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| AIUB-Logo | **AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)**  Faculty of Science and Technology (FST)  Department of Computer Science (CS)  Undergraduate Program |

American International University-Bangladesh (AIUB)



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| **COURSE PLAN** | **Fall 2021-2022** SEMESTER |

I. Course Core and Title

**CSC 4182: Advanced Programming In Web Technologies**

II. Credit **3 credit hours (2 hours of theory + 3 hours of lab per week)**

III. Nature

**Elective Course for CS, CSE, CSSE, SE, CIS**

IV. Prerequisite **CSC 3222: Web Technologies**

**V. 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.

**VI. 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:**

* At the end of the course, the following objectives shall have been attained
* Understood and appreciated the object-oriented programming concept using JavaScript
* Understood and appreciated programming Web-based applications using JS framework
* Prepared and presented a group project using JS framework
* Understood and appreciated the object-oriented programming concept using PHP
* Understood and appreciated programming Web-based applications using PHP framework
* Understood and appreciated programming the security for framework-based applications
* Prepared and presented a group project using PHP framework



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**IX – Topics to be covered in Theory class\*:**

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| **TOPICS** | **Specific Objective(s)** | **Time Frame** | **Suggested Activities** | **Teaching Strategy(s)** |
| Mission & Vision of AIUB; Course Introduction, Introduction PHP | Importance of the course, Career opportunity, Course outline & class policy, OOP in PHP | Week 1 | Lecture and Lab | Class Discussion |
| Introduction to object oriented PHP. | Object oriented PHP overview. Project building | Week 1 | Lecture, Lab Work and Assignments | Class Discussion |
| Introduction to PHP Framework and View Engine | Understanding the concepts of dynamic web application using framework and template layout | Week 2 | Lecture, Lab Work and Assignments | Class Discussion, Self-Study and Assignments |
| Frameworks Controller and Data Transportation | Understanding View-Controller Data Transportation/Action  Form actions and data validations | Week3 | Lecture, Lab Work and Assignments | Class Discussion, Self-Study and Assignments |
| Storage management using framework | Session-Cookies, Middleware, ORM, and Database | Week 4 - 6 | Lecture, Lab Work and Assignments | Class Discussion, Self-Study, Assignments and term project preparation |
| Security Management | Authentication and Middleware Revise | Week 6 | Lab Exam | Class Discussion, Self-Study |
| **Week 7 - Midterm Examination** | | | | |
| PHP API Management | API vs RESTful API,  PHP Framework API Creation and Interaction | Week 8-9 | Lecture, Lab Work | Class Discussion |
| Introduction to object oriented JavaScript | Introduction to JS and Object oriented JS overview. JQuery (AJAX) and JSON | Week 9 | Lecture, Lab Work | Class Discussion |
| Building dynamic web application using framework | Understanding the concepts of dynamic web application using Node.Js framework | Week 10 | Lecture, Lab Work and Assignments | Class Discussion, Self-Study and Assignments |
| Introduction to ORM using JS framework | Creating and integrating database with web applications using Active Record and CRUD operation | Week 11-12 | Lecture, Lab Work and Assignments | Class Discussion, Self-Study |
| Advanced topics of JS framework and Application Deployment | Creating dynamic applications and web services using JS framework. | Week 13 | Lecture, Lab Work and Assignments | Class Discussion, Self-Study, Project preparation and Assignments |
| **Week 14 - Final term Week** | | | | |

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

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**X- Course Requirements**

At least **80% class attendance** is necessary to sit for the exam. If there is any assignment given to the students, they have to submit it before the deadline decided by the course teacher.

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**XI – Online Assessment & Grading System**

The following grading system will be strictly followed in this class

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| **Final Grade/ Grand Total** | |
| Midterm: | 40% |
| Final Term: | 60% |
| **Grand Total** | 100% |

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| **Marking Distribution**  **(Midterm and Final term)** | |
| Quiz | 15% |
| Attendance | 10% |
| Lab Task/Assignment | 15% |
| Project | 60% |
| **Total** | 100% |

**Grand Total = 40% of Midterm + 60% 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 (Failed) |
| A+ | 4.00 | 90-100 |
| I | Incomplete |  |
| W | Withdrawal |  |
| UW | Unofficial Withdrawal |  |

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

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**XII – Teaching Methods**

Maximum topics will be covered from the textbook. For the rest of the topics, reference books will be followed. Some Class notes will be uploaded on the web. White board will be used for most of the time.

For some cases, multimedia projector will be used for the convenience of the students.

Students must study up to the last lecture before coming to the class and it is suggested that they should go through the relevant chapter before coming to the class. Just being present in the class is not enough- students must participate in classroom discussions.

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**XIII – Textbook/ References**

1. **PHP Advanced and Object-Oriented Programming, 3rd Edition; Larry Ullman; Peachpit, Press, 2013**
2. **PHP Objects, Patterns and Practice, 5th Edition; Matt Zandstra; Apress, 2016**
3. **Learning PHP, MySQL, JavaScript and CSS, 2nd Edition; Robin Nixon; O’Reilly, 2009**
4. **Eloquent JavaScript: A Modern Introduction to Programming; Marijn Haverbeke; 2011**

**Learning Node.js: A Hands On Guide to Building Web Applications in JavaScript; Marc**

**Wandschneider; Addison-Wesley, 2013**

1. **Beginning Node.js; Basarat Ali Syed; Apress, 2014**
2. **PHP: Hypertext Preprocessor, URL: http://php.net**
3. **W3Schools Online Web Tutorials, URL: http://www.w3schools.com**
4. **Laravel Web Framework, URL: https://laravel.com/**
5. **Node.js, URL:** [**https://nodejs.org/en/**](https://nodejs.org/en/)



**XIV - List of Faculties Teaching the Course**

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| 1. **Tanvir Ahmed** 2. **Rashidul Hasan Nabil** |



**XV – Verification:**

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| Prepared by  ---------------------------------  Course Convener  Date : | Checked and certified by:  .............................................................  (Dr. Md. Mahbub Chowdhury Mishu)  (Head of Department)  Date:................................................ | Approved by:  .............................................................  Assoc. Prof. Mashiour Rahman  (Associate Dean of Faculty of Science and Technology)  Date:................................................... |
|  | Moderated by :  ……………………….  Date : ……………………….. | Moderated by :  ……………………….  Date : ……………………….. |