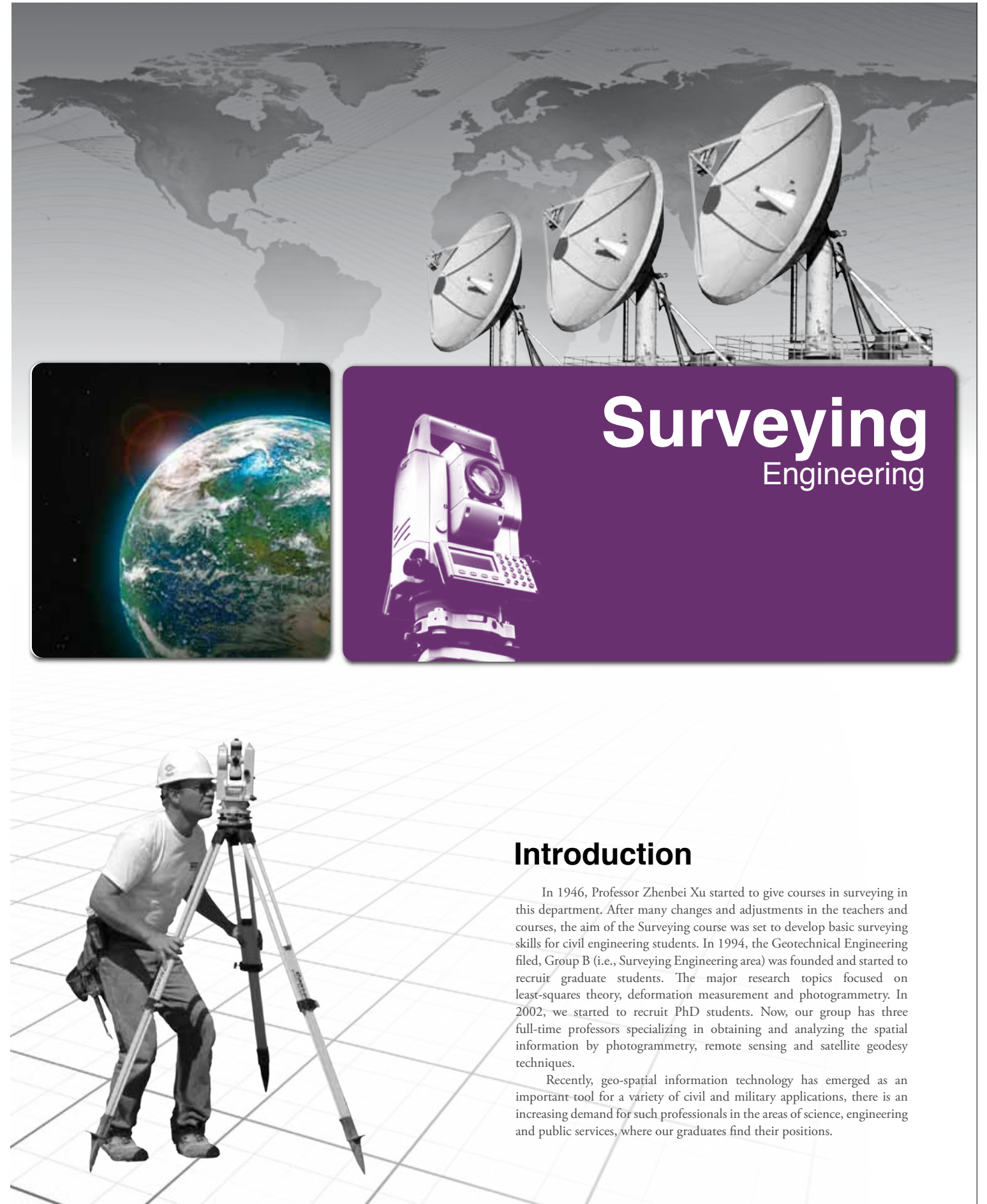


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Surveying Engineering



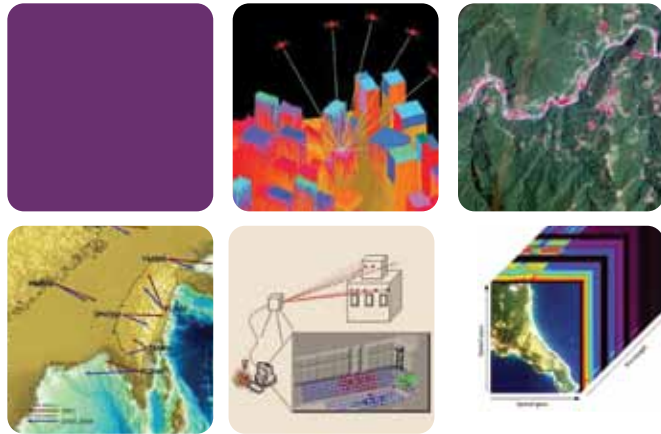
Surveying Engineering

Introduction

In 1946, Professor Zhenbei Xu started to give courses in surveying in this department. After many changes and adjustments in the teachers and courses, the aim of the Surveying course was set to develop basic surveying skills for civil engineering students. In 1994, the Geotechnical Engineering filed, Group B (i.e., Surveying Engineering area) was founded and started to recruit graduate students. The major research topics focused on least-squares theory, deformation measurement and photogrammetry. In 2002, we started to recruit PhD students. Now, our group has three full-time professors specializing in obtaining and analyzing the spatial information by photogrammetry, remote sensing and satellite geodesy techniques.

Recently, geo-spatial information technology has emerged as an important tool for a variety of civil and military applications, there is an increasing demand for such professionals in the areas of science, engineering and public services, where our graduates find their positions.

Surveying Engineering



Research Areas

The four research areas in this research group are: Spatial Information and Least-Squares Analysis, Photogrammetry, Satellite Geodesy and Remote Sensing.

The Spatial Information and Least-Squares Analysis research topics include Generalized Least Square Analysis and Application, Bayesian Statistics Applications in Surveying Engineering, Least-Squares Weighting and Application in Crust Deformation Studies, Kalman Filtering Applications in Survey Engineering and Total Least-Squares (TLS) in Coordinate System Studies.

The Photogrammetry research topics feature in Automation of Photogrammetry, 3D Object/Surface Reconstruction, and Mapping and Analysis of Geo-spatial Information.

The research topics in the Satellite Geodesy area include Modernization of Terrestrial Reference Frames, Quality Assessment and Optimization of GNSS Surveying, and High-Accuracy Strain Analysis.

The research topics in Remote Sensing area focus on Automation of Image Interpretation and Classification, Hyperspectral Image Analysis, Wavelet Applications in Geospatial Information, and Applications of Remote Sensing for Disaster Monitoring and Management.



Research Facilities

The equipment pieces in surveying instrument laboratory include:

- Automatic levels: (11 sets).
- High accuracy digital level: Topcon DL-101C (1 set)
- Electronic theodolites: (9 sets)
- Total stations: (9 sets)
- Laser theodolite: (1 set)
- Hand-held satellite navigation devices: (3 sets)
- Geo-image processing software: Geomatica, PhotoModeler
- Dual-frequency GNSS satellite positioning system: (RTK and VRS ready): (1 set)
- Workstation for GNSS data processing: (1 set)
- SmartStation: (1 set)

The group is currently committed to purchasing more digital image processing and satellite positioning software and related hardware equipment. In addition, the group has also established a Spatial Information Laboratory to support research, teaching and studying activities.



Faculty

Associate Professor Jen-Jer Jaw

Photogrammetry, Errors Theory, Geo-spatial data Acquisition and Analysis

Assistant Professor Professor Jen-Yu Han

Satellite Geodesy, Deformation Analysis, Time-variant Terrestrial Reference Frames, Adjustment and Analysis of Survey Network

Assistant Professor Pai-Hui Hsu

Remote Sensing, Wavelet Theory, Geographic Information System, Disaster Monitoring and Management

