Technology revolutions have driven the expectations of remote sensing and spatial technologies to an all-time high for a new generation of resource managers. Advances in computational technologies, visualization products, and sensor technologies have led to the development of unprecedented capabilities in remote sensing, global position systems, and geographic information systems. With the recent launches of commercial and governmental remote sensing satellites, as well as the development of aerial remote sensing instruments that provide advanced spectral and radar technologies, the industry is poised to develop operational remote sensing applications that fundamentally impact management of resources.

Mississippi State University has developed broad, multidisciplinary efforts in spatial technologies of many types, and is a leader among universities in education and outreach activities to prepare the next generation for utilizing these technologies. One of the primary limitations to the development of this industry is the need for a better-educated workforce that can understand and utilize the tools of these spatial technologies. Education in geospatial and remote sensing technologies is by nature multi-disciplinary; therefore, a certificate program that crosses departmental and college boundaries has been developed to address these needs. This certificate can thus serve the needs of undergraduate and graduate students with diverse backgrounds from a variety of disciplines.

Students may strategically assess which courses within their disciplinary academic program can be used for the certificate program, thus satisfying the needs of both and maximizing their educational experience. Non-traditional students may also receive the certificate in seeking professional credentials for career enhancement.
The certificate should represent a student’s mastery of basic GIS and Remote Sensing coursework. A minimum of 3 hours of coursework is required in each of these three areas:

- Geographic Information Systems
- Remote Sensing
- Spatial Positioning Technologies

9 hrs.

Students are required to complete additional 6 hours of coursework from a list of restricted electives for a total of 15 hrs. These electives are offered by several MSU departments. Due to the multi-disciplinary nature of this program, the Office of Academic Affairs is the resident office for admission and administration. Thus, the program is not focused on a single college or department. The program coordinator, appointed by the Provost, advises students seeking the GRS certificate, and assists departmental advisors. The coordinator is also responsible for conducting the necessary transcript audits and authorizing the awarding of certificates.

**Required Classes (9 hours)**

- GIS (one of the following)
  FO 4471/6471 and FO 4472/6472*
  GR 4303/6303
  WF 4253/6253**

- Remote Sensing (one of the following)
  ECE 4423/6423 (ABE/ECE/PSS 4483/6483)*
  FO 4451/6451 and FO 4452/6452
  GR 4333/6333*

- GPS (one of the following)
  FO 4313/6413 and FO 4311/6311*
  GR 3303*
  ABE 3513

**Geospatial Electives (6 total hours)**

- ABE/ECE/PSS 4483/6483: Introduction to RS (3 hrs) *
- ABE 3513: GPS/GIS Ag. And Eng. (3 hrs)
- ECE 3163: Signals and Systems (3 hrs)
- ECE 4413/6413: Digital Signal Processing (3 hrs)*
- ECE 8413: Digital Spectral Analysis (3 hrs)*
- ECE 8401: Current Topics in RS (3 hrs)
- ECE 8473: Digital Image Processing (3 hrs)**
- FO 6311 and FO 6313: FO Sp. Tech. in Nat. Res. Mgt. (4 hrs)*
- FO 6452 and FO 6451: RS Applications and Lab (3 hrs)
- FO 6472 and FO 6471: GIS for Nat. Res. Mgt. (3 hrs)*
- FO 8313: Spatial Statistics for Natural Res. (3 hrs)
- GR 2313: Maps and Remote Sensing (3 hrs)
- GR 3313: Introduction to Geodatabases (3 hrs)**
- GR 3303: Survey of Geospatial Technologies (3 hrs)*
- GR 4303/6303: Principles of GIS (3 hrs)
- GR 3311: Geospatial Applications (1 hrs)*
- GR 4323/6323: Cartographic Sciences (3 hrs)*
- GR 4313/6313: Advanced GIS (3 hrs)**
- GR 4333/6333: RS of the Physical Environment (3 hrs)*
- GR 8303: Advanced Geodatabases (3 hrs)*
- PSS 4373/6373: Geospatial Agronomic Mgt. (3 hrs)*
- PSS 4411/6411: Remote Sensing Seminar (1 hrs)*
- SO 8243: Spatial Analysis of Social Data (3 hrs)
- ST 4313/6313: Spatial Statistics (3 hrs)
- WF 4253/6253: GIS and GPS in WF Mgt. (3 hrs)**

* fall only, ** spring only
Note: See college advisor for course offerings.

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