strings are immutable - Searching - Looping and counting - String methods - The in operator - String comparison.

**UNIT III Lists, Dictionaries, Tuples (15 Hours)**

Lists: A list is a sequence - Lists are mutable - Traversing a list - List operations - List slices - List methods - Map, filter and reduce Deleting elements - Lists and strings Objects and values - Aliasing - List arguments - Dictionaries: A dictionary is a mapping Dictionary as a collection of counters - Looping and dictionaries - Reverse lookup Dictionaries and lists - Memos - Global variables. Tuples: Tuples are immutable - Tuple assignment - Tuples as return values - Variable length argument tuples - Lists and tuples . Dictionaries and tuples.

**UNIT IV Files, Classes and Objects (15 Hours)**

Files: Persistence - Reading and writing - Format operator - Filenames and paths - Catching exceptions - Databases - Pickling - Pipes - Writing modules – Classes and objects: Programmer -defined types . Attributes - Rectangles - Instances as return values - Objects are mutable Copying - Classes and Functions: Time - Pure functions - Modifiers - Prototyping versus planning.

**UNIT V Classes and Methods (15 Hours)**

Classes and methods: Object-oriented features - Printing objects - Another example - A more complicated example - The init method- The_str_method - Operator overloading - Type-based dispatch - Polymorphism - Interface and implementation - Inheritance: Card objects - Class attributes Comparing cards . Decks Printing the deck, add, remove, shuffle and sort - Inheritance - Class diagrams - Data encapsulation.

**TEXT BOOK**

1. Allen B. Downey,"Think Python: How to Think Like a Computer Scientist", 2nd Edition 2012, O'Reilly.

**REFERENCE BOOKS**

1. Kenneth A. Lambert, “Fundamentals of Python First Programs”, Second Edition
2. Rashi Gupta, “Makinf Use of Python”, Willey publishing Inc

**WEB REFERENCES:**

1. https://www.w3schools.com/python/python_intro.asp
2. https://www.geeksforgeeks.org/python-programming-language/
3. https://www.programiz.com/python-programming

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XVII PRACTICAL : VI | 23ITU17 | PROGRAMMING IN PYTHON - PRACTICAL | 72 | 4 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | V | 40 | 60 | 100 |

**Preamble**

The Paper offers the understanding of basic principles in python and skills to create computer programs for small scale usage.

**Course Outcome**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the syntax and semantics of various programming constructs while writing simple programs | K1 |
| CO2 | Understand the basic programming concepts of python | K2 |
| CO3 | Organise data using lists, tuples,dictionaries and files and program using control structures, functions, class and objects | K3 |
| CO4 | Assume appropriate programming structure and data type to solve the given problem efficiently | K4 |
| CO5 | Interpret the given problen statement into a python progran | K5 |

**K1 – Remember;K2 – Understand;K3 – Apply;K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 15 | 33 | 33 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 1.45 | 2.82 | 3.17 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs**

**Practical List**

11. Write a Program to find prime numbers between 1 to n.

2. Construct a Program to print the decimal equivalents of 1/2, 1/3, 1/4,.....1/n. code

3. Design a Program to check given number is Armstrong or not.

4. Simulate a basic calculator using various arithmetic operators.

5. Compute GCD and LCM of two numbers using functions

6. Develop a program to accept a line of text and find the number of characters, number of vowels and number of blank spaces in it.

7. Demonstrate various List operations.

8. Write a Program to create a List and split it into two lists for odd and even numbers.

9. Design a Program to create a tuple and perform various slicing operations,

10. Build a Program to display the file contents and copy the file contents from one file to another.

11. Develop a Program to create a dictionary, add a key-value pair , change and retrieve the values based on the key.

12. Device a Program to implement class and object concepts.

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XVIII | 23ITU18 | PROJECT WORK | 72 | - |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | V | - | - | - |

**Preamble**

To expose the students to practice themselves and find solution for the problems in the respective areas

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Remember the thrust areas of project | K1 |
| CO2 | Demonstrate the problem pertaining to the domain | K2 |
| CO3 | Apply various algorithms in their relevant field | K3 |
| CO4 | Explorethe real time applications | K4 |
| CO5 | Evaluate demographic variables and factors influencing software development | K5 |

**K1 – Remember;K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 4.34 | 3.84 | 4.33 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs**

**Viva-Voce Will Conducted in the ESE(VI Semester)

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XIX<br>ELECTIVE : I | 23ITU19A | DATA MINING | 60 | 5 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | V | 25 | 75 | 100 |

**Preamble**

To learn about Data Mining and its techniques.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Remember the basics of Data Mining concepts | K1 |
| CO2 | Explain the techniques of Data Mining | K2 |
| CO3 | Classify algorithms for mining the data efficiently | K3 |
| CO4 | Analyze clustering techniques and algorithms | K4 |
| CO5 | Evaluate the challenges of data mining in real world applications | K5 |

**K1 – Remember;K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 6 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 6 |
| **CO3** | 9 | 9 | 9 | 9 | 9 | 9 | 6 |
| **CO4** | 9 | 9 | 9 | 9 | 9 | 9 | 6 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 9 | 6 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 45 | 45 | 30 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 4.34 | 3.84 | 2.88 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs**

**COURSE CONTENT:**

**UNIT I Introduction (12 Hours)**

Expanding universe of data – production factor – computer systems that can learn – data mining – data mining versus query tools – data mining in marketing – practical application. Learning – Self Learning Computer Systems – machine learning and the methodology of science – concept learning.

**UNIT II Data Warehouse (12 Hours)**

Data warehouse – need- designing decision support systems – integration with data mining-Client/Server and data warehousing–multi-processing machines – cost justification.

**UNIT III Knowledge Discovery Process (12 Hours)**

Knowledge discovery process – data selection – cleaning – enrichment – coding – data mining – preliminary analysis of the data set using traditional query tools – visualization techniques – likelihood and distance – OLAP tools – K-nearest neighbor – Decision trees – Association rules – Neural networks – Genetic algorithms – Reporting.

**UNIT IV Sitting up a KDD environment (12 Hours)**

Different forms of knowledge – Getting started – Data Selection – Cleaning – Enrichment – Coding – Data mining - Reporting – KDD environment – Ten golden rules.

**UNIT V Real-life application and learning algorithms (12 Hours)**

Customer Profiling – Predicting bid behavior of pilots – Discovering foreign key relationships-Results. Learning as compression of data sets – The information content of message – Noise and redundancy – significance of noise – Fuzzy databases – The traditional theory of the relational database – from relations to tables – from keys to statistical development Dependencies – Denormalization – Data Mining Primitives**.**

**TEXT BOOK:**

1. Peter Adrians and Dolf Zantinge, Data Mining, 4th Edition, Addition Wesley, 2002

**REFERENCE BOOKS:**

1.Jiawei Han & Micheline Kamber, Data Mining Concepts &Techniques,Academic Press, 2001.

2.Margaret H.Dunbam, Data Mining Introductory and Advanced Topics, Pearson Education, 2003.

**WEB REFERENCES:**

1.https://www.javatpoint.com/data-mining

2. https://www.tutorialspoint.com/data_mining/dm_overview.htm

3. https://www.guru99.com/data-mining-tutorial.html

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XIX<br>ELECTIVE : I | 23ITU19B | OPERATING SYSTEM | 60 | 5 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Second | VI | 25 | 75 | 100 |

**Preamble**

To learn about the basic building blocks to understand the Operating System in detail.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the fundamental concepts of operating system | K1 |
| CO2 | Demonstrate the functions of deadlock and storage management | K2 |
| CO3 | Utilize the policies of scheduling | K3 |
| CO4 | Analyze memory management | K4 |
| CO5 | Evaluate the concepts of storage management | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply;K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 3 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 1 |
| **CO4** | 9 | 9 | 9 | 9 | 9 | 3 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 3 | 1 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 33 | 33 | 11 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 3.19 | 2.82 | 1.06 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I Introduction (12 Hours)**

What is an Operating System? – Process Concepts – Introduction – Definition of Process – Process States – Process State Transitions – The Process Control Block – Operations on Process – Suspend and Resume – Interrupt Processing.

**UNIT II Deadlock (12 Hours)**

Introduction – Examples of Deadlock – Resource Concepts - Four Necessary Conditions for deadlock – Major Areas of Deadlock Research – Deadlock Prevention-Deadlock Avoidance and the Banker's Algorithm – Deadlock Detection – Deadlock Recovery.

**UNIT III Storage Management (12 Hours)**

Storage Organization – Storage Management – Storage Hierarchy – Storage Management Strategies-Contiguous vs. Noncontiguous Allocation- Single User Contiguous Allocation-Fixed Partition Multiprogramming – Variable Partition Multiprogramming – Multiprogramming with storage swapping.

**UNIT IV Virtual Storage Organization & Management (12 Hours)**

Virtual Storage:Basic Concepts – BlockMapping – Paging Basic Concepts- Segmentation-Virtual Storage Management Strategies – Page Replacement Strategies- Locality - Working Sets – Page Fault Frequency Page Replacement – Demang Paging – Page Release – Page Size.

**UNIT V Job and Processor Scheduling (12 Hours)**

Preemptive Vs. NonPreemptive Scheduling – Priorities – Deadlock Scheduling-First- In-First Out(FIFO)Scheduling-Round Robin Scheduling-Quantum Size – Shortest Job First (SJF) Scheduling - Shortest Remaining Time(SRT) Scheduling-HighestResponseRatioNext(HRN) Scheduling-Fair Share Scheduling.

**TEXT BOOK:**

1. H.M. Deitel, Operating Systems, 2nd Edition, Addision-Wesley Publishing Company 2003

**REFERENCE BOOKS:**

1. DeitelChoffnes, Operating Systems, 3rd Edition, Pearson Education, 2003.
2. Stuart E. Madnick, John J.Donovan. Operating Systems, 3rd Edition, Tata McGraw Hill,2003.

**WEB REFERENCES :**

1.https://drive.uqu.edu.sa/_/mskhayat/files/MySubjects/2017SS%20Operating%20Systems/Abraham%20Silberschatz-Operating%20System%20Concepts%20(9th,2012_12).pdf
2. https://www.youtube.com/watch?v=mXw9ruZaxzQ
3.https://mrcet.com/downloads/digital_notes/CSE/II%20Year/OPERATING%20SYSTEMS%20%20NOTES%20R18.pdf
4. https://www.tutorialspoint.com/operating-system-design-and-implementation
5. https://github.com/dalmia/Operating-Systems

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XIX ELECTIVE : I | 23ITU19C | CLOUD COMPUTING TECHNIQUES | 60 | 5 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | V | 25 | 75 | 100 |

**Preamble**

To understand the Cloud computing architectures, applications and challenges in Industry 4.0

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the basics of Cloud Computing, Working, Benefits and Discovering cloud services. | K1 |
| CO2 | Explain the cloud services | K2 |
| CO3 | Apply the concepts of communications and collaboration using cloud in Industry 4.0 | K3 |
| CO4 | Analyse the various cloud services | K4 |
| CO5 | Evaluate the cloud services | K5 |

**K1 – Remember;K2 – Understand;K3 – Apply;K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 6 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 6 |
| **CO3** | 9 | 9 | 9 | 9 | 9 | 9 | 6 |
| **CO4** | 9 | 9 | 9 | 9 | 9 | 9 | 6 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 9 | 6 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 45 | 45 | 30 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 4.34 | 3.84 | 2.88 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I Introduction (12 Hours)**

Understanding Cloud Computing : Beyond the Desktop – An Introduction to Cloud Computing– Are you Ready for Computing in the Cloud? – Developing Cloud Services.

**UNIT II Cloud Computing For Everyone (12 Hours)**

Cloud Computing for the Family - Cloud Computing for the Community - Cloud Computing for the Corporation.

**UNIT III Using Cloud Services (12 Hours)**

Collaborating on calendars, Schedules and task management – Collaborating on Event Management.

**UNIT IV Using Cloud Services (12 Hours)**

Collaborating on Contact Management, Collaborating on Project Management – Sharing Digital Photographs.

**UNIT V Outside The Cloudx (12 Hours)**

Evaluating web mail services, Evaluating instant messaging, Evaluating web conference tools, creating groups on social networks, Evaluating on line groupware, Collaborating via blogs and wikis.Industry 4.0 use cases for Cloud Computing.

**TEXT BOOK:**

1.Michael Miller, “Cloud Computing”, Pearson Education, New Delhi, 2009

**REFERENCE BOOK:**

1.Anthony T. Velte,Cloud Computing A Practical Approach 1st Edition, Tata Mcgraw Hill Education Private Limited (2009)

**WEB REFERENCES :**

1.https://www.educba.com/cloud-computing-technologies/

2.https://www.tutorialspoint.com/cloud_computing/cloud_computing_technologies.htm

3.https://www.javatpoint.com/cloud-computing-technologies

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XX<br>OPEN ELECTIVE | **** | INTERNET FOR EVERYONE | 48 | 2 |

**Contact hours per week: 4**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | V | 25 | 75 | 100 |

**Preamble**

This paper provides an insight of formal introduction to internet, WWW, Finding Information in the Internet and awareness on Internet Security and Privacy, illustrate the Possibilities of Social Networking. Learning discussion forum software,Effective use of video conferencing,Blogging& Making Money in the Internet.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Outline the basic concept of the Internet, World Wide Web and Web browsers | K1 |
| CO2 | Explain the Knowledge of Finding Information in the Internet and awareness on Internet Security and Privacy | K2 |
| CO3 | Apply tips for effective use of Email, Advantages and Disadvantages of Email | K3 |
| CO4 | Analyze the Possibilities of Social Networking, Learning discussion forum software & effective use of video conferencing | K4 |
| CO5 | Evaluate the learn Blogging & Making Money in the Internet | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply;K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| CO / PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 3 | 1 |
| **CO2** | 9 | 9 | 9 | 3 | 3 | 3 | 1 |
| **CO3** | 9 | 9 | 3 | 3 | 3 | 1 | 1 |
| **CO4** | 9 | 3 | 3 | 1 | 1 | 0 | 1 |
| **CO5** | 3 | 3 | 3 | 1 | 0 | 0 | 1 |
| **Total Contribution of COs to POs** | 39 | 33 | 27 | 17 | 10 | 7 | 5 |
| **Weighted Percentage of COs Contribution to POs** | 2.23 | 1.96 | 1.68 | 1.13 | 0.97 | 0.60 | 0.48 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I Introduction To Internet, WWW & Web Browsers (10 Hours)**

What is Internet? - How does Internet Work? - What is Special about the Internet? - What is WWW? - Internet and Web - How does the web works? - What are web browsers? - Types of Browsers - Web Browsing Tips.

**UNIT II Searching the Web, Safety & Privacy (10 Hours)**

Information Sources - Finding Information on the internet - Searching the Web - Search Engines - Making Your Search- Improving Your Searching - Tips for Internet Research- Privacy - Anonymity - Understanding Security and Privacy.

**UNIT III EMAIL (10 Hours)**

Introduction - How E-mail works? - Why use E-mail? - E-mail Names and Addresses - Mailing Basics - How Private is the e-mail?- Email Ethics - Spamming - E-mail Advantages and Disadvantages - Tips for effective E-mail use - E-mail Safety tips.

**UNIT IV Social Networking and Discussion Forums (8 Hours)**

Introduction - Social Networking Timeline - Why Social Networking? - Dangers of Social Networking?-Discussion Forums - Discussion Forum Software - Internet Telephony - Video Conferencing.

**UNIT V Making Money On the Internet And Blogging (10 Hours)**

What is a Blog? - Why Blog? - Why is Blogging so Popular? - Blog Search Engines and Communities - Blogs and Employment - Pitfalls to avoid while Blogging. Introduction - Writing Product Reviews - Sharing Your Knowledge - Advertising - Affiliate programs - Selling - Online Tutoring.

**TEXT BOOK:**

1. Alexis Leon, Mathews Leon , INTERNET FOR EVERYONE ,Vikas Publishing Housing Pvt Ltd , 15th Anniversary Edition

**REFERENCE BOOKS:**

1. Keiko Pitter, Sara Amato,JohnCallahan,Niger Kerr, Eric Tilton, Robert Minato,Tata McGraw-Hill Edition 2003
2. Peter Weverka, The Everyday Internet All-in-One Desk Reference for Dummies,Wiley Publishing Inc, 3rd Edition

**WEB REFERENCES:**

1. https://www.tutorialspoint.com/computer_concepts/computer_concepts_introduction_to_internet_www_web_browsers.htm
2. https://www.tutorialspoint.com/internet_technologies/e_mail_overview.htm
3. **https://geekflare.com/make-money-with-blogging/**

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XX<br>OPEN ELECTIVE | **** | BASICS OF COMPUTER TECHNOLOGY | 48 | 2 |

**Contact hours per week: 4**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | V | 25 | 75 | 100 |

**Preamble**

To learn about the basics of Computer Technology

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the basics of Computer | K1 |
| CO2 | Illustrate the concepts of data communication and Computer networks | K2 |
| CO3 | UltilizeMiddleware and Gateways | K3 |
| CO4 | Analyze the concepts of Mobile Computing | K4 |
| CO5 | Examine the DBMS Architecture | K5 |

**K1 – Remember; K2 – Understand;K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 3 | 1 |
| **CO2** | 9 | 9 | 9 | 3 | 3 | 3 | 1 |
| **CO3** | 9 | 9 | 3 | 3 | 3 | 1 | 1 |
| **CO4** | 9 | 3 | 3 | 1 | 1 | 0 | 1 |
| **CO5** | 3 | 3 | 3 | 1 | 0 | 0 | 1 |
| **Total Contribution of COs to POs** | 39 | 33 | 27 | 17 | 10 | 7 | 5 |
| **Weighted Percentage of COs Contribution to POs** | 2.23 | 1.96 | 1.68 | 1.13 | 0.97 | 0.60 | 0.48 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I Computer Basics (9 Hours)**

Introduction-Generations of Computers-Classification of Computers- Central Processing Unit-Communication among Various Units-Memory Hierarchy-RAM-ROM-Secondary Storage Devices-Operating System: Introduction- Definition-Types.

**UNIT II Data Communication and Computer Networks (10 Hours)**

Introduction- Data Communication- Transmission Media- Multiplexing- Switching. Computer Network: Types of Computer Networks- Network Topologies- Communication Protocol.Internet: Introduction-Basic Internet Terms- Internet Applications-Search Engines.

**UNIT III Database Fundamentals (9 Hours)**

Introduction-Definition-Logical Data Concepts-Physical Data Concepts-Database Management System-DBMS Architecture-Types of Databases.SQL: Introduction-Getting Started with SQL.

**UNIT IV Mobile Computing (10 Hours)**

Wireless The beginning –Mobile Computing –Dialogue Control-–Networks –Middleware and Gateways –Application and Services-Developing Mobile Computer Applications –Security in Mobile Computing–Architecture for Mobile Computing-Mobile Computing through Telephone-– IVR Applications.

**UNIT V Cloud Computing (10 Hours)**

Introduction- From- Collaboration to cloud- Working of cloud computing-Pros and Cons-Benefits- Developing cloud computing services- Cloud service development-Discovering cloud services-Collaborating on schedules-Collaborating on calendars-Evaluating web conference tools- Creating groups on social networks- Understanding cloud storage-Evaluating on line file storage.

**TEXT BOOKS:**

1. Alexis Leon ,Mathews Leon,Introduction to Information Technology, 2nd Edition, ITL Limited ITL Education Solutions Limited,Publisher(s): Pearson Education India,ISBN: 9789332525146
2. Asoke K Talukder , Roopa R Yavagal,Mobile Computing, TMH, 2005
3. Anthony T. Velte, "Cloud Computing- A Practical Approach", Tata McGraw Hill Education Private Limited, 1st Edition (2013).

**REFERENCE BOOKS:**

1. Alexis Leon ,Mathews Leon,Fundamentals of Information Technology, ITL Limited
2. KumkumGarg,Mobile Computing, Pearson Education, 2010.
3. Michael Miller, Cloud Computing, Pearson Education, New Delhi, First Edition, 2013

**WEB REFERENCES :**

1.https://mrcet.com/pdf/Lab%20Manuals/IT/R15A0529_CloudComputing_Notes-converted.pdf
2.https://mjginfologs.com/mobile-computing-architecture/
3.https://www.guru99.com/dbms-architecture.html
4.https://www.tutorialspoint.com/data_communication_computer_network/index.htm

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XX OPEN ELECTIVE | **** | MACHINE LEARNING | 48 | 2 |

**Contact hours per week: 4**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | V | 25 | 75 | 100 |

## Preamble

To provide an in-depth knowledge about machine learning concepts, techniques, models, and algorithms.

## Course Outcomes

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Remember the Machine Learning Fundamentals | K1 |
| CO2 | Understanding the machine learning concepts | K2 |
| CO3 | Summarize the impact of machine learning applications | K3 |
| CO4 | Analyze machine learning support to business goals | K4 |
| CO5 | Evaluate the knowledge of machine skills | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

## CO-PO MAPPING (COURSE ARTICULATION MATRIX)

| CO / PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 3 | 1 |
| **CO2** | 9 | 9 | 9 | 3 | 3 | 3 | 1 |
| **CO3** | 9 | 9 | 3 | 3 | 3 | 1 | 1 |
| **CO4** | 9 | 3 | 3 | 1 | 1 | 0 | 1 |
| **CO5** | 3 | 3 | 3 | 1 | 0 | 0 | 1 |
| **Total Contribution of COs to POs** | 39 | 33 | 27 | 17 | 10 | 7 | 5 |
| **Weighted Percentage of COs Contribution to POs** | 2.23 | 1.96 | 1.68 | 1.13 | 0.97 | 0.60 | 0.48 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

## COURSE CONTENT:

**UNIT I (10 Hours) Overview of Machine learning**

Understanding Machine Learning- What Is Machine Learning?- Defining Big Data- Big Data in Context with Machine Learning- The Need to Understand and Trust your Data- The Importance of the Hybrid Cloud- Leveraging the Power of Machine Learning- The Roles of Statistics and Data Mining with machine learning- Putting Machine Learning in Context- Approaches to Machine Learning.

**UNIT II (9 Hours) Machine Learning Techniques**

Getting Started with a Strategy- Understanding Machine Learning Techniques- Tying Machine Learning Methods to Outcomes- Applying Machine Learning to Business Needs.

**UNIT III (9 Hours) Machine Learning on Applications**

Looking Inside Machine Learning- The Impact of Machine Learning on Applications- Data Preparation- The Machine Learning Cycle.

**UNIT IV (10 Hours) Getting Started with Machine Learning**

Getting Started with Machine Learning- Understanding How Machine Learning Can Help- Focus on the Business Problem- Machine Learning Requires Collaboration- Executing a Pilot Project- Determining the Best Learning Model.

**UNIT V (10 Hours)Learning Machine Skills**

Learning Machine Skills- Defining the Skills That You Need- Getting Educated- Using Machine Learning to Provide Solutions to Business Problems- Applying Machine Learning to Patient Health- Leveraging IoT to Create More Predictable Outcomes- Proactively Responding to IT Issues- Protecting Against Fraud- Ten Predictions on the Future of Machine Learning.

## TEXT BOOK:

1.Judith Hurwitz and Daniel Kirsch,Machine Learning for dummies, IBM Limited Edition,2018

## REFERENCE BOOK:

1.EthemAlpaydin, Introduction to Machine Learning, Second Edition, The MIT Press Cambridge, Massachusetts London, England

## WEB REFERENCES:

1. https://www.sciencedirect.com/topics/computer-science/machine-learning#:~:text=Machine%20learning%20(ML)%20refers%20to,being%20programmed%20with%20that%20knowledge.
2. https://www.javatpoint.com/machine-learning-techniques
3. **https://www.simplilearn.com/tutorials/machine-learning-tutorial/machine-learning-applications**

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-IV | SKILL ENHANCEMENT : II | 23SEU02 | LIFE SKILLS | 36 | 2 |

**Contact hours per week: 2**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | V | 50 | - | 50 |

**Preamble**

To inculcate both personal and professional skills in the students in the areas of understanding of self and others, interpersonal skills, high performance teams, leadership potential, communication & presentation skills, techniques of problem solving, decision making, fostering creativity and innovationfor personal and professional excellence, stress management, time management and conflict management and inculcation of human values.

**Course Outcome:**

After completion of the course, the learners will be able to:

| CO | Course Outcome | Knowledge Level |
|---|---|---|
| CO1 | Identify the common communication problems, what good communication skills are and what they can do to improve their abilities | K1 |
| CO2 | Demonstrate communication through the digital media | K2 |
| CO3 | Prepare themselves to situations as an individual and as a team. | K3 |
| CO4 | Analyse various leadership models, strengths and abilities to create their leadership vision | K4 |
| CO5 | Appraise their potential as human beings and conduct themselves properly in the ways of theworld. | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / Cos | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 |
|---|---|---|---|---|---|---|---|
| **CO 1** | 3 | 9 | 3 | 1 | 3 | 3 | 1 |
| **CO 2** | 1 | 9 | 3 | 1 | 3 | 9 | 1 |
| **CO 3** | 1 | 3 | 3 | 3 | 9 | 3 | 3 |
| **CO 4** | 1 | 3 | 3 | 3 | 9 | 9 | 3 |
| **CO 5** | 1 | 3 | 3 | 1 | 3 | 1 | 9 |
| **Total Contribution of COs to POs** | 7 | 27 | 15 | 9 | 27 | 25 | 17 |
| **Weighted Percentage of COs Contribution to POs** | 0.40 | 1.60 | 0.93 | 0.60 | 2.61 | 2.13 | 1.63 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

## COURSE CONTENT:

**UNIT I(8 Hours)**
Communication Skills**:** Listening, Speaking, Reading, Writing and different modes of writing

**UNIT II(7 Hours)**
Digital Communication and Presentation Skills**:** Digital Literacy,Effective use of Social Media, Non-verbal communication, Presentation Skills

**UNIT III(5 Hours)**
Team Skills: Trust and Collaboration, Listening as a Team Skill, Brainstorming, Social and Cultural Etiquettes, Internal Communication

**UNIT IV(8 Hours)**
Leadership and Management Skills**:** Leadership Skills, Managerial Skills, Entrepreneurial Skills, Innovative Leadership and Design Thinking

**UNIT V(8 Hours)**
Universal Human Values:Ethics and Integrity, Love & Compassion, Truth, Non-Violence, Righteousness, Peace, Service, Renunciation (Sacrifice)

**TEXT BOOKS:**

1. Sen Madhucchanda (2010), An Introduction to Critical Thinking, Pearson, Delhi
2. Silvia P. J. (2007), How to Read a Lot, American Psychological Association, Washington DC
3. Sinek S. (2009). Start with Why: How Great Leaders Inspire Everyone to Take Action. Penguin
4. Kelly T., Kelly D. (2014). Creative Confidence: Unleashing the Creative Potential Within Us

**REFERENCE BOOK:**

1. Elkington, J., &Hartigan, P. (2008). The Power of Unreasonable People: How Social Entrepreneurs Create Markets that Change the World. Harvard Business Press

**WEB REFERENCES:**

1. Developing Soft Skills and Personality https://www.youtube.com/playlist?list=PLzf4HHlsQFwJZel_j2PUy0pwjVUgj7KlJ
2. Course on Leadership - https://nptel.ac.in/courses/122105021/9
3. https://www.ugc.ac.in/e-book/SKILL%20ENG.pdf
4. Knowledge@Wharton Interviews Former Indian President APJ Abdul Kalam - .
    a. "A Leader Should Know How to Manage Failure" – www.youtube.com/
    b. watch?v=laGZaS4sdeU
5. Martin, R. (2007). How Successful Leaders Think. *Harvard Business Review, 85*(6): 60.
6. Fries, K. (2019). 8 Essential Qualities That Define Great Leadership. *Forbes*. Retrieved 2019-02-15
7. How to Build Your Creative Confidence, Ted Talk by David Kelly - https://www.ted.com/talks/david_kelley_how_to_build_your_creative_confidence

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-V | PROFICIENCY ENHANCEMENT | 23PEITU01 | CASE TOOLS (SELF STUDY) | - | 2 |

**Contact hours per week:-**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | V | - | 100 | 100 |

**Preamble**

To learn about the concepts of Case Tools Concepts and its Applications.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Outline the concepts of data modeling and its tools | K1 |
| CO2 | Describe DFD, DDT, Ubridge, and UML | K2 |
| CO3 | Analyze real time problems and draw appropriate data modeling diagrams | K3 |
| CO4 | Apply the relevant modeling tools to represent the problem using diagrams | K4 |
| CO5 | Assess the software development life cycle with DFD and UML diagrams | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| CO / PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 21 | 27 | 21 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 2.03 | 2.30 | 2.02 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs**

**COURSE CONTENT:**

**UNIT I Introduction to Data Modeling**

Business Growth-Organizational Model-Case Study of Student MIS-What is the Purpose of Such Models- Understanding the Business - Types of Models- Model Development Approach- The Case for Structural Development-Advantages of Using a Case Tool - System Analysis and Design- What is DFD-General Rules for Drawing DFD-Difference between Logical Data Flow Diagram and Physical Data Flow Diagram-Software verses Information Engineering-How Case Tools Store Information.

**UNIT II Approach to Solve the Problem Statement**

How to Deal with a Problem Statement-Data Flow Diagram for Payroll System-Presentation Diagram for Payroll System Schematics of the Model – Forms-Screens-Menu Screens-Data Entry Screens-Report Output Format-Utilities. Installation of Ubridge and Synthesis: How to use the Tools in Ubridge Synthesis for Case-Installation of Ubridge Synthesis-Computer Aided Software Engineering Getting Ubridge to Work – Setup – Assign – Housekeep-The Ubridge page.

**UNIT III Introduction to Ubridge**

Introduction: Main Flow of the System - Prototyping your Report – Introducing the Novice Model of the Operation - Introducing Synthesis - Synthesis Basic – Synthesis Menu Drawing the Screen-Requirement Definition – Diagram-Data Dictionary-Document-Synthesis Main Administration – Synthesis Reference - Importing and exporting screen.

**UNIT IV Diagram Definition Tool**

Introduction: Starting DDT-Drawing your own Icon - Defining the Connection Rules-Rebuilding your Icon – Object Oriented Methodologies -Rambaughet.al.‗s Object Modeling Techniques-The BoochMethodology–The Jacobson et.al. Methodologies – Pattern-Frame Works-The Unified Approach.

**UNIT V Introduction to UML**

UML Diagram-Class Diagram-Use Case Diagram-Interaction Diagram-Sequence Diagram-Collaboration Diagram-State Chart Diagram-Activity Diagram - Component Diagram-Deployment Diagram.

**TEXT BOOKS:**

1. Case Tools Concepts and Applications, Ivan N Bayross, BPB Publications
2.Object Oriented System Development using the Unified Modeling Language, McGraw Hill International edition.

**REFERENCE BOOK:**

1. Software Engineering: A Practitioner‘s Approach, Roger S Pressman, McGraw Hill International Edition.

**WEB REFERENCES:**

1. https://www.tutorialspoint.com/software_engineering/case_tools_overview.htm
2. https://www.freeprojectz.com/dfd/payroll-management-system-dataflow-diagram
3. https://www.youtube.com/watch?v=IFsItnRrFvM
4. https://iq.opengenus.org/rumbaugh-booch-and-jacobson-methodologies/
5. https://www.geeksforgeeks.org/unified-modeling-language-uml-introduction/

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XXI | 23ITU20 | PROGRAMMING IN VB.NET | 72 | 5 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | VI | 25 | 75 | 100 |

**Preamble**

To enable the students to learn about the .NET Framework and VB.NET programming.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Outline the basic concepts of .Net Frame work, class and objects | K1 |
| CO2 | Explain the concepts of data types, control statements, looping statements, arrays, structures, procedures and functions | K2 |
| CO3 | Illustrate the importance of windows form, interfaces, packages, inheritance and exception handling | K3 |
| CO4 | Analyze the various .NET controls and database controls | K4 |
| CO5 | Evaluate the use of ADO.Net connection | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| CO / PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 15 | 45 | 15 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 1.45 | 3.84 | 1.44 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I Introducing .NET (12 Hours)**

.NET Framework Overview – Namespace – Languages in .NET – Visual Studio .NET – Why VB.NET? – Objects and Properties – Constructors and Destructors – Interfaces – Free Threading – Delegates – Winforms - Console Applications – ADO.NET – VB.NET Program: The Solution Explorer Window – The Class View Window – Toolbox – Output Window – The Task List Window.

**UNIT II Data Types, Operators and Control Statements (15 Hours)**

Literals – Variables – Data Types – Declaration of Variables – Constant – Statements – Operators – Arithmetic Operators – Concatenation Operators – Relational Operators – Compound Assignment Operator – Logical Operators – Bitwise Operators – Control Statements: IF Statement – Block-If – Nested If – Looping – Select-Case Statement – Goto Statement – Early exit from control statements – Intrinsic Control List – Events – Label – Textbox – Group Box - Check Box – Radio Button – Scroll Bar – Timer – Picture Box – Working with Mouse Input – Date Time Picker – Month Calendar.

**UNIT III Arrays, Procedures and Structures (15 Hours)**

One-Dimensional Array – Array Initialization – Printing Array Elements using For Each..Next Loop – Redim Statement – Multi-Dimensional Array – Initialization of Two-Dimensional Array – Arrays of Array – List Box Control – Checked List Box – Combo Box Controls – Procedures and Structures: Subroutine Procedures – Function Procedure – Property Procedure – Functions – Sub Procedure – Structures – Message Box Function – Input Box Function.

**UNIT IV Creating Menus and Using Dialog Boxes (15 Hours)**

Menu – MDI Forms – Context Menu – Rich Textbox – Color Dialog control – Font Dialog control – Object Oriented Concepts in VB.NET: Boxing and Unboxing – Read-Only and Write-Only Properties – Adding Methods to Classes – Classes with constructor – Assemblies – Namespaces – Inheritance – Overriding Properties and Methods – Shadows statement – Polymorphism.

**UNIT V Events Delegates Exception Handling and ADO.NET (15 Hours)**

Events in class – Delegates – Singlecast Delegate – Multicast Delegates – Exceptions – Try – Catch – Finally – End Try – Try-Catch – Multiple-Catch – Nested try statements – Try-finally – Data Access with ADO.NET: Database – Relational Database – Table Creation – Record Insertion – Displaying Data – Deleting Data – Modifying – Drop Table – Special Features of ADO.NET – Differences Between ADO and ADO.NET – Connection – Commands – Data Reader – Data Set – Using Data Grid – Using Data Adapter Configuration Wizard.

**TEXT BOOK:**

1. P.Radhaganesan,"VB.NET" , 1st Edition, Scitech Publications(India) Pvt Ltd, 2014

**REFERENCE BOOKS:**

1. JefreyR.Shapiro, The Complete Reference – Visual Basic .NET, Tata McGraw-Hill, 2002
2. StevemHolzner, Visual Basic .Net Programming Black Book, Dreamtech Press, Reprint 2011

**WEB REFERENCES:**

1. https://www.tutorialspoint.com/vb.net/index.htm
2. https://www.javatpoint.com/vb-net
3. https://www.youtube.com/watch?v=HFWQdGn5DaU

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE:XXII PRACTICAL : VII | 23ITU21 | PROGRAMMING IN VB.NET - PRACTICAL | 72 | 4 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | VI | 40 | 60 | 100 |

**Preamble**

This course provides hands on experience on VB.NET Programming.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the basic concepts of class and objects using console application | K1 |
| CO2 | Illustrate the concepts of data types, control statements, looping statements, arrays, structures, procedures and functions using programs | K2 |
| CO3 | Build applications using windows form, interfaces, packages, inheritance and exception handling | K3 |
| CO4 | Analyze the usage of various .NET controls | K4 |
| CO5 | Examine the use of ADO.Net connection for real world applications | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| CO / PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 15 | 45 | 15 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 1.45 | 3.84 | 1.44 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**Practical list**

1. Simulate a calculator with basic operation.
2. Implement Font Application.
3. Create a Notepad Application.
4. Illustrate If condition using console application.
5. Demonstrate the looping statements using a console application.
6. Develop an application for deploying various built-in functions in VB.NET.
7. Develop a windows application with Menus and Dialog Boxes.
8. Demonstrate file operations.
9. Develop a simple project for Student Database Management System.
10. Develop a simple project for Employee Database Management System.

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XVIII | 23ITU18 | PROJECT WORK | 60 | 5 |

**Contact hours per week: 5**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | V | 20 | 80 | 100 |

**Preamble**

To expose the students to practice themselves and find solution for the problems in the respective areas

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Remember the thrust areas of project | K1 |
| CO2 | Demonstrate the problem pertaining to the domain | K2 |
| CO3 | Apply various algorithms in their relevant field | K3 |
| CO4 | Explorethe real time applications | K4 |
| CO5 | Evaluate demographic variables and factors influencing software development | K5 |

**K1 – Remember;K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 4.34 | 3.84 | 4.33 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs**

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XXIII<br>ELECTIVE: II | 23ITU22A | COMPUTER NETWORKS & CRYPTOGRAPHY | 60 | 5 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | VI | 25 | 75 | 100 |

**Preamble**

To provide grounding in basic and advanced techniques in network security and its effective algorithms

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the various definitions involved in Symmetric on computer networks | K1 |
| CO2 | Illustrate various Public key cryptographic techniques | K2 |
| CO3 | Experiment with Secure Socket Layer | K3 |
| CO4 | Examine authentication applications | K4 |
| CO5 | Sketch IP Security and web Security | K5 |

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate

| CO / PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 15 | 33 | 15 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 1.45 | 2.82 | 1.44 |

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

## COURSE CONTENT:

**UNIT 1 Introduction to Computer Networks (12 Hours)**

Network Hardware: LAN, Man, WAN, Wireless Networks, Home Networks, Internetworks. Network Software: Protocol Hierarchies, Design Issues for Layers – Connection Oriented and Connection less services – Service Primitives. Reference Models: OSI – TCP/IP – Comparison of OSI and TCP/IP Reference Models.

**UNIT 2 Layer services (12 Hours)**

Physical Layer: Guided Transmission Media- Data Link Layer: Error Detection and Correction- Network Layer Services: Routing Algorithm - Transport Layer: Transport Protocols: TCP and UDP, Application Layer: DNS – E-Mail – WWW.

**UNIT 3 An Introduction to Network Security (12 Hours)**

Introduction: The OSI Security Architecture-Security Attacks-Security Services-Security Mechanisms-A Model for Internetwork Security. Symmetric Encryption and Message Confidentiality: Symmetric Encryption Principles-Symmetric Block Encryption Algorithms-Stream Ciphers and RC4-Cipher Block Modes of Operation.

**UNIT 3 Public-Key Cryptography and Message Authentication (12 Hours)**

Public-Key Cryptography and Message Authentication: Approaches to Message Authentication-Digital Signatures-Key Management- Electronic Mail Security: Pretty Good Privacy- S/MIME.

**UNIT 5 IP Securities and Web Security (12 Hours)**

IP Security: IP Security Overview- IP Security Architecture. Web Security: Web Security Considerations-Secure Socket Layer (SSL) and Transport Layer Security (TLS)-Secure Electronic Transaction (SET).

## TEXT BOOK:

**1**. Andrew S.Tanenbaum, Computer Networks, PHI Private Ltd, Fourth Edition.
2. William Stallings, Network Security Essentials, 3rd Edition, Pearson.

## REFERENCE BOOKS:

1.AtulKahate , Cryptography and Network Security, 2nd Edition, Tata McGrawHill.

## WEB REFERENCES:

1.https://www.geeksforgeeks.org/osi-security-architecture/
2.https://www.geeksforgeeks.org/digital-signatures-certificates/
3.https://www.tutorialspoint.com/internet_technologies/digital_signature.htm
4.https://www.geeksforgeeks.org/secure-socket-layer-ssl/
5.https://www.youtube.com/watch?v=402-fibaczk

| | | | | | |
|---|---|---|---|---|---|
| PART-III | CORE : XXIII<br>ELECTIVE: II | 23ITU22B | BIG DATA ANALYTICS | 60 | 5 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | VI | 25 | 75 | 100 |

**Preamble**

To enable the students to learn the concepts of Big Data Analytics and its tools in Industry 4.0

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the definitions in Big Data and Data Analytics | K1 |
| CO2 | Explain NoSQL, Hadoop and Map Reduce Concepts with algorithms | K2 |
| CO3 | Apply Data Stream Management, Frequent Itemset Mining in clustering techniques | K3 |
| CO4 | Analyze Big Data Challenges, link analysis and Recommendation systems towards Industry 4.0 | K4 |
| CO5 | evaluate Hadoop architecture and types of Big Data approach | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| CO / PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 15 | 33 | 15 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 1.45 | 2.82 | 1.44 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT I Big Data Analytics & Hadoop (12 Hours)**

Big Data Analytics**:** Introduction to Big Data- Big Data Characteristics- Types of Big Data- Traditional Versus Big Data Approach – Technologies Available for Big Data- Infrastructure

for Big Data- use of Data Analytics - Big Data Challenges- Desired Properties of a Big Data System-Case study for Big Data Solutions.Hadoop**:** Introduction- What is Hadoop?- Core Hadoop Components- Hadoop Ecosystem- Hive- Physical Architecture- Hadoop Limitations.

**UNIT II NoSQL & MapReduce (12 Hours)**

What is NoSQL?: What is NoSQL?- NoSQL Business Drivers- NoSQL Case studies- NoSQL Data Architectural Patterns- Variations of NoSQL Architectural Patterns- using NoSQL to Manage Big Data.MapReduce**:** MapReduce and The New Software stack- MapReduce- Algorithms Using MapReduce.

**UNIT III Finding analogous Items and Mining Data Streams (12 Hours)**

Finding Similar Items**:** Introduction- Nearest Neighbor Search- Applications of Nearest Neighbor Search- Collaborative Filtering as a Similar– Sets Problem- Recommendation Based on User Ratings- Distance Measures.Mining Data Streams: Introduction- Data Stream Management Systems- Data stream Mining- Examples of Data Stream Applications- Stream Queries- Issues in Data Stream Query Processing- Sampling in Data Streams- Filtering Streams – counting Distinct Elements in a Stream- Querying on Windows- Counting ones in a Window- Decaying Windows.

**UNIT IV Link Analysis and Frequent Itemset Mining (12 Hours)**

Link Analysis:Introduction- History of Search Engines and Spam- PageRank- Efficient Computation of PageRank- Topic- Sensitive PageRank- Link Spam-Hubs and Authorities.

Frequent Itemset Mining**:** Introduction- Market-Basket Model- Algorithm for Finding Frequent Itemsets- Handling Larger Datasets in Main Memory- Limited Pass Algorithms- Counting Frequent Items in a Stream.

**UNIT V Clustering Approach and Recommendation Systems (12 Hours)**

Clustering Approach**:** Introduction- Overview of Clustering Techniques- Hierarchicl clustering- Partitioning Methods- The CURE Algorithm - Clustering Streams.

Recommendation Systems:Introduction- A model For Recommendation Systems- Collaborative- Filtering system- Content-Based Recommendations.Features of R language.

**TEXT BOOK:**

1. RadhaShankarmani and M.Vijayalakshmi, “Big Data Analytics”, 2nd Edition, Wiley.
(Unit I: Chap 1&2, Unit II: Chap 3&4, Unit III: Chap 5&6, Unit IV: Chap 7&8, Unit V: Chap 9&10)

**REFERENCE BOOK:**

1. VigneshPrajapati, “Big Data Analytics with R and Hadoop**”**, PACKT publishing open source community experience distilled, Mumbai. 2013.

**WEB REFERENCES:**

1.https://www.techtarget.com/searchdatamanagement/definition/big-data

2.https://www.techtarget.com/searchdatamanagement/definition/NoSQL-Not-Only-SQL

3.https://www.youtube.com/watch?v=nbBJ27XhEyM

4.https://www.youtube.com/watch?v=fL41WSVDunM

5.https://www.youtube.com/watch?v=a3It88zzbiA

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XXIII<br>ELECTIVE: II | 23ITU22C | INFORMATICS | 60 | 5 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | VI | 25 | 75 | 100 |

## Preamble

To understand the basics of Informatics.

## Course Outcomes

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Recall the special terms in Basics of Informatics | K1 |
| CO2 | Demonstrate security and Ethics issues related to informatics. | K2 |
| CO3 | Apply technology informatics skills to solve specific industry data and information management problems, with a focus on usability and designing for users. | K3 |
| CO4 | Ideate informatics products and services. | K4 |
| CO5 | Conduct informatics Analysis and visualization applied to different real-world fields. | K5 |
| CO6 | Develop electronic record programs and applications in a specific organizational setting | K6 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| CO / PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO2** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 15 | 33 | 15 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 1.45 | 2.82 | 1.44 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

## COURSE CONTENT:

### UNIT I (12 Hours )Knowledge Skills

Data, Information and Knowledge – Internet Access Methods – Internet as a Knowledge Repository – INFLIBNET – Open Access Initiatives – IPR,Copyrights and Patents – Software License Agreement.

### UNIT II ( 12 Hours) Social Informatics

Digital society – Digital Divide – Social Networks – IT New Threats –Cybersecurity – Computer Harsh Realities.

### UNIT III ( 12 Hours ) Boinformatics and Immuno informatics

Computational Biology and Bioinformatics – Scope of Bioinformatics – Origin of Concept of Bioinformatics : History and Development – Importance of Bioinformatics – Applications of BioInformatics.Immuno Informatics

### UNIT IV (12 Hours ) Geoinformatics

Applications – Geographic Information Systems – Conceptualization of GIS – Remote Sensing – Global Positioning System – Geodesy – Catography –Global Navigation Satellite System – WebMapping.

### UNIT V ( 12 Hours) Futuristic IT

Artificial Intelligence – Expert Systems – DNA Barcoding –DNA Fingerprinting – Biocomputing – Biometrics.

## TEXT BOOK

1.Vijayakumaran Nair K , Vinod Chandra S S , “INFORMATICS” ,PHI Learning Private Limited

## REFERENCE BOOKS

1.Claverie J. And Notredame C, Bio Informatics, Wiley India ( P) Ltd- Newdelhi
2 Evans and Others,.Informatics, Pearson - Delhi

## WEB REFERENCES:

1. https://medium.datadriveninvestor.com/a-short-note-on-futuristic-technologies-based-on-ai-58fe5efe8157
2. https://www.geoinformatics.com/
3. https://www.udemy.com/course/bioinformatics-mastery-vaccine-design/

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XXIV<br>ELECTIVE: III | 23ITU23A | ARTIFICIAL INTELLIGENCE | 60 | 5 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | VI | 25 | 75 | 100 |

**Preamble**

To learn about the concepts of Artificial Intelligence(AI) and its applicability in Industry 4.0

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Outline the basic AI problems, techniques and knowledge representation issues | K1 |
| CO2 | Explain the AI problem designs and issues, heuristic techniquesand knowledge representation methods | K2 |
| CO3 | Apply AI techniques in Industry 4.0 | K3 |
| CO4 | Analyze AI problems using various search techniques | K4 |
| CO5 | Compare procedural and declarative knowledge representation methods | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| CO / PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 9 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 33 | 45 | 33 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 3.19 | 3.84 | 3.17 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs**

## COURSE CONTENT:

**UNIT I (12 Hours) Introduction – Problems and Search**

What is Artificial Intelligence? The AI Problems – The Underlying Assumption – What is anAI Technique? – The Level of the Model – Criteria for Success. Problems, Problems Space and Search – Defining the Problem as a State Search – Production Systems – Problem Characteristics – Production System Characteristics – Issues in the Design of Search Programs.

**UNIT II (12Hours) Heuristic Search Techniques**

Heuristic Search Techniques: Generate and Test – Hill Climbing – Best First Search. Problem Reduction – Constraint Satisfaction – Means – Ends Analysis.

**UNIT III(12 Hours) Knowledge Representation**

Knowledge Representation Issues: Representations and Mappings – Approaches to Knowledge Representation – Issues in Knowledge Representation – The Frame Problem. Using Predicate Logic: Representing Simple Facts in Logic – Representing Instance and Isa Relationships – Computable Functions and Predicates – Resolution.

**UNIT IV (12 Hours) Representing Knowledge Using Rules**

Representing Knowledge Using Rules: Procedural versus Declarative Knowledge - Logic Programming – Forward versus Backward Reasoning – Matching – Control Knowledge

**UNIT V (12 Hours) Statistical Reasoning**

Statistical Reasoning: Probability and Bayes Theorem– CertaintyFactors and Rule Based Systems – Bayesian Networks – Dempster-Shafer Theory – Fuzzy Logic.Robotics.

**TEXT BOOK:**

1.Elain Rich & Kevin Knight, Artificial Intelligence - Tata McGraw Hill – Second Edition, 1991.

**REFERENCE BOOKS:**

1.StuartRussel,PeterNorvig,Artificial Intelligence: A Modern Approach,3rd Edition

2. David W. Rolston, Principles of Artificial Intelligence & Expert Systems Development – McGraw Hill.

**WEB REFERENCES:**

1. https://www.geeksforgeeks.org/artificial-intelligence-an-introduction/
2. https://www.javatpoint.com/artificial-intelligence-tutorial
3. https://www.youtube.com/watch?v=oV74Najm6Nc

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-III | CORE : XXIV<br>ELECTIVE : III | 23ITU23B | GREEN COMPUTING | 60 | 5 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | VI | 25 | 75 | 100 |

**Preamble**

To acquire knowledge to adopt green computing practices to minimize negative impacts on the environment, skill in energy saving practices in their use of hardware, examine technology tools that can reduce paper waste and carbon footprint by user

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Label the problems concerning with e-waste and its consequences on environment | K1 |
| CO2 | Describe the components involved and how effectively we can achieve cost saving without harming environment | K2 |
| CO3 | Inspect the procedural aspects towards going green. | K3 |
| CO4 | Categorize the means of green compliance | K4 |
| CO5 | Specify the certifications necessary for hardware devices | K5 |
| CO6 | Label the problems concerning with e-waste and its consequences on environment | K6 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| CO / PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 9 | 3 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 33 | 45 | 33 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 3.19 | 3.84 | 3.17 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

## COURSE CONTENT:

**UNIT I (12 Hours) Green Computing Essentials**

**Overview and Issues:** Introduction - green Computing - Problems – Your Company's Carbon Footprint – Cost Savings. **Initiatives and Standards**: Global Initiatives – Comparative study on green initiatives of other countries.

**UNIT II (12 Hours) Green Computing Tribulations and Optimizations**

**Minimizing Power Usage:** Power problems - Monitoring power Usage – Reducing Power Usage – Low power Computers – Components. **Cooling:** Cooling Costs – Reducing Cooling Costs – Optimizing air Flow – Adding Cooling – Datacenter Design.

**UNIT III (12 Hours) Green Enterprise Transforming**

**Changing the Way of Work:** Old Behaviour – Steps – Teleworkers and Outsourcing.**Going Paperless:** Paper Problems – Paper and Office – Going Paperless – Intranets – Electronic Data Interchange (EDI).

**UNIT IV (12 Hours) Green Computing**

**Recycling:** Problems – Means of Disposal – Life Cycle – Recycling Companies – Hard Drive Recycling.**Hardware Considerations**: Certification Programs – Energy Star – Servers – Hardware Considerations – Remote Desktop.

**UNIT V (12 Hours) Green Accomplishment**

**Greening Your Information Systems:** Initial Improvement Calculations – Change Business Process – Improve Technology Infrastructure.**Staying Green:** Organizational Check-ups – Equipment Check-ups – Certifications – Helpful Organizations.

**TEXT BOOKS:**

1. TusharSambare ,SonaliSambare: Green Computing, Himalaya Publishing House, First Edition 2008.

**REFERENCE BOOKS:**

1. Carl Speshocky, Empowering Green Initiatives with IT, John Wiley & Sons, 2010.
2. Jason Harris, Green Computing and Green IT- Best Practices on regulations & Industry, Lulu.com, 2008.

**WEB REFERENCES:**

1. https://www.himpub.com/documents/Chapter1765.pdf
2. https://www.wiley.com/en-us/Empowering+Green+Initiatives+with+IT+%3A+A+Strategy+and+Implementation+Guide-p-x000528886
3. https://www.wiley.com/en-be/exportProduct/pdf/9780470550151
4. http://docplayer.net/102991987-Green-home-computing-learn-to-woody-leonhard-katherine-murray-making-everything-easier-use-your-computer-to-green-your-lifestyle.html

| CATEGORY | COURSE TYPE | COURSE CODE | TITLE | C | P | CREDIT |
|---|---|---|---|---|---|---|
| PART III | CORE : XXIV<br>ELECTIVE : III | 23ITU23C | SOFTWARE PROJECT MANAGEMENT | - | - | 5 |

**Contact hours per week: 6**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | VI | 25 | 75 | 100 |

**Preamble**

To inculcate the knowledge on how to manage a Software Project.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Understand the importance of software product life cycle | K1 |
| CO2 | Obtaining the knowledge thoroughly on software requirements gathering | K2 |
| CO3 | Gain detailed understanding on estimation concepts | K3 |
| CO4 | Acquire familiarity on design and development phases | K4 |
| CO5 | Accumulate and apply the knowledge on project testing phase | K5 |

**K1 – Remember;K2 – Understand;K3 – Apply; K4 – Analyze; K5 – Evaluate**

| POs / COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO4** | 9 | 9 | 9 | 9 | 3 | 3 | 3 |
| **CO5** | 9 | 9 | 9 | 9 | 1 | 3 | 1 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 25 | 27 | 25 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 2.41 | 2.30 | 2.40 |

## SYLLABUS

**UNIT I Introduction to Software Product Life cycle**

Product Life Cycle: Introduction –Idea Generation- Prototype Development Phase- Alpha Phase –Beta Phase- Protection Phase- Maintenance and Obsolescence Phase. Project Life Cycle Models: What is Project Life Cycle Model - A Frame Work for Studying Different Life Cycle Models - The Waterfall Model - The Prototype Model- The Rapid Application Development Model- The Spiral Model and its Variants.

**UNIT II Software Requirements Gathering**

Inputs and Start Criteria for Requirements Gathering- Dimensions of Requirements Gathering-Steps to be Followed During Requirements Gathering Outputs and Quality Records from the Requirements Phase- Skill Sets Required During the Requirements Phase- Differences for a Shrink-Wrapped Software- Challenges During the Requirements Management Phase- Metrices for the Requirement Phase.

**UNIT III Estimation**

What is Estimation - When & Why is Estimation Done – The Three Phases of Estimation - Estimation Methodology - Formal Models for Size Estimation –Translation Effort Estimated into Schedule Estimates – Common Challenges During Estimation – Metrices for the Estimation Processes.

**UNIT IV Design and Development phases**

Some Difference in our Chosen Approach - Salient Features of Design- Evolving an Architecture Blueprint –Design for Reusability- Technology Choices/Constraints – Design to Standards –Design for Portability- User Interface Issues- Design for Testability - Design for Diagnosability- Design or Maintainability- Design for Installability – Inter-Operability Design - Challenges During Design and Development Phases - Skill Sets for Design and Project Management.

**UNIT V Testing Phase**

Introduction- What is Testing- What are the Activities that make up Testing- Test scheduling and Types of Tests-People Issues in Testing Management Structures for Testing in Global Teams –Metrics for Testing Phase.

**TEXT BOOK:**

1.Gopalaswamy Ramesh, Managing Global Software Projects, Tata McGraw Hill.

**REFERENCE BOOKS:**

1.S.A. Kelkar, Software Project Management –A concise study, PHI, 2003
2.Milk Cotterel, Bob Hughes, Software Project Management, Inclination / Thomas computer press, 1955.

| CATEGORY | COURSE TYPE | COURSE CODE | COURSE TITLE | CONTACT HOURS | CREDIT |
|---|---|---|---|---|---|
| PART-IV | SKILL ENHANCEMENT : III | 23SEITU03 | DIGITAL MARKETING | 36 | 2 |

**Contact hours per week: 2**

| Year | Semester | Internal Marks | External Marks | Total Marks |
|---|---|---|---|---|
| Third | VI | 50 | - | 50 |

**Preamble**

To create a structured digital marketing plan and budget, Identify the correct measures to set objectives and evaluate digital marketing, Review and prioritize the strategic options for boosting customer acquisition, conversion, and retention using digital marketing.

**Course Outcomes**

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

| CO Number | CO Statement | Knowledge Level |
|---|---|---|
| CO1 | Remember the important terminologies in digital marketing | K1 |
| CO2 | Illustrate the role of Digital Marketing | K2 |
| CO3 | Apply various digital marketing options | K3 |
| CO4 | AnalyseReturn on Investment for any digital marketingprogram. | K4 |
| CO5 | Evaluate the KeyPerformanceIndicatorstiedtoanydigitalmarketingprogram. | K5 |

**K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate**

**CO-PO MAPPING (COURSE ARTICULATION MATRIX)**

| CO / PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 |
|---|---|---|---|---|---|---|---|
| **CO1** | 9 | 9 | 9 | 9 | 3 | 9 | 9 |
| **CO2** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO3** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO4** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **CO5** | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| **Total Contribution of COs to POs** | 45 | 45 | 45 | 45 | 42 | 45 | 45 |
| **Weighted Percentage of COs Contribution to POs** | 2.58 | 2.67 | 2.80 | 2.99 | 4.05 | 3.84 | 4.33 |

**Level of correlation: 0 – No correlation; 1 – Low correlation; 3 – Medium correlation; 9- High correlation between COs and POs.**

**COURSE CONTENT:**

**UNIT-I(5 Hours) Introduction & origin of Digital Marketing.**

Introduction & origin of Digital Marketing**.**Traditional v/s Digital Marketing. Digital Marketing Strategy, The P-O-E-M Framework, Segmenting & Customizing Messages, The Digital landscape, Digital Advertising Market in India. Skills required in Digital Marketing. Digital Marketing Plan.

**UNIT-II(4 Hours) Social Media Marketing**

Social Media Marketing:Meaning, Purpose, types of social media websites. Blogging: Types ofblogs,Bloggingplatforms&recommendations.SocialMediaEngagement,Targetaudience, Sharing content on social media, Do's and don'ts of social media.

**UNIT-III(5 Hours) Search Engine Optimization**

Search Engine Optimization: Meaning, Common SEO techniques, Understanding Search Engines, basics of Keyword search, Google rankings, Link Building, Steps to optimize website. Basics of Email Marketing**:** Types of Emails, Mailing List, Email Marketing tools, Email Deliverability & Email Marketingautomation.

**UNIT-IV(5 Hours) Facebook**

FacebookMarketing-Introduction,Facebookforbusiness.AnatomyofanAdCampaign,Role of Adverts-Types & Targeting, Adverts Budget & Scheduling, Adverts Objective & Delivery. LinkedIn Marketing-introduction & importance, LinkedIn Strategies, Sales Leads Generation Using LinkedIn, Content Strategies.MobileMarketing-Introduction, Mobile Usage, Mobile Advertising, Mobile Marketing tool Kit, Mobile MarketingFeatures.

**UNIT-V(5 Hours) Understanding Web Analytics**

Understanding Web Analytics: Purpose, History, Goals & objectives, Web Analytic tools &Methods.Web Analytics Mistakes and Pitfalls.Basics of Content Marketing:Introduction, Contentmarketingstatistics,TypesofContent,TypesofBlogposts,ContentCreation,Content optimization, Content Management & Distribution, Content Marketing Strategy, Content creation tools and apps, Challenges of ContentMarketing.

**TEXT BOOKS:**

1. Digital Marketing by Vandana Ahuja, Oxford University Press
2. Digital Marketing by Seema Gupta, McGraw-Hill Publishing Company Ltd.

**REFERENCE BOOK:**

1. Commonsense Direct & Digital Marketing by Drayton Bird, Kogan Page Publisher

**a) List of elective courses for Semester – V:**

*Minimum of 15 students must be admitted in an elective course.
*Elective can be offered as self-study courses.

| Course code | Semester | Course | Hours per Week | Credits |
|---|---|---|---|---|
| 23ITU19A | V | Data Mining | 5 | 5 |
| 23ITU19B | V | Operating system | 5 | 5 |
| 23ITU19C | V | Cloud Computing Techniques | 5 | 5 |

**b) List of elective courses for Semester – VI:**

*Minimum of 15 students must be admitted in an elective course.
*Elective can be offered as self-study courses.

| Course code | Semester | Course | Hours per Week | Credits |
|---|---|---|---|---|
| 23ITU23A | VI | Computer Networks & Cryptography | 5 | 4 |
| 23ITU23B | VI | Big data Analytics | 5 | 4 |
| 23ITU23C | VI | Informatics | 5 | 4 |
| 23ITU24A | VI | Artificial Intelligence | 5 | 4 |
| 23ITU24B | VI | Green Computing | 5 | 4 |
| 23ITU24C | VI | Software Project Management | 5 | 4 |

**c) Courses for Skill Enhancement:**

| Course Code | Semester | Course | Hours per Week | Credits |
|---|---|---|---|---|
| 21SEITU01 | IV | Programming in PHP – Practical | 3 | 2 |
| 21SEU02 | V | Life Skills | 3 | 2 |
| 21SEITU03 | VI | Digital Marketing | 3 | 2 |

**d) Courses for Ability Enhancement:**

| Course Code | Semester | Course | Hours per Week | Credits |
|---|---|---|---|---|
| 21AEU01 | III | Information Security | 2 | 2 |
| 21AEU02 | IV | Consumer Rights | 2 | 2 |

**e) Course for Proficiency Enhancement:**

| Course Code | Semester | Course | Hours per Week | Credits |
|---|---|---|---|---|
| 21PEITU01 | V | Case Tools | Self Study<br>No instructional Hours | 2 |

**f) Courses for Competency Enhancement:**

| Semester | Course | Hours per Week | Credit |
|---|---|---|---|
| I - VI | NSS/YRC/RRC/CCC/PHY.EDU/ Others | Self-Paced with Faculty mentoring and Support | 1 |
| I - VI | Professional Grooming | | 1 |
| I - VI | Students Social activity (Related to the Curriculum) | Faculty mentoring and Support | 1 |

Total Credits: 140 credits Total Marks: 3700

**Chair Person**

**Name, designation**

**DISTRIBUTION OF MARKS AND QUESTION PAPER PATTERN**
**FOR SCHOLASTIC COURSES UNDER PART III, IV AND V**
**OF ALL UG PROGRAMMES – 2023 and onwards**

**For Scholastic Courses:**

| S. No. | COMPONENT | TOTAL MARKS | DISTRIBUTION OF MARKS | | PASSING MINIMUM FOR (ESE) | | OVERALL PASSING MINIMUM FOR (CIA & ESE) |
|---|---|---|---|---|---|---|---|
| | | | CIA * | ESE ** | CIA * | ESE ** | |
| 1. | **Theory / Project (Both CIA and ESE)** Core / Allied / Any category Open Elective | 100 | 25 | 75 | | 30 | 40 |
| 2. | **Practical** | 100 | 40 | 60 | | | 40 |
| 3. | **100% INTERNAL (ONLY CIA / NO ESE)** Skill Enhancement | 50 | 50 | -- | 20 | -- | 20 |
| 4. | **100% INTERNAL (ONLY CIA / NO ESE)** Foundation Non-Major Elective Ability Enhancement | 50 | 50 | -- | 20 | -- | 20 |
| 5. | **100% EXTERNAL (ONLY ESE)** Proficiency Enhancement | 100 | -- | 100 | -- | 40 | 40 |
| 6. | Institutional training/ Articleship Training/ Mini Project / Apprenticeship Training **(ONLY CIA / NO ESE)** | 100 | 20 | 80 | -- | -- | 40 |

*Bloom's Taxonomy based assessment pattern – K1 to K5 levels. K6 is also appreciable.

** ONLY CIA indicates 100% CIA course, ONLY ESE indicates 100% ESE appearance, BOTH indicates CIA and ESE components (WITH MANDATED

appearance : Should have attended atleast one CIA and the MODEL exam to take up the ESE).