

FAQs for the Graduate Certificate in Urban Computing at Virginia Tech

****Please read through the entire FAQ as most questions regarding the certificate program are addressed below****

Q: Who can receive a certificate in urban computing?

A: The certificate is open to all graduate students enrolled in Virginia Tech's graduate school. Open to Virginia Tech students located in either the Blacksburg or the greater D.C. metro campus who are pursuing a Master's or Ph.D.

Q: How do I apply for the certificate if I am not a Virginia Tech student?

A: Students first have to be admitted to the Virginia Tech graduate school, in any discipline of their choice or as non-degree seeking. For more information about applying to the Virginia Tech graduate school visit: <http://graduateschool.vt.edu/applying>. While filling out your application for the graduate school, you can apply as either a non-degree seeking student or apply directly to the certificate program. If you are already enrolled in Virginia Tech's graduate school, you can simply begin taking the courses to fulfill the certificate requirements.

Q: How do I apply for the certificate if I am an international student?

A: International students seeking F-1 or J-1 status may apply only to the Blacksburg and National Capital Region campuses. For assistance with immigration questions, contact the [Cranwell International Center](#) if applying to the Blacksburg Campus, our [immigration advisors in the Northern Virginia Graduate Center](#) if applying to the Greater Washington DC area campus. Regardless of your campus location, financial and immigration documents may be submitted after you receive admission into a graduate program.

Q: What is the cost of tuition?

A: The Virginia Tech Bursar's Office lists [tuition rates and fees](#) by program and campus. Contact the graduate school if you have any additional questions regarding tuition.

Q: What do I do after getting admitted?

A: Take the necessary courses to fulfill the certificate requirements.

Q: How do I sign up for courses that are restricted to specific majors?

A: The Sanghani Center does NOT take force-add requests for students interested in pursuing the certificate. If you are interested in signing up for a course that is restricted to either of the following majors: CS, ECE or STAT, you must reach out to that specific department for any/all force-add requests. Below are instructions for each department.

CS: If you want to be force-added to a course, check out this page:
<https://cs.vt.edu/Graduate/grforceadd.html>

ECE: If you want to be force-added to a course in ECE, Non-ECE students must submit a Force Add request to add ECE courses if there is a restriction. See the ECE Force Add policy here: <https://ece.vt.edu/grad/advising>. The force add survey is available on the ECE website under the graduate advising and graduate forms tab. Note: faculty do not determine whether a student can

be added to a class. The force add process is managed by the department and students are asked to submit the Force Add request. We do not add into full courses or based on section/faculty preferences. Please note that our first priority will be to add ECE students.

STAT: If you want to be force-added to a course in STAT, please reach out to Betty Higginbotham (higgvt@vt.edu)

Q: What are the certificate credit requirements?

A: Students should complete 2 courses from the core list and 2 courses from the elective list for a total of 12 credits. More specifically, the two electives should be chosen so that a minimum of three (3) credits are drawn from the “Horizontal” list and a minimum of three (3) credits come from the “Verticals” list (refer to Appendix A for the list of Core and Restricted Elective Courses). At least two of the four 3-credit courses must be outside the student’s home department. If a master’s student writes a thesis, it must be related to Urban Computing. Doctoral students must have a successful defense of a doctoral dissertation related to Urban Computing. Students must attain at least a 3.0 grade average for the 4 courses. Per university requirements, all of the 12 required credits for the certificate can be double counted towards a student’s degree program. However, students cannot double count a course towards two certificate programs or triple count a course (i.e. a course cannot be used in one certificate and two degrees (M.S. or Ph.D). or two certificates and one degree (M.S. or Ph.D.))

Q: How do I get the certificate after finishing all the requirements?

A: First fill out the Check Sheet for the certificate and the [Graduate Certificate Application form](#). Submit both forms along with your unofficial transcript to the Sanghani Center (contact info below) to be signed and then submit the Graduate Certificate Application to the Graduate School. Once the Graduate School has accepted your application, you will then need to fill out an [Application for Degree or Certificate Conferral form](#), which also needs to be signed by the Sanghani Center and submitted to the Graduate School. It is recommended that you submit these forms during your last semester or before you plan to graduate; therefore, you should have completed the requirements for the program upon submitting the necessary forms.

Q: Are there any prerequisites for the certificate?

A: Some of the courses listed may have prerequisites, please refer to the [Graduate Catalog](#) for more information. If you are looking for additional certificate programs, please visit <http://analytics.cs.vt.edu/edu.php> for a list of other Data Analytics programs offered at Virginia Tech.

Q: What is the time to complete the certificate?

A: The estimated time of completion for students is one year; however, this can vary based on each student and how they fit the required coursework into their plan of study. Time to completion will not substantially increase student’s time to completion for their degree program.

Q: Which department administers the certificate?

A: The certificate is administered by The Sanghani Center for AI and DA. The certificate is a collaboration between the departments of Civil and Environmental Engineering, Computer

Science, Electrical and Computer Engineering, Mathematics, Population Health Sciences, Sociology, Statistics, Urban Affairs and Planning.

Q: Who can I contact for additional questions?

A: Please note that Wanawsha Shalaby, Manager of Operations for The Sanghani Center (wanah92@vt.edu) will be on maternity leave from the Spring semester till end of Summer 2024. Please reach out to Naren Ramkarishnan (naren@cs.vt.edu) and Nickolas Bradley (nickolasb24@vt.edu) for any/all questions regarding the certificate program.

Appendix A

Required core courses (6 credits):

CS 5834 Introduction to Urban Computing

CS 5024 Ethics and Professionalism in Computer Science

Restricted Elective Courses: (Choose 2)

“Horizontals” (Data Science/Research Methods) Courses (Choose 1)

CS 5234 Advanced Parallel Computation

CS/MATH 5485 Numerical Analysis and Software I

CS/MATH 5486 Numerical Analysis and Software II

CS 5805 Machine Learning I

CS 5806 Machine Learning II

CS 5764 Information Visualization

ECE 5424G Advanced Machine Learning

STAT 5525 Data Analytics I

STAT 5526 Data Analytics II

STAT 5444 Bayesian Statistics

STAT 5544 Spatial Statistics

“Verticals” (Urban Informatics/Applications) Courses (Choose 1)

CEE 5604 Traffic Characteristics and Flows

CEE 5634 Analysis & Planning of Mass Transit Systems

PHS/VM 5314 Infectious Disease Epidemiology

PHS 5354 Modeling Infectious Diseases

ECE 6304 Advanced Topics in Power

ECE 6334 Computational Methods in Power Engineering

SOC 5504 Population Processes and Policies

SOC 6504 The Sociology of Culture

**UAP 5114 Computer Applications in Urban Planning and Management

UAP 5234 Urban Economics and Policy

UAP 5604 Housing Planning and Policy Topics

UAP 5644 Transportation Systems Planning