

Graduate Level Geospatial Information Technology Certification Program

1. Identification of Graduate Level Geospatial Information Technology Certification Program Admission and Completion Requirements:

Students who wish to complete the GIT Certificate Program must:

1. Go to the Graduate School web site > Academics > Forms > Enrollment > [Application- Certificate](#), fill out and print the *generic* Certificate Application form.
2. Go to the Graduate School web site > Academics > Graduate Catalog > Certificate Programs (http://www.grads.vt.edu/graduate_catalog/certificates.jsp) and then choose Geospatial Information Technology (GITC) (<http://www.grads.vt.edu/academics/programs/certificates.html>). Read the requirements and print out the course requirements checklist.
3. Discuss a complete plan of study with your academic advisor to be sure that you will meet the certificate requirements, and sign the *generic* Certificate Application.
4. Take the signed generic certificate application form to Dr. Bill Carstensen, GEOG department, and get his signature or a proxy signature, and return *generic* Certificate Application form to the graduate school. For students in Northern Campus locations, have it signed by one of the faculty on the Northern Virginia Oversight Committee.
5. After you have completed the 12 hours of courses required, take the course requirements checklist to Dr. Carstensen (GEOG), Dr. Galbraith (CSES), or Dr. Heatwole (BSE) for signature. Bring a copy of your transcript to show them. For students in Northern Campus locations, have it signed by one of the faculty on the Northern Virginia Oversight Committee. Provide a copy of your transcript.
6. Submit the signed course requirements checklist to the Graduate School no less than six months prior to completion of course requirements, or as soon as possible to meet their deadlines (call them to check on this).

2. Course Requirements – Graduate Level Geospatial Information Technologies Certificate

Limitations:

1. No more than three hours can be transferred from institutions other than Virginia Tech, unless approved by the Oversight Committee.
2. Transfer credits and course substitutions must be approved by the Oversight Committee.

In addition:

Non-degree seeking students and master's degree-seeking students must:

1. complete 12 credit hours from the course requirements checksheet, and
2. take at least three of the 12 credit hours from outside their degree requirements and home department, and
3. must attain an average GPA of 3.0 or above in the chosen courses.

Doctoral degree-seeking students must:

1. complete 12 credit hours from the course requirements checksheet, and
2. take at least six of the 12 credit hours outside their degree requirements and home department, and must attain an average GPA of 3.0 or above in the chosen courses.

3. List of Potential Advisors and Departments:

Conrad Heatwole <heatwole@vt.edu>	BSE
Cully Hession <chession@vt.edu>	BSE
Randy Dymond <dymond@vt.edu>	CEE
John Galbraith <tctf@vt.edu>	CSES
Steve Prisley <prisley@vt.edu>	FOR
Val Thomas <thomasv@vt.edu>	FOR
Randolph Wynne <wynne@vt.edu>	FOR
Bill Carstensen <carstens@vt.edu>	GEOG
Jim Campbell <jayhawk@vt.edu>	GEOG
Kirsten de Beurs <kdebeurs@vt.edu>	GEOG
Larry Grossman <lgrossmn@vt.edu>	GEOG
Peter Sforza <sforza@vt.edu>	GEOG
Mintai Kim <mintkim@vt.edu>	LAR
Patrick Miller <pmiller@vt.edu>	LAR
Yang Zhang <yz@vt.edu>	UAP

Northern Capital locations:

Kitty Hancock <hancockk@vt.edu>	CEE NoVA
CT Lu <ctl@vt.edu>	CS NoVA
Glen Moglen <moglen@vt.edu>	CEE NoVA
Kris Wernstedt <krisw@vt.edu>	UAP NoVA

4. Oversight CommitteeOversight Committee: Blacksburg Campus (updated 2008)

Faculty	College	Department
Bill Carstensen	Natural Resources	Geography
Conrad Heatwole	Agriculture and Life Sciences	Biological Systems Engineering
John Galbraith	Agriculture and Life Sciences	Crop and Soil Environmental Sciences

Oversight Committee: Northern Capital Campuses (updated 2009)

Faculty	College	Department
Kitty Hancock	Engineering	Civil & Environmental Engineering
Glen Moglen	Engineering	Civil & Environmental Engineering
Kris Wernstedt	Architecture and Urban Studies	Urban Affairs & Planning

An oversight committee comprised of faculty from participating colleges and departments will oversee this program. The oversight committee chair (or a proxy) will sign the certificate application and the course requirement checklist at least six months prior to completion of graduation. The Graduate School will have responsibility for issuing certificates to the students. The committee will decide questions concerning the course requirements and appeals for course substitutions. Contact information of the advisors, chair and committee members will be available at the OGIS web site (<http://www.ogis.org.vt.edu/>).

5. Course Requirement Checksheet – Graduate Geospatial Information Technologies Certificate

This form must be completed and submitted to the Chair of the Oversight Committee for signature and then to the graduate school at least six months prior to graduation. Courses are described on-line at the VT and OGIS web site (<http://www.ogis.org.vt.edu/>). All courses below qualify for graduate credit. No more than three hours can be transferred in to Virginia Tech. No more than three hours can be at the 4000 level. Transfer credits and course substitutions must be approved by the Oversight Committee (Sec. 2). * - course also available at Northern Campuses.

Student Name: _____

Certificate Course Advisor's Name: _____

A. Introductory Courses: (3 credit hours minimum) Credit Hrs. ____

BSE 5344	Applied Geographic Information Systems
CEE 5204	GIS Applications in Civil and Environmental Engineering
CEE *5984	Remote Sensing
FOR 5114	Information Technologies for Natural Res. Mngt.
FOR 5254	Remote Sensing of Natural Resources
GEOG/GEOS 5084	Introduction to Geographic Information Systems (GIS)
GEOG/GEOS 5354	Introduction to Remote Sensing
LAR 5044	Land Analysis
UAP 5114	Computational Appl. in Planning
UAP *5114/CEE *5204	Computer Applications (GIS)

B. Advanced Courses: (6 credit hours minimum) ____

BSE/CEE *5244	Advanced GIS in Hydrologic Analysis
CEE *5224	Advanced GIS Applications in Civil & Envir. Engineering
CEE *5984	Geospatial Data Structures
FOR 5264 (GEOG 5364)	GIS Applications in Natural Resource Management
FOR/GEOG 5984	Hyperspectral Remote Sensing of Natural Resources
FOR/GEOG 6214	Forestry Lidar Applications
GEOG 5084	Intermediate GIS
GEOG 5984	Web Mapping
GEOG 5984	Remote Sensing and Phenology
NR 6104	Topics in Remote Sensing
NR 6314	Advanced Topics in GIS

C. Supporting Technologies Courses: (3 credit hours minimum) ____

CS 5814	Digital Picture Processing
CS *6604	Advanced Topics in Data and Inform: Spatial Data Mngt.
CEE *5984	Geoknowledge Derivation
CEE *5984	Advanced Geospatial Analysis and Reasoning
ECE 5524	Pattern Recognition
FOR/GEOG 5104	Seminar in Remote Sensing & GIS (1 credit)
GEOG 5034	Analysis of Spatial Data
GEOG 5124	Aerial Photo Interpretation and Analysis
GEOG 5314	Advanced Spatial Analysis in GIS
GEOG 5384	Programming for ArcGIS
STAT 5544	Spatial Statistics

The above student has successfully completed the program requirements. Date: _____

Signed: _____ (Oversight Committee)

6. Rationale and need:

Geospatial information technology (GIT) includes collection and analysis of remotely sensed data, digital spatial and attribute data used for geographic information systems (GIS), and application of related technologies such as the Global Positioning System (GPS). The objectives of this proposal are to: 1) outline the structure for a geospatial information technologies (GIT) certificate program to recognize students who concentrate their study and research in GIT, 2) provide a recruitment tool to help bring top graduate students and research funds to Virginia Tech, and 3) increase the stature of Virginia Tech's GIT program among competing institutions in Virginia. Students at Blacksburg and at the Northern Capital Region Campuses who successfully complete our program will receive a certificate and the concentration notation on their transcripts. No additional resources are needed to offer this certificate in Blacksburg; however, resources are needed to make this program more feasible for students at the National Capital Campuses, and these are being addressed by the departments concerned.

The number of Virginia Tech faculty and staff involved in GIT is comparable to other land grant institutions and is larger than most regional universities. Expertise is represented in a variety of disciplines in eight departments in five colleges along with the Virginia Tech library. A user's group called OGIS (http://ecs.lib.vt.edu/VT_OGIS/wwwmain.html) has been meeting regularly and has hosted an annual Virginia GIS and Remote Sensing Research Symposium since the mid 1990s. Presently, there is no GIT department at Virginia Tech. The College of Natural Resources has developed a PhD. in Geospatial and Environmental Analysis (GEA) beginning in 2006. According to Bill Carstensen, one of the authors of that program, "that degree has not conflicted with this certificate, which would apply to a wide audience of those not specializing in a GIT-related degree. The certificate and degree will make a good pair of offerings."

Each year, several dozen graduate students use GIT to complete their thesis and several dozen more have taken one or more GIT courses during their college career. Some of these students receive no documented indication of their expertise unless their thesis or dissertation title includes GIT terminology. Students at Virginia institutions that have fewer GIT faculty and less well-developed curricula are able to receive a certification in GIT, which gives those schools a distinct recruiting advantage, especially among GIT professionals in Northern Virginia. Virginia businesses and industry representatives have indicated that a documented GIT concentration would greatly assist both graduates and employers in matching applicants to available positions. This certificate is now fully available to students at northern campuses.

There are adequate courses and faculty available to offer this certificate to students at the Blacksburg campus. The interest by potential graduate students in Blacksburg has been consistently proven. However, there are a large number of GIT companies, agencies, and professionals in Northern Virginia, and this certificate will help to recruit working and non-traditional students. This may lead to cooperative funding and research ventures and possibly lead to enrollment of certificate earners for full graduate degrees. At the current time, sufficient faculty are in place to teach multiple GIT courses at the National Capital Region Campuses. The student enrollment is expected to increase at the National Capital Region Campuses as we continue to develop distance education classes and increase our GIT teaching presence through hiring of qualified instructors.