SECOND YEAR OF BACHELOR OF SCIENCE MINOR PHYSICS REVISED SYLLABUS ACCORDING TO CBCS NEP2020

SEMESTER- IV
W.E.F. 2024-2025

Recommended by the Board of Studies in PHYSICS
And
Approved by the Academic Council

Devrukh Shikshan Prasarak Mandal's
Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh.
Tal.Sangmeshwar, Dist. Ratnagiri-415804, Maharashtra, India

Academic Council Item No: _____

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangmeshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Bachelor of Science
Name of the Department	:	Physics
Name of the Class	:	Second Year
Semester	:	Fourth
Paper	:	I
No. of Credits	:	02
Title of the Course	:	**Advanced Python and Introduction to Django**
Course Code	:	S407PHT
Name of the Vertical in adherence to NEP 2020	:	Minor
Eligibility for Admission	:	
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	UG
Pattern of Marks Distribution for TE and CIA	:	60:40
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2024-2025
Ordinances /Regulations (if any)		

Syllabus for Second Year of Bachelor of Science

(With effect from the academic year 2024-2025)

SEMESTER - IV **Paper No.– Minor(CS) – I**

Course Title: Advanced Python and Introduction to Django **No. of Credits - 02**

Type of Vertical: Minor **COURSE CODE: S407PHT**

Learning Outcomes Based on BLOOM's Taxonomy:

After completing the course, the learner will be able to…		
Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CLO-01	Understand	To understand APIs and RESTful APIs.
CLO-02	Apply	To use advanced python concepts in programs.
CLO-03	Apply	To implement CRUD operations using python
CLO-04	Understand	To understand the django framework in general
CLO-05	Apply	To implement django views
CLO-06	Apply	To implement the MVT for a basic site using django

COURSE CONTENT			
Module	**Content**	**Credits**	**No. of Lectures**
1	**Python concepts** – argument vs parameter, positional & keyword arguments, *args, *kwargs, python lambdas, callables, scopes, closure, decorators, modules, packages, namespaces, sequences, slicing, iterators, iterables, itertools, generators, arrays, dictionaries, sets, serialization & deserialization, OOP-Classes methods, attributes & objects, init function, constructor, inheritance, in-built class functions and attributes, Multi-level inheritance, multiple inheritance, method overriding, data abstraction, encapsulation & polymorphism. Special Methods, Single Descriptors, Python Regular Expressions, Virtual Environments, working with APIs, RESTful APIs, request library. **Database handling in python (postgrsql)** Database connections, CRUD operations in sqlite, mysql & postgresql	**01**	**15**
2	**Basic Concepts** - Backend, Web Framework, HTTP protocol, History **Structure of django** – MVT, url dispatcher, Django Project Structure, Sites and Apps, Shared Config, Minimal Django Layout, Using manage.py, Django web server, starting a project URL dispatcher, **Django Views** – What's a view, generic views, custom views **Django Templating** - Template System & Language (DTL), logic in templates, staticfiles, variable lookups, inheritance, filters, escaping HTML **Django Models** – setting up models, migrations, Querying Models, querysets, chaining filters, slicing querysets **Forms** - Overview, GET & POST, Form class, processing form, widgets, validations, **Admin interface** – Setting up, running admin site	**01**	**30**
	Total	**02**	**45**

References:

- https://docs.djangoproject.com/en/5.0/
- Andrew Pinkham Django Unleashed
- William S. Vincent Django for Beginners
- Aidas Bendoraitis , Jake Kronika Django 3 Web Development Cookbook

Required Previous Knowledge

Basic Computer Knowledge would be beneficial but not essential.

Access to the Course

The course is available for all the students admitted for Bachelor of Computer Science as a Minor. Students seeking admission to other disciplines may select the course as a minor considering the terms and conditions laid down by the University of Mumbai, the Government of Maharashtra, and the college, from time to time.

Forms of Assessment

The assessment of the course will be of Diagnostic, Formative and Summative type. At the beginning of the course diagnostic assessment will be carried out. The formative assessment will be used for the Continuous Internal Evaluation whereas the summative assessment will be conducted at the end of the term. The weightage for formative and summative assessment will be 60:40. The detailed pattern is as given below.

Term End Evaluation (30 Marks)
Question Paper Pattern
Time: 1 hr 15 min

Question No.	Unit/s	Question Pattern	Marks
Q.1	All	Fill in the Blanks	
Q.2	All	Theory questions (any five out of eight)	
Q.3	All	Find the output (any five out of eight)	
Q.4	All	Programming exercises (any five out of eight)	
	Total		**30**

Internal Evaluation (20 Marks)

No.	Description	Marks
1	Mid Term Examination	
2	Classroom Performance based on self-study	
3	Assignments	
	Total	**20**

Grading Scale

The grading scale used is O to F. Grade O is the highest passing grade on the grading scale, and grade F is a fail. The Board of Examinations of the college reserves the right to change the grading scale.

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Name of the Parent University	:	University of Mumbai

Name of the Programme	:	Bachelor of Science
Name of the Department	:	Physics
Name of the Class	:	Second Year
Semester	:	Forth
Paper	:	II
No. of Credits	:	02
Title of the Course	:	**Python & Django Practicals**
Course Code	:	S408PHP
Name of the Vertical in adherence to NEP 2020	:	Minor
Eligibility for Admission	:	
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	UG
Pattern of Marks Distribution for TE and CIA	:	60:40
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2024-2025
Ordinances /Regulations (if any)		

Syllabus for Second Year of Bachelor of Science

(With effect from the academic year 2024-2025)

SEMESTER - IV **Paper No.– Minor(CS) – II**

Course Title: Python & Django Practicals **No. of Credits - 02**

Type of Vertical: Minor **COURSE CODE: S408PHP**

Learning Outcomes Based on BLOOM's Taxonomy:

After completing the course, the learner will be able to…		
Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CLO-01	Understand	To understand various concepts in advanced python
CLO-02	Apply	To demonstrate advanced python concepts
CLO-03	Apply	To setup a basic django project
CLO-04	Apply	To create custom views in django
CLO-05	Apply	To setup django templates effectively
CLO-06	Create	To create a database backed site using django

COURSE CONTENT

1. Python Practicals – Functions
2. Python Practicals – Iterators, Generators
3. Python Practicals – Dictionaries, sets, JSON, regex
4. Python Practicals - OOP
5. Python Practicals – Databases – CRUD operations
6. Django installation, setup and minimal working site
7. Study of sample Django projects/apps from github – seminar / presentation
8. Django models - Using models, migrations
9. Django Views – Generic views
10. Django views – Custom views
11. Django Templates – using templates, DTL
12. Django Templates - inheritance
13. Django models – querying, querysets
14. Django forms – creating, processing, modelforms
15. Django practicals – validations, staticfiles
16. Bootstrap and jquery
17. Project

References:

- https://docs.djangoproject.com/en/5.0/
- Andrew Pinkham Django Unleashed
- William S. Vincent Django for Beginners
- Aidas Bendoraitis , Jake Kronika Django 3 Web Development Cookbook

Access to the Course

The course is available for all the students admitted for Semester – IV of Bachelor of Computer Science as a Minor.

Forms of Assessment

The assessment of the course will be of Diagnostic, Formative and Summative type. At the beginning of the course diagnostic assessment will be carried out. The formative assessment will be used for the Continuous Internal Evaluation whereas the summative assessment will be conducted at the end of the term. The weightage for formative and summative assessment will be 60:40. The detailed pattern is as given below.

Sr. No.	Description	Marks
1	Performance in regular Practicals / Project work	20
2	Practical Examination	15
3	Project Presentation	10
4	Viva	05
	Total	**50**

Grading Scale

The grading scale used is O to F. Grade O is the highest passing grade on the grading scale, and grade F is a fail. The Board of Examinations of the college reserves the right to change the grading scale.