



**SECOND-YEAR OF BACHELOR OF ARTS
OPEN ELECTIVE COURSE REVISED SYLLABUS
ACCORDING TO CBCS NEP2020**

**COURSE TITLE: VECTOR ANALYSIS IN Q-GIS
SEMESTER-III, W.E.F. 2024-2025**

**RECOMMENDED BY THE BOARD OF STUDIES IN GEOGRAPHY
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: 03

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 Arts
Name of the Department	:	Geography
Name of the Class	:	Second Year
Semester	:	Third
No. of Credits	:	02
Title of the Course	:	Vector Analysis in Q-GIS
Course Code	:	GEOE201
Name of the Vertical in adherence to NEP 2020	:	OPEN ELECTIVE COURSE
Eligibility for Admission	:	Any student from the commerce and science faculty who completed an open elective course on the Basics of Q-GIS is eligible to be admitted for the course.
Passing Marks	:	40%
Mode of Assessment	:	Summative
Level	:	UG
Pattern of Marks Distribution for TE and CIA	:	NA
Status	:	NEP-CBCS
To be implemented from the Academic Year	:	2024-2025
Ordinances /Regulations (if any)	:	

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Syllabus for Open Elective Course

(With effect from the academic year 2024-2025)

SEMESTER-III

COURSE CODE: GEOE201

Course Title: Vector Analysis in Q-GIS

No. of Credits - 02

Type of Vertical: Open Elective Course

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	Remember	Fundamentals of vector database.
CLO-02	Understand	Understand the fundamentals of vector analysis in Q-GIS.
CLO-03	Apply	Apply the vector analysis technique for spatial analysis.
CLO-04	Analyze	Analyze the different tools available in Q-GIS for vector analysis.
CLO-05	Evaluate	Evaluate the outputs of vector analysis in Q-GIS.
CLO-06	Create	Create an analytical map using the vector analysis techniques in Q-GIS software.

Syllabus for Open Elective Course

(With effect from the academic year 2024-2025)

SEMESTER-III

COURSE CODE: GEOE201

Course Title: Vector Analysis in Q-GIS

No. of Credits - 02

Type of Vertical: Open Elective Course

COURSE CONTENT			
Module No.	Content	Credits	No. of Hours
1	<p>Geoprocessing and Geometry Tools in Q-GIS</p> <p>Geoprocessing Tools:</p> <ul style="list-style-type: none"> ○ Buffer Analysis ○ Clip ○ Convex Hull ○ Difference ○ Dissolve ○ Intersection ○ Symmetrical difference ○ Union ○ Estimate Selected Polygons <p>Geometry Tools</p> <ul style="list-style-type: none"> ○ Centroid ○ Collect Geometrics ○ Extract Vertices ○ Multipart to Single part ○ Polygon to line ○ Line to polygon ○ Check validity ○ Add geometry attributes 	01	30
2	<p>Analysis and Research Tools</p> <p>Analysis Tools</p> <ul style="list-style-type: none"> ○ Count point in polygon ○ Line Intersections ○ Mean Coordinates 	01	30

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	<ul style="list-style-type: none"> ○ Nearest Neighbor Analysis ○ Sum Line Lengths ○ Basic Statistics for Field Calculator ○ Distance Matrix ○ List Unique Values <p>Research Tools</p> <ul style="list-style-type: none"> ○ Create Grid ○ Extract Layer Extension ○ Random points in extension ○ Random points in polygons ○ Random points on lines ○ Select by Location ○ Select within distance ○ Random points in Layer Bounds ○ Random points inside the polygons ○ Random Selection ○ Random selection within a subset ○ Regular Points 		
	Total	02	60

Required Previous Knowledge

The learner should know the Basics of Q-GIS.

Access to the Course

Any student from the commerce and science faculty who completed an open elective course on the Basics of Q-GIS is eligible to be admitted for the course.

Methods of Assessment:

Vocational skill Courses, Skill Enhancement Courses and courses having laboratory sessions shall be assessed at the end of each semester.

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.

References:

1. Q-GIS Manual
2. Peter A. Burrough and Rachael A. McDonnell, 2011, Principles of Geographic Information Systems, Oxford University Press.

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3. Ian Heywood, Sarah Cornelius, and Steve Carver, An Introduction to Geographic Information System, 2010, third edition, Pearson Education Ltd.
4. David O' Sullivan and David J. Unwin, 2010, Geographic Information analysis, second edition, John Wiley & Sons.
5. Paul a. Longley, Michael F. Goodchild, David J. Maguire, David W. Rhind, 2011, Geographic Information Systems and Science, third edition, John Wiley & Sons.
6. John R. Jenson and Ryan R. Jensen, 2013, Introductory Geographic Information system, Pearson Education.