Programme	B.Sc. (Hons) Agriculture (Major: Soil Science)	Course Code	SS-306	Credit Hours	3(2-1)
Course Title	**SOIL SURVEY AND LAND EVALUATION**				

Course Introduction

Techniques used for survey and characterization of soil and their suitability for various uses are discussed. The students will be able to interpret the soil maps and delineate mapping units in the field and be able to use the concept of soil suitability and land use capability classes.

Learning Outcomes

1. Students will develop the ability to accurately read and interpret topographic maps, including identifying key symbols, features, and contour lines. They will also learn to calculate slope percentages, which is essential for understanding terrain and planning land use. Students will gain comprehensive knowledge of different types of
2. stereoscopes and their uses. They will learn the principles of stereoscopic vision and how to apply these techniques in soil survey and landform analysis.

	Course Content (Theory)	Assignments/Readings
Week 1	**Unit 1** 1.1. Soil and Landform 1.1.1. Introduction to soil and landforms	
Week 2	1.1.2. Basic concepts and definitions 1.1.3. Factors influencing soil formation	Summarize the key elements of topographic maps and their uses in land analysis. Provide examples of how slope percentage calculations impact land use decisions.
Week 3	1.1.4. Types of landforms and their characteristics 1.1.5. Relationship between soil and landform	
Week 4	**Unit 2** 2.1. Kinds and Levels of Soil Survey	Discuss the principles of stereoscopic vision and evaluate the advantages of different types of

	2.1.1. Overview of soil surveys 2.1.2. Different types of soil surveys (detailed, semi-detailed, reconnaissance, exploratory)	stereoscopes in soil surveys.
Week 5	2.1.3. Levels of soil survey (local, regional, national) 2.1.4. Purpose and scope of each survey level	
Week 6	**Unit 3** 3.1. Aerial Photographs and Their Interpretation 3.1.1. Introduction to aerial photography 3.1.2. Types and sources of aerial photographs	
Week 7	3.1.3. Techniques for interpreting aerial photographs 3.1.4. Applications in soil survey	
Week 8	**Unit 4** 4.1. Stereoscopic Vision Theory 4.1.1. Basic principles of stereoscopic vision 4.1.2. Use of stereoscopes in soil survey	Describe the procedures for effective field data collection and how to ensure accuracy and reliability in observations.
Week 9	4.1.3. Practice in stereoscopic viewing 4.1.4. Interpretation of stereoscopic images	
Week 10	**Unit 5** 5.1. Field Traverse Selection 5.1.1. Planning field traverses for soil survey 5.1.2. Criteria for selecting traverses	
Week 11	5.1.3. Methods for recording field observations 5.1.4. Practical exercises in field traverse selection	Write a critical review of how integrating data from different sources enhances landform and soil analysis.

Week 12	**Unit 6** 6.1. Purposes, Characteristics, and Identification of Mapping Units 6.1.1. Definition and purpose of mapping units 6.1.2. Characteristics of different mapping units	
Week 13	6.1.3. Techniques for identifying mapping units in the field 6.1.4. Case studies and examples	
Week 14	**Unit 7** 7.1. Mapping Legends, Mapping, and Taxonomic Units 7.1.1. Creation and use of mapping legends 7.1.2. Relationship between mapping and taxonomic units 7.1.3. Practical exercises in developing mapping legends	Prepare a paper comparing different types of stereoscopes, including their functionalities, advantages, and specific applications in soil surveying. Support your discussion with examples and case studies.
Week 15	**Unit 8** 8.1. Interpretation and Use of Soil Survey Reports 8.1.1. Structure and components of soil survey reports 8.1.2. Techniques for interpreting soil survey data 8.1.3. Applications of soil survey reports in land use planning	
Week 16	**Unit 9** 9.1. Land Capability and Suitability Classification 9.1.1. Introduction to land capability classification 9.1.2. Criteria and methods for land capability assessment	Develop a project paper integrating data from topographic maps, stereoscopic images, aerial photographs, and field observations. Discuss how the integration of these data

	9.1.3. Introduction to land suitability classification 9.1.4. Criteria and methods for land suitability assessment	sources provides a more complete understanding of a specific land area.
Course Content (Practical)		**Assignments/Readings**
Week 1	**Unit 1** 1. 1. Reading of Topographic Maps and Calculation of Slope Percentage 1. Introduction to topographic maps 2. Symbols and features on topographic maps	Practical notebook completion
Week 2	3. Techniques for reading and interpreting topographic maps 4. Contour lines and elevation	
Week 3	5. Calculation of slope percentage 6. Methods and formulas for slope calculation	Practical notebook completion
Week 4	7. Practical exercises in reading topographic maps and calculating slopes	
Week 5	**Unit 2** 2.1. Stereoscope: Types and Uses 2.1.1. Introduction to stereoscopes	Practical notebook completion
Week 6	2.1.2. Basic principles of stereoscopy	

	2.1.3. Types of stereoscopes (pocket, mirror, and electronic stereoscopes)	
Week 7	2.1.4. Features and functionalities of each type 2.1.5. Uses of stereoscopes in soil survey and landform analysis	Practical notebook completion
Week 8	2.1.6. Techniques for effective stereoscopic viewing	
Week 9	**Unit 3** 3.1. Interpretation of Aerial Photographs 3.1.1. Introduction to aerial photography 3.1.2. Types and sources of aerial photographs	
Week 10	3.1.3. Techniques for interpreting aerial photographs 3.1.4. Identifying landforms and soil types from aerial images	Practical notebook completion
Week 11	3.1.5. Integration of aerial photographs with topographic maps and stereoscopic images 3.1.6. Practical exercises in aerial photograph interpretation	
Week 12	3.1.7. Case studies and examples 3.1.8. Applications in soil survey and land use planning	
Week 13	**Unit 4** 4.1. Field Visits 4.1.1. Planning and preparation for field visits	Practical notebook completion

	Safety and logistics	
Week 14	4.1.2. Conducting field visits: data collection and observation techniques 4.1.3. Hands-on practice with topographic maps, stereoscopes, and aerial photographs	
Week 15	4.1.4. Analysis and interpretation of field data 4.1.5. Comparing field observations with map and photograph data	Practical notebook completion
Week 16	4.1.6. Review and discussion of field visit findings 4.1.7. Final project presentations and assessments	

Textbooks and Reading Material

1. Burt, R. (ed.). 2004. Soil Survey Laboratory Methods Manual Soil Survey Investigations Report No. 42, Version 4.0. USDA, Washington, DC, USA.
2. Lagacherie, P., A. McBratney and M. Voltz. 2007. Digital Soil Mapping – An Introductory Perspective. Elsevier Publishers, Amsterdam, The Netherlands.
3. Soil Survey Division Staff. 2002. Soil Survey Manual. USDA, University Press of Pacific, Washington, DC, USA.

Teaching Learning Strategies

1. Multimedia
2. White Board
3. Group discussion
4. Quiz/Assignments
5. Demonstration/Activity

Assignments: Types and Number with Calendar

1. Summarize the key elements of topographic maps and their uses in land analysis. Provide examples of how slope percentage calculations impact land use decisions.
2. Discuss the principles of stereoscopic vision and evaluate the advantages of different types of stereoscopes in soil surveys.
3. Describe the procedures for effective field data collection and how to ensure accuracy and reliability in observations.

4. Write a critical review of how integrating data from different sources enhances landform and soil analysis.
5. Prepare a paper comparing different types of stereoscopes, including their functionalities, advantages, and specific applications in soil surveying. Support your discussion with examples and case studies.
6. Develop a project paper integrating data from topographic maps, stereoscopic images, aerial photographs, and field observations. Discuss how the integration of these data sources provides a more complete understanding of a specific land area.
7. Practical notebook completion

Assessment

Sr. No.	Elements	Weightage	Details
	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.