Forest Remote Sensing BIP 2026

Erasmus+ Blended Intensive Programme

Hosted by Eskişehir Technical University, Institute of Earth and Space Sciences on Forest Remote Sensing.

📎 **Interest / Information Request Form**

At a Glance

Item	Details
Topic	Remote sensing fundamentals with a focus on forest applications (phenology, tree species, forest structure)
Credits	3 ECTS
Format	Blended: Virtual component + one-week intensive physical mobility
Teaching Language	English
Target Audience	**Students:** Senior undergraduate, MSc (early PhD upon agreement) in Remote Sensing, GIS, Forestry, Geography **Staff Members:** Remote Sensing, GIS, Forestry, Geography
Location (Physical Week)	Eskişehir, Türkiye – Eskişehir Technical University (ESTU)
Key Practical Assets	Satellite remote sensing; UAV (İHA) and laser scanning (TLS/MLS) applications for forest plots
Participant Capacity	18–25 students (depending on partner distribution and equipment capacity)

Important Dates (Tentative)

Phase	Date
Interest Form Deadline	1 May 2026
Virtual Component	May 2026
Physical Mobility Week	5 days in June 2026
Final Submission	End of July 2026

Program Phases

Phase 1 — Virtual Component (Online)

Format: Live online sessions + guided labs + team collaboration.

Planned session blocks:

- **RS Fundamentals (core lectures):**
    - Reflectance, radiometry, atmosphere; spatial/temporal/spectral resolution trade-offs
    - Optical pre-processing and QA/QC (cloud/shadow masking, compositing)
    - Introduction to SAR for forests (why/when Sentinel-1 helps)
- **Forests: Phenology + Tree Species (application lectures & demos):**
    - Time series features, seasonality, anomalies; SoS/PoS/EoS concepts
    - Species separability: phenology + spectral signatures + structure; mixed stands
- **Guest Seminars (partners / invited speakers):**
    - Forest health and climate stress
    - Disturbance & recovery (fire, storms, harvesting)
    - Forest structure and validation strategies
- **Project Clinics (team support):**
    - Project design, data management, validation plan, troubleshooting

Phase 2 — Preparatory Assignment (Remote Teamwork)

Teams (mixed universities) prepare:

- A one-page project plan (research question, AOI, datasets, methods, validation design)
- A baseline satellite product (phenology metric or preliminary species/composition map)
- A reproducible workspace (GEE script and/or Python notebook repository)

Phase 3 — Physical Mobility (One-Week Intensive)

Location: Eskişehir Technical University, Institute of Earth and Space Sciences + Field sites

Planned intensive week activities:

- **UAV (İHA) acquisition:** Flight planning, safety, sensor setup (RGB; multispectral/thermal if available), GCP/RTK workflow (if available)
- **Laser scanning:** Field protocol, scan registration basics, point-cloud QA/QC, occlusion management
- **Processing labs:** UAV photogrammetry → orthomosaic, DSM/DTM, canopy height model (CHM); point clouds → height percentiles, canopy cover proxies, vertical profiles, structural indices
- **Integration with satellite:** Phenology track (time series interpretation, mixed-pixel effects) and/or species track (training/validation refinement, confusion drivers, domain shift)
- **Final deliverables:** Map + figures + short technical note + team presentation

Learning Outcome: By the end of this BIP, you will be able to use remote sensing data and workflows to support practical forest monitoring tasks, moving from core concepts to application: selecting appropriate Earth observation and close-range sensing data, preparing and analyzing imagery and time series, interpreting forest dynamics such as seasonal change and variability, and producing clear, reproducible outputs (maps and short technical notes) that can be used in real-world contexts such as forest management, environmental reporting, and decision support.

Phase 4 — Wrap-up and Certification

Timeline: [DATE, e.g., within 2 weeks after the physical week]

Teams submit the final package and receive [certificate/grade transcript details].

Program Details

What You Will Produce (Deliverables)

Each team will submit:

- A final map product (phenology indicator or tree species/composition result)
- A 2–3 page technical note (data, methods, validation, limitations)
- A reproducible workflow (GEE script and/or Python notebook)
- A short presentation (8–10 minutes)

Tools and Software (Indicative)

Satellite datasets and platforms:

- Sentinel-2 (optical), Sentinel-1 (SAR), ancillary DEM/topography (as needed)
- Platforms: Google Earth Engine and/or Python (host will specify the primary track)

Practical processing:

- UAV photogrammetry suite: [e.g., Metashape / Pix4D / OpenDroneMap]
- Point-cloud tools: [e.g., CloudCompare / PDAL-based workflows]
- GIS: QGIS (optional)

Assessment and Credits (Indicative)

- **60%** Group project (map + technical note + reproducibility)
- **40%** Participation / lab notebook (QA/QC, documentation, teamwork)
- **Credits:** Awarded as 3 ECTS by Eskişehir Technical University under Erasmus+ mobility procedures.

Partner Universities and Eligibility

This BIP is open to students and staff from partner institutions with a valid Erasmus+ agreement and BIP participation arrangements.

How to join as a partner institution:

1. Contact your Erasmus+ office and confirm eligibility for BIP mobility funding.

2. Share your Erasmus+ institutional contact with the course coordinator (below).
3. Confirm the number of students/staff you expect to nominate.

Staff mobility: Teaching/training staff are welcome to participate in the physical week and (optionally) contribute a guest seminar during the virtual component.

Frequently Asked Questions (FAQ)

Will the online component be live or prerecorded?

Planned as live online meetings with interaction, short readings/videos, and guided labs.

How many online sessions are there?

Indicatively: 4 core lectures + 4 application/guest seminars + 2 project clinics (final schedule published after partner confirmation).

Is this for undergraduate or master's level?

Designed for senior undergraduate and MSc. Early PhD participation is possible if it fits partner rules.

Do students need prior remote sensing experience?

No—this course starts with fundamentals. Basic RS and GIS familiarity is helpful.

What about costs?

Participants typically cover travel/accommodation up front and are supported via Erasmus+ mobility grants through their home institution.

What should students bring?

If possible, a laptop capable of running QGIS and point-cloud viewers; however, we do have our own computer lab available.

Contact

Course Coordinator: Assoc. Prof. Dr. Gordana Kaplan

Affiliation: Eskişehir Technical University, Institute of Earth and Space Sciences

Email: gkaplan@eskisehir.edu.tr / kaplangorde@gmail.com

Erasmus+ Administrative Contact (Host):

Gülsüm Karaman

Email: ukaraman@eskisehir.edu.tr