**Curriculum Plan (ODD SEM 2025): B.Sc. (H) Mathematics I Year (Semester I)**

**Paper SEC: Essentials of Python**

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| **Dr. Tajender Kumar**Assistant ProfessorDepartment of MathematicsKalindi College (University of Delhi)Delhi- 110008Mobile: +91 7417837644**E- mail**: tajenderkumar@kalindi.du.ac.in  |  | **Marks Distribution**  | **Theory** |   |
| **Practical** | 80 Marks |
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| **Classes Assigned** | **Practical** | 4 Practical per week |
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| **References** |  | * "Starting Out with Python plus My Programming Lab with Pearson eText -- Access Card Package (3rd Edition) Tony Gaddis ISBN-13: 978-0133862256".
* Python Crash Course: A Hands-On, Project-Based Introduction to Programming (2nd Edition).
* Head-First Python: A Brain-Friendly Guide (2nd Edition) by Paul Barry.
* Learn Python the Hard Way: 3rd Edition  by Zed A. Shaw.
* Python Programming: An Introduction to Computer Science (3rd Edition) by John M. Zelle.
* Python Cookbook: Recipes for Mastering Python 3 (3rd Edition) by Brian Jones and David Beazley
* <https://docs.djangoproject.com/> 
* Introduction to Programming using Python by Y. Daniel Liang. Publisher Pearson
* Taneja, S., Kumar, N. Python Programming- A modular Approach,

 Pearson Education India, 2018.* Balaguruswamy E., Introduction to Computing and Problem Solving using Python, 2nd edition, McGraw Hill Education, 2018
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|  | **Week** | **Topics** |  |
|  | **Beginning/1st week with 2 days** **(**01-02,04-09AUG) | **Python Program Flow**Indentation, The If statement and its’ related statement, An example with if and it’srelated statement, The while loop, The for loop, The range statement, Break &Continue,Assert, Examples for looping |  |
|  | **2nd week (**11-16 AUG) | **Functions& Modules**Create your own functions, Functions Parameters, Variable Arguments, Scope of a Function, Function Documentations, Lambda Functions& map, n Exercise with functions, Create a Module, Standard Modules |  |
|  | **3rd week (**18-23 AUG) | **Functions& Modules**Create your own functions, Functions Parameters, Variable Arguments, Scope of a Function, Function Documentations, Lambda Functions& map, n Exercise with functions, Create a Module, Standard Modules |  |
|  | **4th week (**25-30 AUG) | **Classes In Python**New Style Classes, Creating Classes, Instance Methods, Inheritance, Polymorphism,Exception Classes & Custom Exceptions**Generators and iterators**Iterators, Generators, The Functions any and all, With Statement, Data Compression |  |
|  | **5th week (**01-06 SEP) | **Data Structures**List Comprehensions, Nested List Comprehensions, Dictionary Comprehensions.Functions, Default Parameters, Variable Arguments, Specialized Sorts |  |
|  | **6th week (**08-13 SEP) |  **Python SQL Database Access**Introduction, Installation, DB Connection, Creating DB Table, INSERT, READ,UPDATE, DELETE operations, COMMIT & ROLLBACK operation, handling Errors |  |
|  | **7th week (**15-20 SEP) | **Date and Time**Sleep, Program execution time, more methods on date/time,  |  |
|  | **8th week (**22-27 SEP) | Filter, Map, Reduce, Decorators, Frozen set, Collections |  |
|  | **9th week (**29 SEP-04 OCT) | **Threads ESSENTIAL**Class and threads, Multi-threading, Synchronization, Treads Life cycle, use cases |  |
|  | **10th week**. (06-11 0CT) | **Threads ESSENTIAL**Class and threads, Multi-threading, Synchronization, Treads Life cycle, use cases |  |
|  | **11th week (**13-18 0CT) | **DJANGO**Django Overview, Django Installation, Creating a Project, Usage of Project in depthDiscussion, Creating an Application, Understanding Folder Structure, Creating a HelloWorld Page, Database and Views, Static Files and Forms, API and Security |  |
|  | **12th week (**20-25 OCT) | **DJANGO**Django Overview, Django Installation, Creating a Project, Usage of Project in depthDiscussion, Creating an Application, Understanding Folder Structure, Creating a HelloWorld Page, Database and Views, Static Files and Forms, API and Security |  |
|  | **13th week (**27-01 NOV) | **DJANGO**Django Overview, Django Installation, Creating a Project, Usage of Project in depthDiscussion, Creating an Application, Understanding Folder Structure, Creating a HelloWorld Page, Database and Views, Static Files and Forms, API and Security |  |
|  | **14th week (**03-08 NOV) | Revision |  |
|  | **15th week** (10-15 NOV) | Revision |  |
|  | **16th week with additional 3 Days** (17-22, 24-26 NOV) | Revision |  |
| Dispersal of classes, preparation leave and practical examination begin- 27 November, 2025. |