**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 Professor  Department of Mathematics  Kalindi College (University of Delhi)  Delhi- 110008  Mobile: +91 7417837644  **E- mail**: [tajenderkumar@kalindi.du.ac.in](mailto: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 | | | | |
|  | **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’s  related 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 depth  Discussion, Creating an Application, Understanding Folder Structure, Creating a Hello  World 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 depth  Discussion, Creating an Application, Understanding Folder Structure, Creating a Hello  World 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 depth  Discussion, Creating an Application, Understanding Folder Structure, Creating a Hello  World 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. | | | | | | |