**University of Asia Pacific (UAP)**

**Department of Computer Science and Engineering (CSE)**

**Course Outline**

**Program:** Computer Science and Engineering (CSE)

**Course Title: Object Oriented Programming II: Visual and Web Programming**

**Course Code: CSE 309**

**Semester: 1st**

**Level: 3rd**

**Credit Hour: 3.0**

**Name & Designation of Teacher:**  Tanmoy Sarkar Pias, Lecturer

**Office/Room: 7th floor, Teacher’s room**

**Class Hours: Tuesday**: 11:00 a.m. -12:30 p.m.

Wednesday: 9:30 a.m. -10:50 p.m.

Saturday: 12:30 p.m. -1:50 p.m., 03:30-04:45 p.m

**Consultation Hours: Tuesday: 12:30-2 pm**

**Thursday: 9:30-11 am**

**Saturday: 2-3:30 pm**

**E-mail:** tsr@uap-bd.edu

**Mobile: +8801757222240**

**Rationale:** The knowledge of Object Oriented Programming: Java is very important for this course.

**Pre-requisite** (if any)**:** CSE 203, CSE 211

**Course Synopsis:** This course will cover the main aspects of the an object oriented programming language (example: Python). Students will learn how to use Python according to proper Object-Oriented Programming principles. This course covers the Python language syntax, and then moves into the object- oriented features of the language. Students will then learn the OOP principles, Data types, Variables, Scoping and life time of variable, Operators, classes and objects, Inheritance, Polymorphism, Interface, abstract class, Association, Aggregation, Composition, Database, HTML, CSS, JS, MVC pattern, File management, Server, Hosting, IP address, Web App

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**Course Objectives (CO):** The objectives of this course are:

1. Learn professional Object Design with Python
2. Learn OOP principles and features and how to apply them in Python
3. Learn Inheritance, Encapsulation, Abstraction , Polymorphism in Python
4. Learn Python Classes, Objects & Interfaces
5. Learn how to properly apply OOP concepts in Web and System development
6. Learn how to use the Django Framework
7. Become familiar with Django views, models and urls.

**Course Outcomes (CO) and their mapping with Program outcomes (PO) and Teaching-Learning Assessment methods:**

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| **CO**  **No.** | **CO Statements:**  Upon successful completion of the course, students should be able to: | **Corresponding**  **POs**  **(Appendix-1)** | **Bloom’s taxonomy domain/level**  **(Appendix-2)** | **Delivery methods and activities** | **Assessment**  **Tools** |
| CO1 | Describe Object Oriented Programming Features | 1 | Understand | Lecture, multimedia, | Quiz,  Written exam |
| CO2 | Apply OOP features in solving programming problem. | 3 | Apply | Lecture, Problem Solving | Quiz,  Written exam |
| CO3 | Write, compile, execute and analyze Python programs | 4 | Analyze | Lecture, Problem Solving | Programming Quiz |
| CO4 | Create robust Web applications using Django framework | 3 | Create | Lecture  Problem Solving | Written exam |

**Weighting COs with Assessment methods:**

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| --- | --- | --- | --- | --- | --- |
| **Assessment Type** | **% weight** | **CO1** | **CO2** | **CO3** | **CO4** |
| Final Exam | 50% | 10 | 10 | 15 | 15 |
| Mid Term | 20% | 3 | 7 | 10 |  |
| Class performance,  Quizzes, Assignment | 30% | 5 |  | 10 | 15 |
| Total | 100% | 16 | 17 | 35 | 30 |

**Lecture Schedule**

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| --- | --- | --- | --- | --- |
| **Lecture** | **Topic** | **Course Outcome** | **Reading assignment** | **Work assignment** |
| Week 1: Lecture 1 | Introduction to Course | CO1 | Course Outline | To be assigned during lecture. |
| Week 1: Lecture 2 | Introduction to Python (Basic Syntax) | CO1 | Python official documentation: Chapter 1, 2, 3 | To be assigned during lecture. |
| Week 2: Lecture 3-4 | Python (Control and Condition, List, Dictionary) | CO1, CO2, CO3 | Python official documentation: Chapter 4; Other Materials to be delivered during lecture | To be assigned during lecture. |
| Week 3: Lecture 5-6 | Python (Loop, Function),  CT 1 | CO1, CO2, CO3 | Python official documentation: Chapter 5; Other Materials to be delivered during lecture | To be assigned during lecture. |
| Week 4: Lecture 7-8 | OOP (Class, Inheritance) | CO1, CO2, CO3 | Python official documentation: Chapter 9; Other Materials to be delivered during lecture | To be assigned during lecture. |
| Week 5: Lecture 9-10 | Introduction to Visual and Web Programming,  CT 2 | CO1, CO2, CO4 | Django Documentation; Other Materials to be delivered during lecture | To be assigned during lecture. |
| Week 6: Lecture 11-12 | Web design (HTML, CSS, JS) | CO4 | Materials will be provided in the class | To be assigned during lecture. |
| Week 7: Lecture 13-14 | Django (Introduction, Project Structure),  OOP (Polymorphism, Abstract class and Interface)  Mid Exam discussion | CO1, CO3, CO4 | Django Documentation; Other Materials to be delivered during lecture | To be assigned during lecture. |
| Week 8: Lecture 15-16 | Python  (Module, File, I/O)  Django (URLs, Views) | CO1, CO3, CO3 | Python official documentation: Chapter 9; Other Materials to be delivered during lecture | To be assigned during lecture. |
| Week 9: Lecture 17-18 | Django (Models, Database, Admin,) | CO1, CO3, CO4 | Django Documentation; Other Materials to be delivered during lecture | To be assigned during lecture. |
| Week 10: Lecture 19-20 | Django (User account) | CO1, CO3, CO4 | Django Documentation; Other Materials to be delivered during lecture | To be assigned during lecture. |
| Week 11: Lecture 21-22 | Django, OOP Concepts | CO1, CO3, CO4 | Django Documentation; Other Materials to be delivered during lecture | To be assigned during lecture. |
| Week 12: Lecture 23-24 | Django, OOP Concepts  CT 4 | CO1, CO3, CO4 | Django Documentation; Other Materials to be delivered during lecture | To be assigned during lecture. |
| Week 13: Lecture 25-26 | Django (Sample Project) | CO1, CO3, CO4 | Django Documentation; Other Materials to be delivered during lecture | To be assigned during lecture. |
| Week 14: Lecture 27-28 | Review Class (OOP, Framework) | CO1, CO3, CO4 | Materials to be delivered during lecture | To be assigned during lecture. |

**Minimum attendance:** 70% class attendance is mandatory for a student in order to appear at the final examination.

**Textbook:** Python Crash Course: A Hands-on, Project-based Introduction to Programming - Eric Matthes

**Recommended References:** Python Crash Course: A Hands-on, Project-based Introduction to Programming - Eric Matthes

Python Tutorial (Official Publication) – Guido van Rossum and the Python development team

Django Documentation (2.2) - Django Software Foundation

**Grading System:** As per the approved grading scale of University of Asia Pacific (Appendix-3).

**Special Instructions: Late attendance:** Students who will enter the class after the attendance call will be marked as absent.

**Assignment**: Assignment will be given throughout the semester. Copied assignments will be graded as zero. Late submission will result a 50% deduction in score.

**Class Test:** There will be no make-up quizzes.

**Student’s responsibilities:** Students must come to the class prepared for the course material covered in the previous class (es).

They must submit their assignments on time.

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| **Prepared by**  **(**Course Teacher**)** | **Checked by**  **(**Chairman, PSAC committee**)** | **Approved by**  **(**Head of the Department**)** |
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**Appendix-1:**

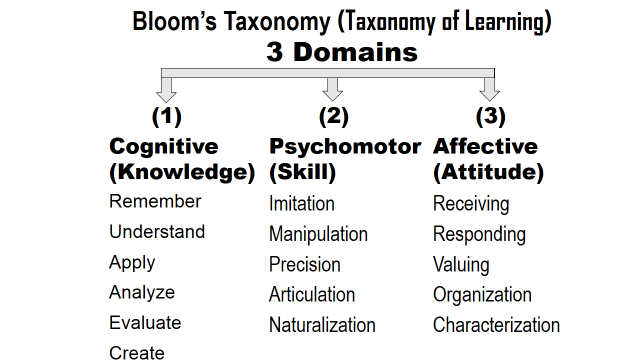
**Washington Accord Program Outcomes (PO) for engineering programs:**

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| --- | --- | --- | --- |
| **No.** |  | **PO** | **Differentiating Characteristic** |
| 1 |  | Engineering Knowledge | Breadth and depth of education and type of knowledge, both theoretical and practical |
| 2 |  | Problem Analysis | Complexity of analysis |
| 3 |  | Design/ development of solutions | Breadth and uniqueness of engineering problems i.e. the extent to which problems are original and to which solutions have previously been identified or codified |
| 4 |  | Investigation | Breadth and depth of investigation and experimentation |
| 5 |  | Modern Tool Usage | Level of understanding of the appropriateness of the tool |
| 6 |  | The Engineer and Society | Level of knowledge and responsibility |
| 7 |  | Environment and Sustainability | Type of solutions. |
| 8 |  | Ethics | Understanding and level of practice |
| 9 |  | Individual and Team work | Role in and diversity of team |
| 10 |  | Communication | Level of communication according to type of activities performed |
| 11 |  | Project Management and Finance | Level of management required  for differing types of activity |
| 12 |  | Lifelong learning | Preparation for and depth of Continuing learning. |

**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 modelling, 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 Islamic 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 at large, 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.

**Appendix-2**



**Appendix-3**

**UAP Grading Policy:**

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| **Numeric Grade** | **Letter Grade** | **Grade Point** |
| 80% and above | A+ | 4.00 |
| 75% to less than 80% | A | 3.75 |
| 70% to less than 75% | A- | 3.50 |
| 65% to less than 70% | B+ | 3.25 |
| 60% to less than 65% | B | 3.00 |
| 55% to less than 60% | B- | 2.75 |
| 50% to less than 55% | C+ | 2.50 |
| 45% to less than 50% | C | 2.25 |
| 40% to less than 45% | D | 2.00 |
| Less than 40% | F | 0.00 |

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| **Prepared by:**  **----------------------------------** | **Checked by:**  **-----------------------------** | **Approved by: (Head of the Dept.)**  **-----------------------------** |