BSc Programme – Forestry

FOR 326 Photogrammetry and Remote Sensing

Compulsory subject – in 5th /winter/ semester for Bulgarian students

ECTS credits – **4.5**   Ability to teach a foreign language – **English**

Syllabus in brief

I. Lectures:

1. Physical basis of Remote Sensing – sources of electromagnetic energy, SI radiometry units, reflectance of natural surfaces, atmospheric effects, spectral reflectance of vegetation.

2. Technical means for RS data acquisition – platforms, sensors – photographic and non-photographic.

3. Methods and techniques for RS data processing – computer assisted interpretation, digital image processing, cluster analysis and supervised image classification, vegetation indexes.

4. Photogrammetry – photogrammetric survey, photographic flying requirements, aerial photo camera, classification of aerial photographs, scale of the vertical aerial photo, flight plan.

5. Analysis of a single aerial photograph – central projection, interior and exterior orientation, coordinate systems, relationship between image and spatial coordinates, changes in the scale of the tilted photograph.

6. Deformations of the photographic image – linear tilt and elevation displacements, displacements due to the change of flight level.

7. Transformation of aerial photographs – graphical, optical-graphical and photomechanical rectification, differential rectification, aerial mosaics and photo plans.

8. Geodetic basis of aerial photographs – photo triangulation, graphic radial triangulation

9. Stereo photogrammetry – stereoscopic vision, geometry of aerial stereophotographs, stereoscopic model, stereoscopic measurements, parallax difference equation, orientation of a stereopair, stereo plotters.

10. Photo interpretation – interpretative features – direct, indirect and composite indicator – features, technical equipment, photo interpretation for forestry tasks.

II. Exercises:

1. Elementary measurements on aerial photographs.

2. Optical-graphical rectification of aerial photographs.

3. Stereoscopic viewing, elevation measurements by means of a stereometer.

4. Basic techniques in forest photo interpretation, measuring the mean height of forest stands.

5. Computer assisted interpretation of satellite images, cluster analyses, supervised classification, vegetation indexes.

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