

METROPOLITAN STATE COLLEGE OF DENVER
Office of Academic Affairs

Program Modifications

SECTION B: PROPOSED CATALOG LISTING

Department of
Earth and Atmospheric Sciences

Geographic Information Systems (GIS) Concentration

The GIS Concentration provides students with the theoretical knowledge and technical training to develop proficiency in Geographic Information Systems (GIS), remote sensing, Global Positioning Systems (GPS), cartography and database systems in order to define and solve problems in the management, conservation, and improvement of natural and man-made environments.

Students must complete each course with a grade of “C” or better. The courses cannot be taken pass/fail.

Required General Studies Courses:	Semester Hours
___ General Studies-Level I-Mathematics: MTH 1110 College Algebra...(required).....	4

REQUIRED COURSES	SEMESTER HOURS
Required Core	16
CMS 1010 Introduction to Computers	
-or-	
CSS 1010 Introduction to Computers	3
GEG 3610 Principles of Land Use Planning	3
GIS 2710 Global Positioning Systems	2
GIS 3250 Cartography	3
GIS 4840 Remote Sensing	3
GIS 4850 Spatial Modeling in Raster.....	4
GIS 4860 GIS Applications.....	4
GIS 4870 Spatial Databases	3
GIS 4890 Advanced GIS Project (Senior Experience)	3
GIS 4880 Current Topics in GIS: Variable Topics.....	2
Total required concentration	30

Because GIS is an application tool, students are required to specialize in an **area of interest**. One of the following interest areas must be selected or one may be designed and approved by a department advisor. Select a minimum of 19 credit hours from one of the following areas, resulting in a major total of 65 hours. Note: other suggestions include the courses comprising minors in Computer Science (School of Letters, Arts and Sciences); Computer Information Systems, General Business, International Business, Marketing (School of Business), and Criminal Justice and Criminology (School of Professional Studies).

Areas of Interest

Environment

COURSES	SEMESTER HOURS
ENV 1200 Introduction to Environmental Science	3
ENV 3540 Advanced Geologic and Environmental Hazards–Denver and Vicinity	2
ENV 4000 Environmental Geology (required)	3
ENV 4010 Environmental Hazards and Planning	3
ENV 4200 Environmental Policy and Planning	3
ENV 4420 Wetlands	3
ENV 4430 Habitat Planning	3
ENV 4960 Global Environmental Challenges	3
ENV 4970 Environmental Field Studies	3
GEG 4XXX Advanced Seminars, Topics, or Workshops in Geography	1-3
GEL 3150 Hydrogeology	3
GEL 4150 Hydrology	3
<i>Subtotal</i>	19

Meteorology

COURSES	SEMESTER HOURS
MTR 2400 Introduction to Atmospheric Science (required)	4
MTR 2410 Weather Observing Systems	3
MTR 3100 Air Pollution	3
MTR 3400 Synoptic Meteorology (required)	4

MTR 3420 Radar and Satellite Meteorology	3
MTR 3500 Hazardous Weather	3
MTR 4210 Forecasting Laboratory I	1
MTR 4440 Climatology	3
MTR 4500 Mesometeorology	3
<i>Subtotal</i>	19

Planning

COURSES	SEMESTER HOURS
ENV 1200 Introduction to Environmental Science	3
ENV 4200 Environmental Policy and Planning	3
GEG 1300 Introduction to Human Geography	3
GEG 2010 Economic Geography	3
PSC 3020 Introduction to Public Administration	3
GEG 3600 Urban Geography	3
GEG 3610 Principles of Land Use Planning	3
ENV 3620 Population, Resources & Land Use	3
GEG 3630 Transportation, Planning & Land Use	3
ENV 4430 Habitat Planning	3
GEG 4610 Urban & Regional Planning	3
GEG 4710 Legal Aspects of Land Use	3
<i>Subtotal</i>	19

Resources

COURSES	SEMESTER HOURS
ENV 1400 World Resources	3
ENV 3400 Water Resources	3
ENV 3620 Population, Resources, and Land Use	3
ENV 4960 Global Environmental Challenges	3
GEL 3150 Hydrogeology	3
GEL 3420 Soil Resources	4
GEL 3440 Energy and Mineral Resources	4
GEL 4150 Hydrology	3
<i>Subtotal</i>	19
<i>Major Total</i>	65

GEOGRAPHIC INFORMATION SYSTEM (GIS)MINOR

Students must complete each course with a grade of “C” or better. The courses cannot be taken pass/fail.

Required Core	SEMESTER HOURS
GEG 1220 Map Use	2
GIS 2250 Introduction to Geographic Information Systems	3
GIS 3250 Cartography	3
GIS 4850 Spatial Modeling in Raster or GIS 4860 GIS Applications	4
<i>Subtotal</i>	12

Electives

A minimum of eight additional hours must be selected from the following list.

GIS 4840 Remote Sensing	3
GIS 4850 Spatial Modeling in Raster	4
GIS 4860 GIS Applications	4
GIS 4870 Spatial Databases	3
GIS 4890 Advanced GIS Project	3
GIS 2710 Global Positioning Systems	2
GIS 4880 Current Topics in GIS: Variable Topics	(1-6)
<i>Subtotal</i>	8
<i>GIS Minor total</i>	20

CERTIFICATE PROGRAMS AVAILABLE

Students must complete each course in a certificate program with a grade of “C” or better. The courses cannot be taken pass/fail.

Geographic Information Systems (GIS)

This is a professional-level certification program that serves working professionals and students interested in developing proficiency in GIS sciences. GIS education has become an integral part of many academic disciplines and professions, including natural resources, environmental science, geography, geology, planning, anthropology, civil engineering, surveying, criminal justice, business, biology, health sciences, social sciences, and others. In order to develop a high-level of proficiency, the GIS course requirements for the GIS Certificate are similar to those of the GIS Concentration for Land Use Majors.

Admissions Requirements:

1. There are no special admission requirements for students seeking GIS certification.
2. All students must take the prerequisite courses or provide evidence of equivalent training and receive an official waiver. The courses that have non-GIS prerequisites are GIS 2250, GIS 3250, GIS 4840, and GIS 4850. Courses that require upper division or senior standing include GIS4850, GIS4860, GIS4870, and GIS 4890. All courses can be taken by permission of instructor (the official waiver).

Completion Requirements:

All students seeking GIS certification must maintain a 3.0 or above in the certificate program because GIS technology and its applications require a high degree of discipline and commitment.

REQUIRED COURSES SEMESTER HOURS

GIS 2250 Introduction to Geographic Information Systems	3
GIS 3250 Cartography	3
GIS 4840 Remote Sensing	3
GIS 4850 Spatial Modeling in Raster.....	4
GIS 4860 GIS Applications.....	4
GIS 4870 Spatial Databases	3
GIS 4890 Advanced GIS Project	3
<i>Total credits for certificate</i>	23