

GEOSPATIAL BIG DATA ANALYTICS, CERTIFICATE

Requirements for an undergraduate certificate may be completed at any campus location offering the specified courses for the certificate.

Program Requirements

To earn an undergraduate certificate in Geospatial Big Data Analytics, a minimum of 12 credits is required.

Code	Title	Credits
Required Courses		
GEOG 365	Intermediate GIS Programming	3
Select 9 additional credits, including at least 3 credits in Analytics and 3 credits in Big Data.		9
<i>Analytics:</i>		
EMSC 460	Environmental Data Analytics	
GEOG 461	Geovisualization	
GEOG 464	Advanced Spatial Analysis	
GEOG 465	Advanced Geographic Information Systems Modeling	
GEOG 485	GIS Programming and Software Development	
<i>Big Data:</i>		
GEOG 413	Cryosphere and Climate Systems	
GEOG 462	Advanced Observation of Earth and Its Environment	
GEOG 463	Geospatial Information Management	
GEOG 467	Applied Cartographic Design	

Non-Course Requirements

Per University policy, all credit courses for a certificate require a grade of 'C' or higher, and at least two-thirds (2/3) of the credits used to complete a certificate must be earned at Penn State. If student is completing multiple certificates in Geography, no more than one (1) course may double-count for each.

Prerequisites not included in Geospatial Big Data Certificate:

- (GEOG 260 or GEOG 160) and (GEOG 265 or GEOG 161 or EME 210 or GEOSC 210 or METEO 273 or MATSE 219 or FOR 255 or or FORT 260 or WILDL 211 or CMPSC 101 or CMPSC 121 or CMPSC 131 or IST 140): prerequisite for GEOG 361, GEOG 362, GEOG 363, GEOG 365
- (GEOG 365 or GEOG 485 or GEOG 489 or GEOSC 210 or GEOSC 444 or METEO 273 or EME 210 or MATSE 219 or CMPSC 101 or CMPSC 200 or CMPSC 201) and (MATH 110 or MATH 140 or MATH 140B or MATH 140E or MATH 140G or MATH 140H): prerequisite for EMSC 460
- GEOG 210 or EARTH 2 or EARTH 103N or EARTH 303 or METEO 101 or METEO 201: prerequisite for GEOG 413
- GEOG 361 or GEOG 362 or GEOG 363: prerequisite for GEOG 461
- GEOG 362 or FOR 455 or GEOSC 482 or METEO 477 or EE 477: prerequisite for GEOG 462
- GEOG 363: prerequisite for GEOG 463, GEOG 465, GEOG 485
- GEOG 364: prerequisite for GEOG 464
- GEOG 361: prerequisite for GEOG 467