## Advanced Python Program
### December Session 2022
#### Schedule of Topics

| Week #1 | Monday  
Nov. 28:  
**Session 1: OOP Concepts**  
- Introducing object-oriented concepts  
- Objects and classes  
- Specifying attributes and behaviors  
- Hiding details and creating the public interface  
- Composition  
- Basic inheritance  
- Multiple inheritance  

| Thursday  
Dec. 1:  
**Session 2: Meta-Programming**  
- Polymorphism  
- Abstract base classes  
  - Using an abstract base class  
  - Creating an abstract base class  
- Meta-Programming  
  - Basic Meta-Programming  
  - Using __init__ vs. __new__ in Metaclasses  
  - Class Methods and Metamethods  |

| Week #2 | Monday  
Dec. 5:  
**Session 3: Python Object-Oriented Design**  
- Unified Model Language (UML)  
- Requirements  
- Use-cases and User Stories  
- Domain Modeling  
- Class Diagrams  

| Thursday  
Dec. 8:  
**Session 4: Python Design Patterns I**  
- What is a Pattern?  
- Classifying patterns  
- Pattern Taxonomy  
- Singleton pattern  
- Factory Patterns  |

| Week #3 | Monday  
Dec. 12  
**Session 5: Python Design Patterns II**  
- Façade  
- Proxy  
- Decorator  
- Adapter  
- Observer  
- Model View Controller (MVC)  

| Thursday  
Dec. 15:  
**Session 6: Case Study for different Design patterns**  
- Exercises  
- Case studies  
- Testing Object-Oriented Programs  |