**A screenshot of a cell phone

Description generated with very high confidence MCA**

**COURSE PLAN: LABORATORY COURSE**

|  |  |  |  |
| --- | --- | --- | --- |
| **Department:** | **Data Science And Computer Applications** | | |
| **Course Name & code:** | **Network Lab & MCA** | |  |
| **Semester & branch:** |  |  | |
| **Name of the faculty:** |  | | |
| |  |  |  |  | | --- | --- | --- | --- | | **L** | **T** | **P** | **C** | | **0** | **1** | **3** | **2** |   **No of contact hours/week:** | | | |

**Course Outcomes (COs)**

|  |  |  |  |
| --- | --- | --- | --- |
| **At the end of this course, the student should be able to:** | | **No. of Contact Hours** | **Marks** |
| **CO1** | Implement Inter-Process Communication between Processes | 12 | 36 |
| **CO2** | Implement socket programming using C & Unix | 9 | 28 |
| **CO3** | Construct network with connecting devices-switch, hub & routers to understand the working of different topologies. | 6 | 18 |
| **CO4** | Construct networks using RIP and simulate application protocols- DHCP, HTTP & FTP | 6 | 18 |
| **CO5** |  |  |  |
|  |  |  |  |
|  | **Total** | **33** | **100** |

**Course Articulation Matrix**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CO** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** |
| **CO1** |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  |  |
| **Average Articulation Level** |  |  |  |  |  |  |

**ICT Tools used in delivery and assessment**

|  |  |  |
| --- | --- | --- |
| **Sl. No** | **Name of the ICT tool used** | **Details of how it is used** |
|  |  |  |
|  |  |  |
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|  |  |  |

**Course Outcomes (COs)/Course Learning Outcomes (CLOs) to PO, PSO, LO, BL Mapping**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **At the end of this course, the student should be able to:** | | **No. of Contact Hours** | **Marks** | **Program Outcomes (PO’s)** | **Program Specific Outcomes (PSO)** | **Learning Outcomes (LOs) \*\*** | **BL** |
| **CO1** |  |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | **Total** |  |  |  |  |  |  |

**\*\* Delete this column if not relevant.**

**Delivery and assessment Plan of LOs#**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome (LO) mapped to the course** | | **Delivery and assessment Plan** |
| **LO** | **LO statement** |
|  |  |  |
|  |  |  |
|  |  |  |
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***# Applicable to IET Accredited Programs***

**Assessment Plan**

|  |  |  |  |
| --- | --- | --- | --- |
| **Components** | **Continuous Evaluation: Experiments/Open Ended experiments** | **Mini Project (Optional)** | **End semester Examination** |
| **Duration** | 3/6 Hours per week | 3 months | 180 Minutes |
| **Weightage** | 50% / 60% | 10% | 40% |
| **Typology of questions** | Applying;  Analysing.  Evaluating. | Applying; Analysing.  Evaluating.  Creating | Applying; Analysing; Evaluating; Creating |
| **Pattern** | Aim, Procedure, Conduction, Analysis, Result discussion, Conclusion. | Abstract, Literature, Problem Statement, Comparative analysis,  Conclusion | Answer all 5 full questions of 10 marks each. Each question may have 2 to 3 parts of 3/4/5/6/7 marks |
| **Schedule** | Weekly | To be decided by the faculty | Last week of the semester |
| **Topics** | As per syllabus | Faculty to decide | Experiments/Open ended. Individual |
| **Mode of Conducting** | Individual/Group | Individual/Group | Individual |

**Note: Fine tune the assessment plan as per the guidelines, issued by AD(A), notified from time to time**

**Lesson Plan**

|  |  |  |
| --- | --- | --- |
| **L No** | **Topics** | **Course Outcome Addressed** |
| Exp 1 | Review of Linux system calls: open (), close (), read (), write (), creat (), fork (), wait (). | CO1 |
| Exp 2 | Interprocess Communication using Pipes. | CO1 |
| Exp 3 | Interprocess Communication FIFOs | CO1 |
| Exp 4 | Interprocess Communication using Message Queue | CO1 |
| Exp 5 | Socket Programming - Simple TCP | CO2 |
| Exp 6 | Socket Programming - Simple UDP | CO2 |
| Exp 7 | Socket Programming – multi client | CO2 |
| Exp 8 | Construct a 3 or more-node network by connecting a hub and switch and realize the working of hub & switch (using Simulation Tool). | CO3 |
| Exp 9 | Implement different network design topologies like Bus, Star, Ring and transfer the data packet from one PC to another PC. (using Simulation Tool). | CO3 |
| Exp 10 | Connect two or more networks by configuring router, nodes with RIP protocol. Simulate the communication within and between networks. (using Simulation Tool). | CO4 |
| Exp 11 | Construct simple networks to simulate the application protocols- HTTP, FTP and DHCP. (using Simulation Tool). | CO4 |
| Exp 12 | FINAL LAB EXAM |  |
|  |  |  |

**References:**

1. W. Richard Stevens, “UNIX Network Programming Interprocess Communications”, Volume 2, Second Edition, Pearson Education, 2001.
2. A Rama Satish, “UNIX Programming”, SciTech Publications, 2009.
3. Douglas E Comer, David L Stevens, “Internetworking with TCP/IP-Volume III” Pearson Education, Second Edition, 2004.
4. Jesin A, Packet Tracer Network Simulator (1e), Packt Publishing, 2014.
5. Stevens R., Stephen A. R., Advanced Programming in the UNIX Environment (2e),

Pearson Education, 2013.

**Submitted by:** Vinayak Mantoor Nirmal Kumar Nigam & Archana. H

**(Signature of the faculty)**

**Date: 22-07-2024**

**Approved by: Dr. Radhika M Pai**

**(Signature of HOD)**

**Date: 22-07-2024**

**Faculty members teaching the course (if multiple sections exist):**

|  |  |  |  |
| --- | --- | --- | --- |
| **Faculty** | **Section** | **Faculty** | **Section** |
| **Nirmal Kumar Nigam** | **A** | **Vinayak Mantoor** | **B** |
| **Archana H** | **C** |  |  |