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| A picture containing diagram  Description automatically generated | **AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)**  Faculty of Science and Technology (FST)  Department of Computer Science (CS)  Undergraduate Program |

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| **COURSE PLAN** | **SEMESTER: Summer 2024-2025** |
| **I. Course Core and Title**  CSC 3215 Web Technologies  **II. Credit**  3 credit hours (3 hours of theory and 3 hours of lab per week)  **III. Nature**  Core Course for CS, CSE, CSSE, CIS  **IV. Prerequisite**  CSC 3112: Software Engineering | 1. **Vision:**   Our vision is to be the preeminent Department of Computer Science through creating recognized professionals who will provide innovative solutions by leveraging contemporary research methods and development techniques of computing that is in line with the national and global context.   1. **Mission:**   The mission of the Department of Computer Science of AIUB is to educate students in a student-centric dynamic learning environment; to provide advanced facilities for conducting innovative research and development to meet the challenges of the modern era of computing, and to motivate them towards a life-long learning process. |

## **VII - Course Description**

* Appreciate the increasing importance of web technologies and how it is changing the role of information technology.
* Understand what strategic web development is and apply a framework to help identify strategic uses of the internet.
* Compare the fundamental types of web technologies and how they can be used to provide real business benefit.
* Explore new technologies and issues affecting web development.
* Apply a web development approach in analyzing the role of web technology in organizations.
* Describe the process used in developing information systems and the concepts of web engineering and web process reengineering.
* Analyze the skills needed for web development professionals.
* Develop real life and society targeted web applications.

## **VIII - Course outcomes (CO) Matrix**

By the end of this course, students should be able to:

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| **COs**\* | **CO Description** | Level of  Domain\*\*\* | | | PO Assessed \*\*\*\* | |
| C | P | A |
| CO1 | **Analyze** professional engineering solutions in societal and environmental contexts | 4 |  |  | PO-c-1 | |
| CO2 | **Classify** the flow of process for sustainable digital solution | 4 |  |  | PO-c-1 | |
| CO3 \*\* | **Illustrate** multi-tier web application for targeted society | 4 |  |  | PO-c-2 | |
| CO4 \*\* | **Develop** a multi-tier based web application as group member/leader in the project |  | 4 |  | PO-k-2 | |
| *C: Cognitive; P: Psychomotor; A: Affective Domain*  *\* CO assessment method and rubric of COs assessment is provided in later section*  *\*\* COs will be mapped with the Program Outcomes (POs) for PO attainment \*\*\* The numbers under the ‘Level of Domain’ columns represent the level of Bloom’s Taxonomy each   CO corresponds to.*  *\*\*\*\* The numbers under ‘PO Assessed’ column represent the POs each CO corresponds to.* | | | | | |

## **IX - Topics to be covered in the class and/or lab: \***

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| **Time Frame** | **CO**  **Mapped** | **Topics** | **Teaching**  **Activities** | **Assessment Strategy(s)** |
| Week 1 | CO1 | Mission & Vision of AIUB, Course Policy, OBE Discussion, History of the Web, Client-Server architecture, URL, Browsers, Web Server, HTTP Protocol, HTTP Proxies, DNS | Lecture notes, question | Homework |
| Week 2 | CO1 | Version Control System, Introduction to HTML, HTML Forms, DOM | Lecture notes, question | Lab work |
| Week 3 | CO3 | Introduction to CSS | Lecture notes, question | Home Work |
| Week 4 | CO2, CO3 | Introduction to JavaScript | Lecture notes, question | Quiz |
| Week 5 | CO2, CO3 | JavaScript Extended [ES6], DOM Manipulation using JavaScript | Lecture notes, question | Homework, Lab work |
| Midterm (Week 6) | | | | |
| Week 7 | CO1, CO2 | Introduction to PHP | Lecture notes, question | Homework, |
| Week 8 | CO1, CO2 | PHP Form Submission, HTTP Verbs Recap | Lecture notes, question | Lab work |
| Week 9 | CO2, CO3 | PHP From validation, PHP Session and Cookie | Lecture notes, question | Lab work |
| Week 10 | CO4 | PHP & MySQL, MVC | Lecture notes, question | Quiz |
| Week 11 | CO3, CO4 | Data Transportation AJAX and JSON, Fundamentals of Web Security, Fundamentals of API | Lecture notes, question | Homework, Lab work |
| Final term (Week 12) | | | | |

*\* The faculty reserves the right to change, amend, add, or delete any of the contents.*

## **X - Mapping of PO to Courses and K, P, A**

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| PO Indicator ID | PO Indicators Definition (As per the requirement of WKs) | Domain | K | P | A |
| PO-c-1 | Design solutions for component of a complex engineering problem considering public health and safety | Cognitive Level 4 (Analyzing) | K5 |  |  |
| PO-c-2 | Develop process for complex engineering problems considering cultural and societal factors. | Cognitive Level 4 (Analyzing) | K5 | P1 P3 P7 |  |
| PO-k-3 | Manage multi-disciplinary components of a computer science and engineering project as a member/leader | Psychomotor Level 4  (Articulation) |  |  |  |

## **XI – K, P, A Definitions**

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| **Indicator** | **Title** | **Description** |
| K5 | Engineering Design | Knowledge that supports engineering design in a practice area |
| P1 | Depth of knowledge required | Cannot be resolved without in-depth engineering knowledge at the level of one or more of K3, K4, K5, K6 or K8 which allows a fundamentals-based, first principles analytical approach |
| P3 | Depth of analysis required | Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models |
| P7 | Interdependence | Are high level problems including many component parts or sub-problems |

## **XII – Mapping of CO Assessment Method and Rubric**

The mapping between Course Outcome(s) (COs) and The Selected Assessment method(s) and the mapping between Assessment method(s) and Evaluation Rubric(s) is shown below:

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| **COs** | **Description** | **Mapped**  **POs** | **Assessment Method** | **Assessment Rubric** |
| **CO1** | **Analyze** professional engineering solutions in societal and environmental contexts | PO-c-1 | Project Report | Rubric for Project Report |
| **CO2** | **Classify** the flow of process for sustainable digital solution | PO-c-1 | Project Report | Rubric for Project Report |
| **CO3** | **Illustrate** multi-tier web application for targeted society | PO-c-2 | Final Term Exam | Rubric for Final Term Exam |
| **CO4** | **Develop** a multi-tier based web application as group member/leader in the project | PO-k-3 | Lab Exam | Rubric for Lab Exam |

## **XIII – Evaluation and Assessment Criteria**

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| **CO1 [PO-c1]:** Analyze professional engineering solutions in societal and environmental contexts | | | | |
| **Assessment**  **Attribute/Criteria** | **Missing/Incorrect (0)** | **Inadequate**  **(1)** | **Satisfactory**  **(2)** | **Excellent**  **(3)** |
| **Project Proposal** | No project proposal provided or contains major inaccuracies that deviate from the assignment requirements. | The project proposal is present but lacks clarity, coherence, or essential components. There may be significant omissions or errors that hinder understanding. | The project proposal is clear, well-structured, and contains all the necessary elements. It effectively communicates the scope, objectives, and idea proposed project. | The project proposal is exceptionally well-crafted. It demonstrates a thorough understanding of the project's goals, potential outcomes and followed the instruction given in the manual. |
| **Background Study** | No background study is provided, or the information presented is factually incorrect or irrelevant to the project. | The background study is present but lacks depth or fails to connect the relevant literature to the proposed project. It may contain inaccuracies or insufficient information. | The background study provides a solid foundation for the proposed project. It accurately summarizes existing knowledge related to the topic and demonstrates an understanding of relevant theories or concepts. | The background study is comprehensive, well-researched, and effectively integrates various sources. It goes beyond the basics, offering insightful analyses, connections, and a clear justification for the chosen project. |
| **Requirement Analysis** | No requirements analysis is presented, or the analysis provided is inaccurate or irrelevant to the project. | The requirement analysis is present but lacks depth or fails to identify essential project requirements. It may contain inaccuracies or insufficient information. | The requirement analysis is clear, identifies key project requirements, and demonstrates a good understanding of the technological needs of the project. | The requirement analysis is exceptionally thorough, covering all necessary aspects of the project. It not only identifies requirements but also considers potential challenges and proposes effective solutions. It showcases a deep understanding of the technological landscape relevant to the project. |

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| **CO2 [PO-c1]:** Compare the flow of process for sustainable digital solution | | | | |
| **Assessment**  **Attribute/Criteria** | **Missing/Incorrect (0)** | **Inadequate**  **(1)** | **Satisfactory**  **(2)** | **Excellent**  **(3)** |
| **Data Validation** | No Data Validation is provided or contained in the report. | Data Validation is done but there are lacks of objects or concepts that represent important data. | The Data Validation is completed, well-structured, and contains all the necessary attributes. | The Data Validation is drawn exceptionally well. It demonstrates a thorough understanding of the project's goals, followed the instruction given in the manual. |
| **Logical Analysis** | Lacks logical coherence or analysis. The proposal contains random or disconnected ideas without a clear flow of thought or reasoning. | Shows some attempt at logical analysis but lacks depth or consistency. Arguments may be weak or unsupported. | Demonstrates logical analysis by presenting coherent arguments and reasoning. Ideas are logically organized, and there is a clear progression of thought throughout the proposal. | Provides insightful and well-structured logical analysis. Arguments are robust, supported by evidence, and lead to logical conclusions |

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| **CO3 [PO-c2]:** Illustrate multi-tier web application for targeted society | | | | |
| **Assessment**  **Attribute/Criteria** | **Missing/Incorrect (0)** | **Inadequate**  **(1)** | **Satisfactory**  **(2)** | **Excellent**  **(3)** |
| **Completeness** | No web application is developed or completed to show. | The web application is developed or completed but doesn't meet the project requirements or has insufficient features. | The web application is completed and demonstrates a good understanding of the technological needs of the project for society. | The features are exceptionally done, covering all necessary aspects of the project for the specific society. It not only completes all ER- Diagram features but also solves other challenges. It solves the problem for the targeted society in a sustainable way. |
| **Code Structure** | No code structure is provided, or the code structure presented is entirely incorrect. | The code structure is present but lacks organization or adherence to best practices | Demonstrates a well-organized and reasonably structured codebase. Follows established coding conventions and best practices. | Exhibits exemplary code structure characterized by meticulous organization, clarity, and adherence to best practices. |
| **Feature Implementation** | No Feature is implemented. | A small number of features is completed. | Feature implementation is done according to the requirements and explains the implementation process well. | Feature implementation is done exceptionally well according to the requirements and Extra feature is implemented like- SMTP server. |

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| **CO4 [PO-k2]:** Develop a multi-tier based web application as group member/leader in the project | | | | |
| **Assessment**  **Attribute/Criteria** | **Missing/Incorrect (0)** | **Inadequate**  **(1)** | **Satisfactory**  **(2)** | **Excellent**  **(3)** |
| **Collaborative Teamwork** | Makes no technical contribution to the development of the multi-tier based web application and does not engage in GitHub collaboration. | Makes limited or superficial technical contributions to the project, with minimal involvement in coding, testing, or debugging tasks. Shows little to no engagement with GitHub collaboration. | Engages moderately in GitHub collaboration, such as pushing code, reviewing pull requests, and resolving issues. | Demonstrates exceptional technical proficiency and actively engages in GitHub collaboration, demonstrating effective version control practices, providing constructive feedback on pull requests, and actively participating in project discussions. |
| **Communication/Promptness** | Missing during presentation or Demonstrates poor communication skills and consistently misses deadlines. | Displays limited communication skills during the presentation. responds adequately to questions but may struggle with complex inquiries. | Communicates effectively during the presentation, addresses questions confidently and provides relevant answers. Adheres to the allotted presentation time. | Demonstrates exceptional communication skills during the presentation, captivating the audience with clear, concise, and engaging delivery. |
| **Technical Knowledge** | Demonstrates a lack of understanding of essential web technology concepts and tools relevant to the project. Unable to contribute meaningfully to technical discussions or tasks. | Displays basic knowledge of web technology concepts but lacks depth or expertise in applying them to the project. Requires significant guidance and supervision to complete technical tasks. | Exhibits a solid understanding of web technology concepts and tools relevant to the project. Able to independently perform technical tasks and contribute effectively to technical discussions. | Demonstrates exceptional technical proficiency and expertise in web technology. Offers valuable insights and solutions to technical challenges, showcasing advanced knowledge and skills in the field. |

## **XIV- Course Requirements**

* Students are expected to attend at least 80% of the class.
* Students are expected to participate actively in the class.
* For both terms, there will be at least 2 quizzes based on the theoretical knowledge and conceptual understanding of the topic covered discussed in the classes.
* Submit report based on the given course related problems.
* Submission of assignments and projects should be in due time.

## **XV – Evaluation & Grading System\***

The following grading system will be strictly followed in this class.

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| **MID TERM** | | **FINAL TERM** | |
| Attendance | 10% | Attendance | 10% |
| Class Test | 10% | Project performance | 20% |
| Lab performance | 10% | Quiz | 20% |
| Quiz | 20% | Term Exam | 50% |
| Term Exam | 50% |  |  |
| Total | 100% | Total | 100% |
| **Grand Total 100% = 50% of Midterm + 50% of Final Term** | | | |

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| **Letter** | **Grade Point** | **Numerical %** |
| A+ | 4.00 | 90-100 |
| A | 3.75 | 85 - < 90 |
| B+ | 3.50 | 80 - < 85 |
| B | 3.25 | 75 - < 80 |
| C+ | 3.00 | 70 - < 75 |
| C | 2.75 | 65 - < 70 |
| D+ | 2.50 | 60 - < 65 |
| D | 2.25 | 50 - < 60 |
| F | 0.00 | < 50 |
| I |  | Incomplete |
| W |  | Withdrawal |
| UW |  | Unofficially Withdrawal |

*\* The evaluation system will be strictly followed as par with the AIUB grading policy.*

*\* CO attainment will be achieved with 60% of the evaluation marks.*

## **XVI – Textbook/ References**

1. W3Schools Online Web Tutorials; URL: http://www.w3schools.com
2. PHP Documentation; URL: http://www.php.net/docs.php
3. Sams Teach Yourself Ajax JavaScript and PHP All in One; Phil Ballard and Michael Moncur; Sams Publishing; 2010
4. JavaScript Phrasebook; Christian Wenz; Sams Publishing; 2007
5. PHP and MySQL Web Development, 4/E; Luke Welling and Laura Thomson; Addison- Wesley Professional; 2009
6. JavaScript for Programmers Paul J. Deitel and Harvey M. Deitel; Prentice Hall; 2009
7. Beginning PHP5, Apache, and MySQL Web Development; Elizabeth Naramore, Jason Gerner, Yann Le Scouarnec, Jeremy Stolz and Michael K. Glass; Wiley Publishing; 2005
8. XML in a Nutshell, 3/E; Elliotte Rusty Harold and W. Scott Means; O'Reilly Media; 2004
9. https://developer.mozilla.org/

## **XVII - List of Faculties Teaching the Course**

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| --- | --- |
| **FACULTY NAME** | **SIGNATURE** |
| Mr. Md. Al-Amin |  |
| Mr. Mir Md Kawsur**\*\*** |  |
| Mr. Md. Khairul Alam Mazumder**\*** |  |
| Mr. Md. Raihan Mahmud |  |
| Mr. Md. Sazid Uddin |  |
| Mr. Mirza Asif Mahmud |  |
| Mr. Shabab Murshed |  |
| Mr. Sultanul Arifeen Hamim |  |
| Mr. Wahidul Alam Riyad |  |

## **XVIII – Verification**

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| **Prepared by:**  -------------------------  **Md. Khairul Alam Mazumder** *Course Convener*  Date: 17/07/2025 | **Moderated by:**  ---------------------------------  **Dr. M. Mahmudul Hasan**  *Point Of Contact*  *OBE Implementation Committee*  Date:......................................... | **Checked by:**  ---------------------------------  **Dr. Debajyoti Karmaker**  *Head (Undergraduate Program) Department of Computer Science*  Date:......................................... |
| **Verified by:**  ....................................................  **Dr. Md. Abdullah-Al-Jubair**  *Director*  *Faculty of Science & Information Technology*  Date:.......................................... | **Certified by:**  .....................................................  **Prof. Dr. Dip Nandi**  *Associate Dean*,  *Faculty of Science & Information Technology*  Date:............................................ | **Approved by:**  .........................................................  **Mr. Mashiour Rahman**  *Dean*,  *Faculty of Science & Information Technology*  Date:............................................... |