



# AMITY UNIVERSITY

— UTTAR PRADESH —

## COURSE CURRICULUM

**Course Title: Photogrammetry & Image Interpretation**

**Course Code:**

**Credit Units: 4**

**Course Level: PG**

L	T	P/S	SW/F W	TOTAL CREDIT UNITS
2	1	1	-	4

**Course Objectives:** To introduce basics and concepts of photogrammetric, aerial photography and mapping from aerial photographs using different types of stereo plotters. Introduction to the principles and practices of aerial photograph and photo interpretation for use in environmental monitoring, and measurements of structural parameters.

**Pre-requisites:** Student should have basic of cartography and remote sensing

**Student Learning Outcomes:** On successful completion of this course, students will be able to:

- Demonstrate the understanding of properties and characteristics of aerial photographs.
- Illustrate the various types of Photogrammetric techniques and measurements
- Demonstrate knowledge and understanding of Digital Photogrammetry

**Course Contents/Syllabus:**

	Weightage (%)
<b>Module I Introduction</b>	10 %
<b>Descriptors/Topics</b> Historical development, introduction and definition of photogrammetric terms Fundamental concepts of flight planning Types of photograph	

<b>Module II Photo Interpretation</b>	<b>10 %</b>
<b>Descriptors/Topics</b> Fundamentals and elements of visual photo interpretation, its advantages, Satellite image vs. aerial photo interpretation, development of interpretation keys. Mapping terrain elements: landuse-landcover, drainage and physiographical features,	
<b>Module III Analogue Photogrammetry</b>	<b>20 %</b>
<b>Descriptors/Topics</b> Terrestrial Photogrammetry: principles and applications merits and demerits, Types of photographs, Vertical and Tilted photograph: conditions to produce major errors, photo mosaics, Maps compared to mosaics, advantages and disadvantages, types of mosaics construction,	
<b>Module IV Parallax and Stereoscopic Measurements</b>	<b>20 %</b>
<b>Descriptors/Topics</b> Parallax, stereoscopic vision, overlaps in stereo pairs, principles of floating marks, Parallax bar and types, measurement of absolute and differential parallax, Parallax height measurement, correction to measure parallaxes – contouring from stereometric heights.	
<b>Module V Digital Photogrammetry</b>	<b>20 %</b>
<b>Descriptors/Topics</b> Basic Concepts Generation of Digital Photogrammetric Images Recent trends in its application, automated aerial triangulation: concepts, solutions, analysis, Photogrammetry work-stations, review of available software.	
<b>Module V I Digital Photogrammetry Techniques</b>	<b>20 %</b>
<b>Descriptors/Topics</b> Digital Ortho-photos, mosaicing, colour balancing Feature extraction- points, lines and regions Digital Terrain Model, automatic DTM acquisition Limitations, quality checks and interactive control	

**Pedagogy for Course Delivery:** : This course is designed to deliver in both theory and practical mode about introduction to the fundamentals of aerial photography and its measurements. Class lectures will focus on a range of concepts and techniques key to understanding of types of Photogrammetry including digital Photogrammetry. Several hands-on computer labs to gain experience using the image processing software.

**Lab/ Practicals details:**

**List of Experiments:**

- Depth perception (3D view) using pocket stereoscope
- Use of parallax bar and measurement of distance and height
- Stereoscopic vision and photo interpretation of B/W aerial photograph
- Stereoscopic vision and photo interpretation of colour aerial photograph
- Digital Photogrammetry
- Digital elevation modeling / Contouring
- Interpretation of Toposheet
- Photo interpretation of aerial photographs
- Image interpretation of satellite images and FCCs

**Assessment/ Examination Scheme:**

Theory L/T (%)	Lab/Practical/Studio (%)	End Term Examination
70 %	30 %	70 %

**Theory Assessment (L&T):**

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	Class Test	Home Assignment	Presentation	Attendance	
Weightage (%)	10	05	10	05	70

**Lab/ Practical/ Studio Assessment:**

	Continuous Assessment/Internal Assessment			End Term Examination			
Components (Drop down)	Class Test (Practical Based)	Attendance	Mid Term Viva	Major Lab Exercises	Minor	Practical Record	Viva
Weightage (%)	15	05	10	35	15	10	10

**Text & References:**

- P.R. Wolf: , 2000 (2<sup>nd</sup>) Ed, Elements of Photogrammetry, McGraw Hill Ins
- Rampal, K.K., (2004), Textbook of Photogrammetry, John-Wiley & Sons.
- F.M. Moffit: (1980), Photogrammetry, International Text Book Co.
- M.M. thompson , 2004, Mannual of Photogrammetry, American Society of Photogrammetry falls Church.
- Drury, S.A., (2004), “Image Interpretation in Geology, Publisher: - Chapman and Hall, London, UK.
- Manual of Photogrammetry Vol. 1 and 2, (2004) American Society of Photogrammetry and Remote sensing; Fall Church, USA.
- Shiv Narain panday: (1987) ,Principles and Application of Photogeology, Parentice Hall Inc