**City University**

**Department of Computer Science & Engineering**

**Faculty of Science & Engineering**

**Course Outline**

**Course Title: Internet & Internet technology**

**Course Code: SE 413**

**Credit Hours: 3**

**Prerequisite: CSE 111, CSE 114, CSE 317, CSE 318**

**Department of Computer Science & Engineering**

**Semester:** Summer 2020

**Total Weeks:** 13 **Hours/Week:** 3 **Total hours:** 39+

**Instructor:** Md. Khorshed Alam

**Designation:** Lecturer

**Office:** CSE Department

**Email:** u1304073@student.cuet.ac.bd

**Office Hrs:** By appointment

**Course Details**

**Rationale**

To be successful in developing internet usable system platforms through programming, specially, in latest trends of web architectures or web programming. Practitioners will need to know the solid background of recent technologies comprehend to internet, Computer Networks, Web programming structures and Internet applicable devices (Internet Communication, Web Sockets, TCP/ UDP interchanging patterns, C, C++, XML, Python, html5, JavaScript, Telnet, SSH, RDC, WoT).

**Course Objectives**

* To define terms related to the Internet(WoT, Telnet, RDC and WebRTC).
* To design and implement the use of www, internet connectivity towards computers, e-mail protocols. (e.g: architectures, representation, communication queries and system performance enhancements)
* To familiarize students with analytical tools and methods which are currently used in internet and web technologies(e.g: sublime text editors, notepad++,Brakets, Atom, Ice coder, OMNET++, Tetcos NetSim, and OPNET).
* To ensure the overall performance of web systems through programming languages (e.g: C, C++, html5, Java Script, Python, and JQuery)
* Demonstrate an ability to create basic Web pages with HTML5, Java Script, JQuery, XML and python (django).
* To understand societal issues and emerging technologies.
* To expose students to current technologies and current technology challenges, issues related to systems and system programming algorithm strategies.

**Intended Learning Outcomes (ILOs) of the Course**

|  |  |
| --- | --- |
| **Knowledge** | **LO1:**Will gain a thorough knowledge of the principles of managing technology and evaluate information in various research and applied contexts through generating digital system processes with effective programming skills. |
| **LO2:**Will be able to design and implement algorithms for performing web based efficient tasks for systems and softwares. (Web surveillance techniques, People verification through web, system performance enhancements on web caching, backend upgradation) |
| **LO3:**Will be able to apply analytical tools and methods, which are currently used in internet and web technologies (e.g: HTML5, Java Script, JQuery, XML and python – django framework). |
| **LO4:** Will be able to master the key technologies about the World Wide Web and contrast similar technologies through programming languages. |
| **Skills** | Will develop skills on understanding the problems. |
| Will gain skills on analysis the problem and selecting the solutions for the problem. |
| Will help in achieving communication, demonstrate and presentation skill. |
| **Attitude** | |  | | --- | | Will develop attitude to group dynamics and team work | |
| |  | | --- | | Will create attitude to tackle challenges related to computer and basic software | |
| |  | | --- | | Will create positive attitude to listen ideas of classmates | |

**Mapping of course ILO and PLO**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Learning Outcome (LO) of the Course** | **Program Learning Outcome (PLO)** | | | | | | | | | | | |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **ILO1** | MJ | MJ | MJ | MJ | MJ | MN | MN |  | MN | MN |  |  |
| **ILO2** | MJ | MJ | MJ | MJ | MJ | MJ | MN | MJ | MJ | MJ |  | MJ |
| **ILO3** | MJ | MJ | MJ | MJ | MJ | MJ | MJ | MJ | MJ | MN | MN | MJ |
| **ILO4** | MJ | MJ | MJ | MJ | MJ | MN | MJ | MN |  | MN |  |  |

**Contents**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SL | ILO | Topic | Teaching Strategy | Assessment  Strategy | Number of  Classes |
| Week 1 | 1 | **Overview:**  Network layers, Topologies, Network switches, bridges, gateways and related requirements. | Lecture, Exercise | Q/A | 1,2 |
| Weeks 2 | 1,4 | **The Internet:**  Types of address names resolutions, world wide web, File transfer protocol, gopher extensions. | Lecture, Exercise | Q/A, Test Assignment | 3,4 |
| Weeks 3, 4 | 1,3 | **Web browsers, Servers and Securities :**  Web browsers, web proxies and web backend, Firewalls and virus properties, Data securities. | Lecture, Exercise | Q/A, Test Assignment | 5,6,7,8 |
| Weeks 5 | 2,4 | **Creating websites:**  Websites generation, html structuring, dynamic html, xml universal formats. | Lecture, Exercise | Q/A, Test Assignment | 9,10 |
| Weeks 6 | 3,4 | **Searching and web casting techniques:**  Search engines, search tools, subscribing, channel push technology. | Lecture, Exercise | Q/A, Test Assignment | 11, 12 |
| Weeks 7,8 | 1,4 | **web technologies:**  Java web interfacing, Java Script scripting, GUI creating, event handling, applets . | Lecture, Exercise | Q/A, Test Assignment | 13,14, 15, 16 |
| Weeks  9, 10 | 1,4 | **Network Security and Dynamic Functionality on Web:**URL classes, Java servlets, CGI script communications. | Lecture, Exercise | Q/A, Test Assignment | 17, 18, 19, 20 |
|  | Total | | | | 20 |

**Teaching Learning Methods**

|  |
| --- |
| Analyze and solve knowledge-based problems for practical situation |
| Group discussion |
| Lecture slides, presentations, audio and video |
| Analytical and critical thinking approach to understand real life system and models |

**Assessment Schedule**

|  |  |  |
| --- | --- | --- |
| Assessment 1 | Quizzes | Week 4 and Week 8 |
| Assessment 2 | Assignments | Week 3 and Week 9 |
| Assessment 3 | Presentation | Week 10 |
| Assessment 4 | Mid-Term Exam | As per university schedule |
| Assessment 5 | Final Exam | As per university schedule |

**Weights of Assessments**

|  |  |
| --- | --- |
| Assessments | **%** |
| Mid-term Examination | 30 |
| Final Term Examination | 40 |
| Attendance and Class Participation | 10 |
| Presentation /Assignments | 10 |
| Quizzes | 10 |
| Total | 100 |

**List of References**

**Course Notes**: Follow Lecture notes

**Text Book:**

1. D.E Comer- Internetworking with TCP/IP, Vol-I,II,III
2. E. Nemeth, G. Snyder, T.R. Hein-Linux Administration Handbook.

**Online Recourses**: Use Internet to get documents on specific topics

**Facilities Required for Teaching and Learning**

Projector, Whiteboard, Internet access from classroom computer, Audio/Visual equipment.

**Facilities Required for Teaching and Learning**

Projector, Whiteboard, Internet access from classroom computer, Audio/Visual equipment.

1. **Course Policies and Procedures**

* Class attendance: Regular attendances of classes are mandatory and students will be assigned F automatically if he/she misses 6 consecutive classes.
* Late submission of work: Late submission will be followed by penalty, please maintain deadlines.
* Unfair means /plagiarism: Plagiarism will be dealt with severe penalty. Original work is encouraged as they will carry value marks.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Appendix-1: Program Learning Outcome (PLO)**   |  |  | | --- | --- | | **PLO No.** | **PLO** | | **1.** | **Engineering Knowledge** | | **2.** | **Problem Analysis** | | **3.** | **Design/Development of Solutions** | | **4.** | **Investigation** | | **5.** | **Modern Tool Usage** | | **6.** | **The Engineer and Society** | | **7.** | **Environment and Sustainability** | | **8.** | **Ethics** | | **9.** | **Communication** | | **10.** | **Individual and Team Work** | | **11.** | **Life Long Learning** | | **12.** | **Project Management and Finance** |   **Professional/Generic Skills (Detailed):**   1. **Engineering Knowledge (T)** -Apply knowledge of mathematics, sciences, engineering fundamentals and manufacturing engineering to the solution of complex engineering problems; 2. **Problem Analysis (T)** –Identify, formulate, research relevant literature and analyze complex engineering problems, and reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences; 3. **Design/Development of Solutions (A)** –Design solutions, exhibiting innovativeness, for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, economical, ethical, environmental and sustainability issues. 4. **Investigation (D)** Conduct investigation into complex problems, displaying creativeness, using research-based knowledge, and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions; 5. **Modern Tool Usage (A & D)** -Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations; 6. **The Engineer and Society (ESSE)** -Apply reasoning based on contextual knowledge to assess societal, health, safety, legal, cultural, contemporary issues, and the consequent responsibilities relevant to professional engineering practices. 7. **Environment and Sustainability (ESSE)** -Understand the impact of professional engineering solutions in societal, global, and environmental contexts and demonstrate knowledge of and need for sustainable development; 8. **Ethics (ESSE)** –Apply professional ethics with moral values and commit to responsibilities and norms of professional engineering code of practices. 9. **Communication (S)** -Communicate effectively on complex engineering activities with the engineering community and with society atlarge, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions; 10. **Individual and Team Work (S)** -Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings. 11. **Life Long Learning (S)** -Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. 12. **Project Management and Finance (S)** -Demonstrate knowledge and understanding of engineering management and financial principles and apply these to one’s own work, as a member and/or leader in a team, to manage projects in multidisciplinary settings, and identify opportunities of entrepreneurship. |