Department of Remote Sensing & GIS

School of Earth and Environmental Science

Uttarakhand Open University

GUIDELINES FOR PREPARATION OF PROJECT/DISSERTATION SYNOPSIS

Programme: M.Sc. Geo-informatics | Semester: IV

1. General Instructions

1. The synopsis should present a clear work plan of the proposed research/project, including its objectives, methodology and expected outcomes.
2. The topic must be relevant to Remote Sensing, Geographic Information Systems (GIS), Geo-informatics or allied fields.
3. Learners are encouraged to select research problems that address real-world geographical, environmental, socio-economic or developmental issues.
4. The proposed study should have a clearly defined geographical area and research objectives.
5. The methodology should be scientifically appropriate and practically achievable within the available time and resources.
6. Learners must consult their respective project supervisors before finalizing the research topic.

2. Suggested Themes for Project/Dissertation

Learners may select their research topics from the following suggested themes:

A. Remote Sensing Applications

- Land Use/Land Cover (LULC) mapping using Sentinel-2 or Landsat satellite imagery.
- Change detection analysis using multi-temporal satellite data.
- Vegetation health assessment using NDVI, SAVI and other spectral indices.
- Land Surface Temperature (LST) mapping and Urban Heat Island analysis.
- Agricultural crop monitoring using satellite remote sensing.

- Forest cover assessment and monitoring.
- Water body mapping and monitoring using satellite imagery.

B. GIS and Spatial Analysis

- Site suitability analysis for urban development using GIS and AHP.
- Groundwater potential zone mapping using GIS techniques.
- Watershed delineation and morphometric analysis using DEM.
- Drainage density and drainage network analysis.
- Urban growth and spatial expansion analysis.
- Accessibility analysis of healthcare and educational facilities.
- Road network analysis using GIS.

C. Environmental and Natural Resource Management

- Landslide susceptibility mapping using GIS and Remote Sensing.
- Flood hazard zonation and risk assessment.
- Soil erosion risk assessment using RUSLE and GIS.
- Forest fire susceptibility mapping.
- Assessment of environmental degradation using satellite imagery.
- Climate change and its impact on land use and vegetation.
- Natural resource mapping and management using GIS.

D. Advanced Geospatial Techniques

- Machine learning-based LULC classification.
- GIS-based multi-criteria decision analysis (MCDA).
- Google Earth Engine applications in environmental monitoring.
- Digital Elevation Model (DEM)-based terrain analysis.
- Spatial modelling of environmental hazards.
- Integration of Remote Sensing, GIS and GPS for field-based studies.

Note: ***Topics other than those listed above may also be considered, provided they are relevant to the programme and approved by the project supervisor.***

3. Structure and Format of Synopsis

The synopsis should normally be 3–5 pages (excluding the cover page, if required), typed in the following format:

Particulars	Formatting
Paper size	A4
Font style	Times New Roman
Font size	12 pt
Main headings	14 pt, Bold
Subheadings	12 pt, Bold
Line spacing	1.5
Alignment	Justified
Margins	1 inch on all sides
Referencing style	APA (7th Edition)

4. Contents to be Included in the Synopsis

The synopsis must contain the following sections in the given sequence.

4.1 Title of the Proposed Study

- The title should be clear, concise and research-oriented.
- It should indicate the main subject, geographical area and major technique, wherever applicable.

Example:

"Land Use/Land Cover Change Detection Using Multi-Temporal Satellite Data: A Case Study of Haldwani, Uttarakhand."

4.2 Introduction

The introduction should provide the background and context of the proposed research.

It should include:

- General introduction to the selected research topic.

- Importance and relevance of the study.
- Application of Remote Sensing and GIS in the selected research area.
- Brief description of the geographical area.
- Research problem or knowledge gap that the study intends to address**.**

4.3 Statement of the Problem

- Clearly explain the geographical or environmental problem being investigated.
- Identify the major issues associated with the selected study area.
- Explain why the proposed research is necessary.

4.4 Objectives

Objectives should be specific, measurable and achievable.

Example:

Objectives:

1. To prepare Land Use/Land Cover maps using satellite imagery.
2. To identify and classify different LULC categories.
3. To analyse changes in different LULC categories over the selected period.
4. To calculate the area and percentage of each LULC category.
5. To examine the spatial pattern of land use changes.

4.5 Review of Literature

- Include a brief review of previously published research related to the selected topic.
- Refer to relevant research papers, books, reports and scientific publications.
- Mention the major findings and methodologies used in previous studies.
- Identify the research gap, wherever applicable.

4.6 Study Area

This section should briefly describe the geographical location of the proposed study area.

It should include:

- Name and location of the study area.
- Geographical coordinates (latitude and longitude).

- Location map of the study area.
- Physiographic and geographical characteristics.
- Relevant environmental or socio-economic characteristics.

4.7 Materials and Methodology

This is one of the most important sections of the synopsis. Learners should explain how the proposed study will be carried out.

4.8 References and Bibliography

- All research papers, books, reports and websites cited in the synopsis should be included in the reference list.
- References must follow a uniform APA (7th Edition) style.
- References should be arranged alphabetically by the surname of the first author.
- Only authentic and relevant sources should be included.

5. **General Instructions for Submission**

1. The synopsis must be prepared independently by the learner under the guidance of the assigned project supervisor.
2. The proposed topic and objectives must be finalized in consultation with the supervisor.
3. The synopsis should be original and free from plagiarism.
4. All maps, figures, tables and datasets must have appropriate titles and source information.
5. Satellite data sources, software and analytical techniques must be clearly mentioned.
6. The final synopsis must be duly signed by the learner and project supervisor.
7. The signed copy of the synopsis must be submitted through the prescribed university submission platform for evaluation.

Annexure I: Front/cover page

Land Use/Land Cover Change Detection Using Multi-Temporal Satellite Data: A Case Study of Haldwani, Uttarakhand

Synopsis

Submitted

to

partial fulfilment of the requirements
for the award of the degree

of

Master of Science

in

Geo-informatics

Submitted by

(Candidate name)

Enrolment No:

Under the Supervision of

(Supervisor Name)

Department of Remote Sensing & GIS,

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