Estd. 1962
NAAC 'A' Grade

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फॅक्स : ००९१-०२३१-२६९१५३३ व २६९२३३३.e-mail:bos@unishivaji.ac.in

SU/BOS/Science/00323 **Date: 16/09/2021**

To,

The Principal, All Concerned Affiliated Colleges/Institutions Shivaji University, Kolhapur	The Head/Co-ordinator/Director All Concerned Department (Science) Shivaji University, Kolhapur.

Subject: Regarding syllabi of Value Added programme under The Faculty of Science and Technology.

Sir/Madam,

With reference to the subject mentioned above, I am directed to inform you that the University authorities have accepted and granted approval to the syllabi Value Added Course under the Faculty of Science and Technology.

	Value Added Course
1.	**Geography**
	Certificate Course in Soil Testing and Water Analysis

This syllabi and equivalence shall be implemented from the academic year 2021-2022 onwards. A soft copy containing the syllabus is attached herewith and it is also available on university website **www.unishivaji.ac.in**

You are, therefore, requested to bring this to the notice of all students and teachers concerned.

Thanking you,

Yours faithfully,

By Registrar

Copy to:

1	The Dean, Faculty of Arts & Fine Arts	7	P.G.Seminar Section
2	Director, Board of Examinations and Evaluation	8	Computer Centre
3	The Chairman, Respective Board of Studies	9	Affiliation Section (U.G.)
4	B.Sc. Exam	10	Affiliation Section (P.G.)
5	Eligibility Section	11	P.G.Admission Section
6	Appointment Section	12	

SHIVAJI UNIVERSITY, KOLHAPUR
DEPARTMENT OF GEOGRAPHY
(Faculty of Science and Technology)

SYLLABUS FOR VALUE ADDED COURSE-
For M.A./M.Sc. Geography

Course Name:- Certificate Course in Soil Testing and Water Analysis

Course Objectives:

1. To determine the basic concepts of soils in the field of Geography.
2. To determine the physical and chemical properties of soil and water samples.
3. To study the soils and environmental pollution.
4. To develop employability skills and competencies to serve the job requirements in the field of Soil and Agricultural Sectors.

Course Outcomes:

1. To understand the concepts and principles of soil formation and its significance for plant growth .
2. To enable the students to realize the Soil related and environmental problems.
3. To educate the student to determine the quality of Soil and water.
4. Understand the awareness about Soil and Water conservation.

Course Guidelines and other details:

Title of the Value Added Course: Certificate Course in Soil Testing and Water Analysis.

Course Coordinator : Prof. (Dr.) Jagdish B. Sapkale

Year of Implementation: Course syllabus will be implemented from academic year 2021-22.

Programme Duration & Hours : The Course will be conducted after the completion of semester III of M.A./M.Sc. programme of Geography.

Theory and Practical Lectures : Total **30** hours.

Intake: The maximum intake for the Course will be 20 seats.

Content of the Value Added Course: Certificate Course in Soil Testing and Water Analysis

Sections	Topic	Total Hours
Section- I (Theory)	Concepts of Soils, Mineral versus Organic Soils, Origins of Soils, Introduction to important soil elements and Ions, Soil formation, Soil profile & Horizons, Soil forming processes and factors, Physical properties of soil: Soil texture, Soil Structure, Soil:- moisture, colour, Particle density and Bulk density, porosity and permeability, Soil Colloids and chemical properties: Ion exchange, Cation exchange, Clays and Humus, Some Soil pollutants, Soil conservation, Introduction to Water analysis and pollutants.	12
Section- II (Practical)	**Soil Testing and Analysis:** • Field sample collection and preparation. • Analysis of Soil morphology and Soil colour • Particle-size distribution analysis. • Determination of Soil textural classes. • Stokes' Law of Settling Velocities. • Calculation of Pore space percentage. • Determination of soil pH and electrical conductivity - EC • Determination of nutrient content (NPK) of soil. • Determination of Calcium Carbonate ($CaCO_3$) • Determination of selected heavy metals from soil samples.	12
Section- III (Practical)	**Water Analysis:** • Collection of Water Samples from contaminated sites. • Determination of pH using pH Meter . • Measurement of Electrical Conductivity - EC. • Determination of salinity using Salt Meter. • Determination of turbidity.	06
	Total Hours	**30**

Reference Books:

1. Bennet, Hugh H. , Soil Conservation, McGraw Hill, New York.
2. Brady, N. C., and Weil, R. R. (2008): The Nature and Properties of Soils, Prentice Hall, New Jersey.
3. Carter M.R. and E.G.Gregorich., 2007; Soil Sampling and methods of analysis, 2nd Ed.
4. Davis, J. and Freitas F., 1970, In Physical & Chemical Methods of Soil & Water Analysis,

FAO of United Nations, Rome, Soil Bulletin, 10, III-1 : 65-67.

5. Kadam, J. R., Shinde P. B., 2005, Practical Manual on Soil Physics – A method manual, Department of Agricultural Chemistry and Soil Science, P.G.I., Rahuri, P-29.

6. Singh, Dhyan, Chhonkar, P.K. and Pande R.N., 1999, Assessment of Irrigation Water Quality in "Soil, Plant, Water Analysis" - A methods manual, Indian Agricultural Research Institute, Indian Council of Agricultural Research, New Delhi, 3 : 78-79.
