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| **COURSE BASICS** | | | |
| **Course Code** | BIT 217 |  | |
| **Credit Hours** | 3 (2,1) | | |
| **Lectures [No. of Lec(s) Per Week]** | 1 | Duration | 2 hours |
| **Lab Sessions** | 1 | Duration | 1 hour |

*BIT 217*

**[Object Oriented Programming]**

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| **COURSE DISTRIBUTION** | |
| **Program(s) Attached To** | BBIT |
| **Core / Elective** | Core |
| **Course Pre-requisites** | Introduction to Programming. |

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| **COURSE DESCRIPTION** |
| This course is designed to focus on object oriented programming using Python, which is built on the fundamental basic programming concepts.  Object-oriented programming (OOP) is a widely used programming paradigm that reduces development time, making it easier to read, reuse, and maintain the code. OOP shifts the focus from thinking about code as a sequence of actions to looking at the program as a collection of objects that interact with each other. It covers the OOP principles like data abstraction, data encapsulation, composition, inheritance and polymorphism for code reuse and optimization. |

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| **COURSE OBJECTIVES** |
| Objective of this course is to make students familiar with the concepts of Object Oriented Programming.  These concepts will be reinforced by their implementationin Python. |

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| **LEARNING OUTCOMES** |
| On successful completion of the course , students should be able to:   1. Explain the object oriented programming concepts like object, class etc. 2. Devise objects from description, implementing their structure and behavior by defining data members and member functions. 3. Present an object-oriented design in a clear and lucid manner. 4. Apply principles of encapsulation, abstraction, reusability and extensibility to support collaborative development. |

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| **BBA PROGRAM OBJECTIVES** |
| 1. *Intellectual Capacity*   To develop critical thinking skills through keen observation, free inquiry, and logical reasoning for creative problem solving.   1. *Personality Transformation*   To facilitate deep-rooted transformation based on adherence to high ethical standards, social responsibility, and business professionalism.   1. *Business Techies*   To produce technology conversant professionals equipped with knowledge of business and information technology funneled into a coherent strategic whole for effective management in a disruptive business environment.  **Program Learning Outcomes (BBIT)**  Students will be able to  **PLO 1.** Demonstrate the ability to critically analyze complex business problems and propose innovative solutions for business challenges.  **PLO 2.** Demonstrate effective communication, teamwork, and collaboration skills to work in diverse teams and contribute towards organizational performance.  **PLO 3.** Commit to lifelong learning and seek out new knowledge and experiences.  **PLO 4.** Develop a strong sense of ethical responsibility towards all stakeholders and understand the value of diversity and inclusion in fostering collaboration.  **PLO 5.** Exhibit proficiency in various technologies relevant to the dynamic business environment.  **PLO 6.** Showcase a capacity for innovation, embracing technological advancements and adapting to rapidly changing business landscapes to stay competitive and resilient. |

***Map if course objectives or outcomes specifically relate to any program objectives (along with corresponding assessment item):***

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| **PROGRAM OBJECTIVES** | **(COURSE) LEARNING OUTCOMES** | **COURSE ASSESSMENT ITEM** |
| PLO1 | CLO 1 | *Quiz, Midterm* |
| PLO1 | CLO2 | Quiz, Midterm |
| PLO5 | CLO3 | Midterm, Assignment |
| PLO6 | CLO4 | Final Exam, Project |
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| **ASSESSMENT STRUCTURE** | |
| Assessment Items | Percentage |
| Quiz(s) | 10% |
| Assignments(s) |  |
| Class Participation | 10% |
| Midterm Examination | 30% |
| Final Examination | 40% |
| Project Viva/Presentation | 10% |
| Other(s) |  |
| Any specific teaching/learning strategies: Effective use of Chat-GPT for creative learning and error handling during coding practice. | |

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| **COURSE CONTENT AND DELIVERY PLAN** | | |
| Lecture | Topics | Application (*Learning Outcomes achieved through this topic*) |
| 1 | Shift from Procedural Programming to OOP. Introduction to Classes and Objects. | CLO1 |
| 2 | Object Initialization through Constructors. Concept of Destructors. | CLO2 |
| 3 | Accessors, Mutators, Utility methods, Objects as arguments and return types, Cascaded function calls. | CLO2 |
| 4 | Static members and static functions, Const members and const functions, Self pointer | CLO2 |
| 5 | Composition and related concepts; Has-a relationship. Complex object | CLO3 |
| 6 | Aggregation and related concepts | CLO3 |
| 7 | Association and related concepts | CLO3 |
| 8 | MID-TERM |  |
| 9 | Inheritance. Is-a Relationship of baseclass and derived classes, Derived class functions overloading. Data member domination. | CLO3, CLO4 |
| 10 | Multiple Inheritance | CLO4 |
| 11 | Multilevel Inheritance, Hierarchical Inheritance | CLO4 |
| 12 | Polymorphism. Function Override. | CLO4 |
| 13 | Operator Overloading | CLO2 |
| 14 | Exceptional Handling | CLO3 |
| 15 | File handling | CLO2 |
| 16 | Final Term Examination |  |
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| **LEARNING RESOURCES** |
| Books:   1. The Object Oriented Thought Process (2018) 4th Edition by Matt Weisfeld 2. Python 3 Object Oriented Programming (2017) 2nd Edition Dusty Philips 3. Programming in Python 3: A complete introduction to the Python Language (2019) 2nd Edition by Mark Summerfield |