

**NATURAL RESOURCE MANAGEMENT & SUSTAINABILITY MAJOR (Geospatial Information Science Area of Emphasis)  
COURSE SEQUENCE--SPRING ENTRY (Spring 2018 and later)**

SPRING 1			
<b>FANR 3000</b>	<b>Field Methods</b>		<b>4</b>
prereq:	Enrollment in Warnell prof program		
F:	72 TR	07-08F+(M or 74-76T)	
S:	03 MW	07-08F+(M or 74-76T)	
<b>FANR 3060</b>	<b>Soils and Hydrology</b>		<b>4</b>
prereq:	Chemistry I		
F:	04 MWF	W, R: var.	
S:	04 MWF	W, R: var.	
<b>FANR 3300</b>	<b>Economics of Ren. Resources</b>		<b>2</b>
1st half	F: 71 TR	01-02 F	
of term	S: 73 TR	05-06 F	
<b>FANR 3400</b>	<b>Society and Natural Res.</b>		<b>2</b>
2nd half	F: 71 TR	01-02 F	
of term	S: 73 TR	05-06 F	
	<b>REQUIRED OPTION OR ELECTIVE</b>		<b>3</b>
<b>TERM TOTAL:</b>			<b>15</b>

SPRING 2			
<b>FANR 4800W</b>	<b>Renewable Resource Policy</b>		<b>2</b>
prereq:	Economics and senior standing		
S:	03 MW		
<b>FANR 5620</b>	<b>GIS Apps for Natl. Res.</b>		<b>3</b>
prereq:	FANR 3800		
S:	73 TR	12-1pm TR	
<b>FANR 5630</b>	<b>Stat. Software for NR Mgmt</b>		<b>3</b>
prereq:	STAT 2000, BIOS 2010, or FANR 2010		
S:	75 TR		
	<b>REQUIRED OPTION OR ELECTIVE</b>		<b>3</b>
	<b>REQUIRED OPTION OR ELECTIVE</b>		<b>3</b>
<b>TERM TOTAL:</b>			<b>14</b>

FALL 1			
<b>FANR 3200W</b>	<b>Ecology of Natural Res.</b>		<b>4</b>
prereq:	Biology II		
F:	03 MWF	M, F	
S:	71 TR	T, R	
<b>FANR 3800</b>	<b>Spatial Analysis</b>		<b>3</b>
prereq:	FANR 3000		
F:	01 MW	W, R	
S:	05 MW	W, R	
	<b>REMOTE SENSING OPTION</b>		<b>3</b>
	<b>REQUIRED OPTION OR ELECTIVE</b>		<b>3</b>
	<b>REQUIRED OPTION OR ELECTIVE</b>		<b>3</b>
<b>TERM TOTAL:</b>			<b>16</b>

FALL 2			
<b>FANR 4500S or 4990R</b>	<b>Senior Project or Senior Thesis</b>		<b>4</b>
pre or coreq:	FANR 3300, final semester		
F:	3:30-4:30 R	or var.	
S:	01 M	or var.	
<b>GEOG 4590</b>	<b>Programming for GIS</b>		<b>3</b>
prereq:	FANR 3800		
F:	03-04 W	03-04 M	
	<b>REQUIRED OPTION OR ELECTIVE</b>		<b>3</b>
	<b>REQUIRED OPTION OR ELECTIVE</b>		<b>3</b>
	<b>REQUIRED OPTION OR ELECTIVE</b>		<b>2</b>
<b>TERM TOTAL:</b>			<b>15</b>

CLASS PERIODS:	
01	8:00-8:50a
02	9:05-9:55a
03	10:10-11:00a
04	11:15-12:05p
05	12:20-1:10p
06	1:25-2:15p
07	2:30-3:20p
08	3:35-4:25p
09	4:40-5:30p
10	5:45-6:35p
11	6:50-7:40p
12	7:55-8:45p
13	9:00-9:15p
71	8:00-9:15a
72	9:30-10:45a
73	11:00-12:15p
74	12:30-1:45p
75	2:00-3:15p
76	3:30-4:45p
77	5:00-6:15p
78	6:30-7:45p
79	8:00-9:15p
80	9:30-10:45p
VR	various times
AR	to be arranged

TERMS:	
F:	Fall
S:	Spring
SU:	Summer

**Hours Needed to Graduate:**  
**60**

All non-Warnell course times are subject to change without notice.

Underneath each course title, you will find listed the term, the class period and days meeting for the lecture, and the day(s) the labs are offered, separated by a comma for separate sections. Assume the labs are in the afternoon (periods 06 or 75 or later), unless otherwise noted.

**GIS Certificate**  
Students with a 3.0 or higher GPA in the following can receive the GIS certificate:

- FANR 3800 & 3800L
- FANR 5620
- GEOG 4590
- GEOG 4350 or 4460 (remote-sensing option)

**NATURAL RESOURCE MANAGEMENT & SUSTAINABILITY MAJOR (Geospatial Information Science Area of Emphasis)  
COURSE SEQUENCE--SPRING ENTRY (continued)**

**OPTIONS & ELECTIVES:**

<b>REMOTE SENSING OPTION</b>		
<b>GEOG 4350</b>	<b>Remote Sensing of Envir.</b>	<b>3</b>
prereq:	FANR 3800	
	<b>F: 72 T 72 R</b>	
<b>GEOG 4460</b>	<b>Field Methods in Remote Sens.</b>	<b>3</b>
prereq:	FANR 3800	
	<b>F: 06-08 M</b>	
<b>COMPUTER PROGRAMMING OPTION</b>		
<b>CSCI 1301</b>	<b>Intro to Computing</b>	<b>4</b>
prereq:	Precalculus	
	<b>F: 72, 73, 74, or 75 TR*</b>	
	<b>S: 72, 73, 74, or 75 TR*</b>	
	<b>SU: also offered</b>	
<b>*many labs are offered at various times</b>		
<b>CSCI 1360</b>	<b>Informatics &amp; Data Analytics</b>	<b>4</b>
prereq:	Precalculus	
	<b>S: 76 TR 08 W</b>	
<b>CSCI 2150</b>	<b>Intro to Computational Science</b>	<b>4</b>
prereq:	Precalculus	
even years	<b>S: 72 TR 08 MW or 73 TR</b>	
<b>FANR 4700</b>	<b>Computational Plant Science</b>	<b>3</b>
prereq:	STAT 2000 or BIOS 2010	
	<b>S: AR</b>	

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<b>Geospatial Electives (10 hrs)</b>		
<b>ATSC 4140</b>	<b>Satellite Meteorol. &amp; Clim.</b>	<b>3</b>
prereq:	GEOG 1111 or 1112	
<b>CBIO 4835</b>	<b>Computational Biology</b>	<b>3</b>
prereq:	none	
<b>CRSS 4050</b>	<b>Impr Nutr &amp; Energ Eff w/GIS</b>	<b>4</b>
pre or coreq:	APTC(CRSS) 3030	
<b>EDES 4270</b>	<b>Envir Design Uses of GIS</b>	<b>3</b>
prereq:	EDES 3230	
<b>EDES 4280E</b>	<b>Envir Design Uses of GIS</b>	<b>3</b>
prereq:	EDES 3230	
<b>ENGR 3120</b>	<b>Spatial Data Analysis</b>	<b>3</b>
prereq:	MATH 2500 and ENGR 1120	
<b>ENGR 5930</b>	<b>GPS w/ Eng. &amp; GIS Apps.</b>	<b>3</b>
prereq:	ENGR 1120 or GEOG 4370	
<b>FANR 5640</b>	<b>Unmanned Aerial Systems</b>	<b>3</b>
prereq:	FANR 3800	
	<b>S: 02 WF 06-07 M</b>	
<b>FORS 5650</b>	<b>Aerial Photos in Forestry</b>	<b>3</b>
prereq:	none	
	<b>S: 01 MW 01 F</b>	
<b>FORS 5670</b>	<b>Forestry Info Systems</b>	<b>3</b>
prereq:	none	
even years	<b>F: 75-76 T</b>	
<b>GEOG 3510</b>	<b>Cartography and Graphics</b>	<b>3</b>
prereq:	none	
<b>GEOG 4330</b>	<b>Aerial Photos &amp; Image Interp.</b>	<b>3</b>
prereq:	none	
<b>GEOG 4380</b>	<b>Transport Modeling &amp; GIS</b>	<b>3</b>
prereq:	GEOG 4370	
<b>GEOG 4385S</b>	<b>Community GIS</b>	<b>3</b>
coreq:	GEOG 4370 or 3510	
<b>GEOG 4410</b>	<b>Cartographic Visualization</b>	<b>3</b>
prereq:	none	
<b>GEOG 4430</b>	<b>Adv Image Analysis</b>	<b>3</b>
prereq:	GEOG 4330 or 4350	
<b>GEOG 4450</b>	<b>Digital Image Analysis</b>	<b>3</b>
prereq:	GEOG 4350	
<b>GEOG 4460</b>	<b>Fld Methods in Remote Sens.</b>	<b>3</b>
prereq:	GEOG 4350	
<b>GEOG 4470</b>	<b>Adv Geosp Analysis</b>	<b>3</b>
prereq:	STAT 2000 and GEOG 4370	
<b>GEOG 4570</b>	<b>Advanced GIS</b>	<b>3</b>
prereq:	GEOG 4370	
<b>HORT 4095</b>	<b>GPS/GIS Apps / Land Mgrs</b>	<b>3</b>
prereq:	BIOL 1107	
<b>STAT 4360</b>	<b>Statistical Software Progr.</b>	<b>3</b>
prereq:	CSCI 1301 and (STAT 4220 or 4230)	
<b>WILD 5750</b>	<b>Statl Soft for Fish &amp; Wild</b>	<b>1-3</b>
prereq:	STAT 2000 or FANR 2010	
	<b>irregularly offered</b>	
or other, advisor-approved course		

<b>CLASS PERIODS:</b>	
<b>01</b>	8:00-8:50a
<b>02</b>	9:05-9:55a
<b>03</b>	10:10-11:00a
<b>04</b>	11:15-12:05p
<b>05</b>	12:20-1:10p
<b>06</b>	1:25-2:15p
<b>07</b>	2:30-3:20p
<b>08</b>	3:35-4:25p
<b>09</b>	4:40-5:30p
<b>10</b>	5:45-6:35p
<b>11</b>	6:50-7:40p
<b>12</b>	7:55-8:45p
<b>13</b>	9:00-9:15p
<b>71</b>	8:00-9:15a
<b>72</b>	9:30-10:45a
<b>73</b>	11:00-12:15p
<b>74</b>	12:30-1:45p
<b>75</b>	2:00-3:15p
<b>76</b>	3:30-4:45p
<b>77</b>	5:00-6:15p
<b>78</b>	6:30-7:45p
<b>79</b>	8:00-9:15p
<b>80</b>	9:30-10:45p
<b>VR</b>	various times
<b>AR</b>	to be arranged

<b>TERMS:</b>	
<b>F:</b>	Fall
<b>S:</b>	Spring
<b>SU:</b>	Summer

**Hours Needed to Graduate:  
60**

**NATURAL RESOURCE MANAGEMENT & SUSTAINABILITY MAJOR (Geospatial Information Science Area of Emphasis)  
COURSE SEQUENCE--SPRING ENTRY (continued)**

Natural Resources Electives (10 hrs)		
<b>ECOL 4050</b>	<b>Ichthyology</b>	<b>4</b>
	prereq: Biology II	
<b>FISH 4200</b>	<b>Aquatic Biology</b>	<b>3</b>
	prereq: Biology II	
	<b>F: 74 TR R (optional)</b>	
<b>FISH 4300</b>	<b>Environmental Biol of Fishes</b>	<b>4</b>
	prereq: Biology II	
	<b>S: 04 MWF 05-08 F</b>	
<b>FISH 4310</b>	<b>Freshwater Ecosystems</b>	<b>4</b>
	prereq: ECOL 3500 or FANR 3200W	
	<b>F: 02 MW M, W</b>	
<b>FISH 4500</b>	<b>Fish Physiology</b>	<b>4</b>
	prereq: WILD 3580+L	
	<b>F: 75 TR F (optional)</b>	
<b>FISH 4520</b>	<b>Conservation Decision-Making</b>	<b>3</b>
	prereq: FANR 3000 & Ecology	
	pre or coreq: FANR 3800	
	<b>S: 71 TR M or W</b>	
<b>FISH 4550</b>	<b>Sustainable Aquaculture</b>	<b>4</b>
	prereq: Biology II	
	<b>S: 74 TR 75-76 R</b>	
<b>FISH 4600</b>	<b>Ecotoxicology</b>	<b>3</b>
	prereq: Biology II and Chemistry II	
	<b>irregularly offered</b>	
<b>FISH 4650L</b>	<b>Fisheries Field Camp</b>	<b>4</b>
	prereq: apply through StudyAway portal	
	<b>SU: VR (Maymester)</b>	
<b>FORS 3010</b>	<b>Dendrology</b>	<b>3</b>
	prereq: Biology II	
	<b>F: 73 TR T, W, R</b>	
	<b>S: 72 TR T, W, R</b>	
<b>FORS 4010</b>	<b>Silviculture</b>	<b>4</b>
	prereq: FANR 3000 & (ECOL 3500 or FANR 3200W)	
	<b>F: 03 MWF W</b>	
	<b>S: 73 TR T</b>	
<b>FORS 4210</b>	<b>Forest Health and Protection</b>	<b>3</b>
	prereq: Biology II	
	<b>S: 05 MWF 06 F</b>	
<b>FORS 4610</b>	<b>Forest Mensuration</b>	<b>4</b>
	prereq: FANR 3000	
	<b>F: 72 TR R</b>	
<b>FORS 4620</b>	<b>Timber Management</b>	<b>4</b>
	prereq: FORS 4610	
	<b>S: 04 MWF 03-04 F</b>	
<b>FORS 4700</b>	<b>Forest Economics</b>	<b>3</b>
	prereq: none	
	<b>F: 05 MW 05-06 F</b>	
<b>PRTM 3310</b>	<b>Humans, Nature &amp; Env. Aware</b>	<b>3</b>
	prereq: Enrollment in Warnell prof program	
	<b>F: 6:30-9pm TR</b>	
<b>PRTM 4400</b>	<b>Park Management</b>	<b>3</b>
	prereq: FANR 1100, 3400, or PRTM 3310	
	<b>S: 73 TR</b>	
<b>PRTM 5410</b>	<b>Stewardship &amp; Prot of Nat Res</b>	<b>3</b>
	prereq: FANR 3400 or PRTM 3310	
	<b>S: 77-78 T</b>	
<b>PRTM 5800S</b>	<b>Environmental Interpretation</b>	<b>3</b>
	prereq: none	
	<b>F: 73 TR</b>	
<b>PRTM 5900</b>	<b>Ecotourism &amp; Sust Dev</b>	<b>3</b>
	prereq: FANR 3400 or PRTM 3310	
	<b>F: 72 TR</b>	
or other, advisor-approved course		

Natural Resources Electives (10 hrs) (cont.)		
<b>WASR 4110</b>	<b>Forest Hydrology</b>	<b>3</b>
	prereq: FANR 3060	
	<b>S: 01 MWF T</b>	
<b>WILD 3000W</b>	<b>Intro to Fish &amp; Wildlife</b>	<b>2</b>
	prereq: Biology II	
	<b>F: 02 MW</b>	
<b>WILD 3580</b>	<b>Vertebrate Natural History</b>	<b>4</b>
	prereq: Biology II, instructor permission	
	<b>S: 02 MWF M, T, W</b>	
<b>WILD 4040</b>	<b>Herpetology</b>	<b>4</b>
	prereq: Biology II, permission of instructor	
	<b>S: 72 TR T</b>	
<b>WILD 4050</b>	<b>Mammalogy</b>	<b>4</b>
	prereq: WILD 3580+L	
	<b>F: 04 MWF T</b>	
<b>WILD 4060</b>	<b>Ornithology</b>	<b>4</b>
	prereq: Biology II	
	<b>S: 04 MWF 01-03 F</b>	
<b>WILD 4100</b>	<b>Wildlife Habitat Management</b>	<b>4</b>
	prereq: Ecology & (WILD 1100E or 3000W)	
	<b>F: 05 MW F</b>	
<b>WILD 4400</b>	<b>Wildlife Physiology &amp; Nutr.</b>	<b>3</b>
	prereq: WILD 1100E or 3000W	
	<b>S: 72 TR</b>	
<b>WILD 4500</b>	<b>Nongame &amp; End Sp Mgmt</b>	<b>3</b>
	prereq: WILD 1100E/3000W, 4700, & Ecol.	
	even yrs <b>F: 72 TR</b>	
<b>WILD 4700</b>	<b>Wildlife Techniques</b>	<b>3</b>
	prereq: Enrollment in Warnell prof program	
	<b>F: 04 MW M, T, R</b>	
<b>WILD 5100</b>	<b>Wildlife Diseases</b>	<b>3</b>
	prereq: none	
	<b>S: 73 TR</b>	
<b>WILD 5330</b>	<b>Conserv Wildlife in Ag Land</b>	<b>3</b>
	prereq: none	
	<b>irregularly offered</b>	
<b>WILD 5350</b>	<b>Wetlands for Wildlife</b>	<b>3</b>
	prereq: none	
	<b>irregularly offered</b>	
<b>WILD 5700</b>	<b>Population Dynamics</b>	<b>3</b>
	prereq: (FANR 3200W or ECOL 3500) & Precal	
	<b>F: 02 MW W</b>	
or other, advisor-approved course		

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<b>01</b>	8:00-8:50a
<b>02</b>	9:05-9:55a
<b>03</b>	10:10-11:00a
<b>04</b>	11:15-12:05p
<b>05</b>	12:20-1:10p
<b>06</b>	1:25-2:15p
<b>07</b>	2:30-3:20p
<b>08</b>	3:35-4:25p
<b>09</b>	4:40-5:30p
<b>10</b>	5:45-6:35p
<b>11</b>	6:50-7:40p
<b>12</b>	7:55-8:45p
<b>13</b>	9:00-9:15p
<b>71</b>	8:00-9:15a
<b>72</b>	9:30-10:45a
<b>73</b>	11:00-12:15p
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<b>75</b>	2:00-3:15p
<b>76</b>	3:30-4:45p
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**Hours Needed to Graduate:  
60**