FAQs for the Graduate Certificate in Data Analytics 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 data analytics?

A: The certificate is open to **all graduate students currently enrolled in Virginia Tech's graduate school**. The certificate is particularly well suited to complement the technical training of students enrolled in the university's graduate programs in Computer Science, Statistics, or Electrical and Computer Engineering. A technical undergraduate background is required. Students should have proficiently in multiple programming languages, especially those used in data science such as Python or R. Additionally, students should have proficiency in mathematical concepts such as linear algebra, as well as statistical concepts such as probability and inference.

Q: What if I am not currently a Virginia Tech graduate student?

A: Students first must 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: https://graduateschool.vt.edu/admissions.html . 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.

Q: What if I am not currently a Virginia Tech graduate student and 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 (https://international.vt.edu/) if applying to the Blacksburg Campus, or our immigration advisors in the Northern Virginia Graduate Center (https://www.nvc.vt.edu/Current-Students/intlstudents.html) 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 do I do after getting admitted as a graduate student to Virginia Tech?

A: See the next question.

Q: I am currently a Virginia Tech grad student, How do I earn the certificate?

A: If you are already enrolled in Virginia Tech's graduate school, **you can simply begin taking the courses to fulfill the certificate requirements.** There is no need to apply before you begin the coursework. After you have completed the necessary courses, you can then apply to receive the certificate (see the next question).

Q: After finishing all the required coursework, How do I apply to receive the certificate?

A: Complete the following three forms:

A. The certificate **Check Sheet** form (that can be found at https://sanghani.cs.vt.edu/academics/data-analytics/). Don't forget to complete the essay question on page 2 of the Check Sheet.
B. The **Application for Graduate Certificate Program** form (https://graduateschool.vt.edu/content/dam/graduateschool_vt_edu/forms/Application_for_Graduate_Certificate_Program.pdf).
C. The **Certificate Conferral Request** form https://graduateschool.vt.edu/content/dam/graduateschool_vt_edu/forms/Degree-Certificate_Conferral_Request.pdf

Submit forms (A) and (B) along with your **unofficial transcript** to the Sanghani Center (contact info below) to get form (B) signed. Then, submit signed form (B) and form (C) 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 coursework requirements for the program upon submitting the necessary forms.

Q: What is the cost of tuition?

A: The Virginia Tech Bursar's Office lists tuition rates and fees (https://www.bursar.vt.edu/tuition-fee-rates/tuition-fees.html) by program and campus. Contact the graduate school if you have any additional questions regarding tuition.

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 any 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 at least 2 courses from the Required Core course list and 2 courses from the Restricted Elective course list for a total of 12 credits (refer to the Check Sheet for the list of Core and Elective Courses). Courses taken must span all three departments: Computer Science (CS), Statistics (STAT) and Electrical and Computer Engineering (ECE). Cross-listed courses can count either way. Students must attain at least a 3.0 grade average for the 4 courses. Per university requirements, all 12 credits required for the certificate can be double counted toward 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: Are there any prerequisites for the certificate?

A: Some of the courses listed may have prerequisites, please refer to the Graduate Catalog (https://secure.graduateschool.vt.edu/graduate_catalog/certificates.htm) for more information. Students are expected to have a technical background in mathematics and computer programming relevant to data analytics. If you are looking for a less technical certificate program, 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 Artificial Intelligence & Data Analytics (https://sanghani.cs.vt.edu). The certificate is a collaboration between the departments of Computer Science, Statistics and Electrical and Computer Engineering.

Q: Who can I contact for additional questions, and who do I send the forms to?

A: For questions regarding the certificate program or to submit forms after completing the coursework, please reach out to the certificate program manager(s) at the Sanghani Center: **Dr. Chris North** (north@vt.edu, https://people.cs.vt.edu/north/) and **Wanawsha Shalaby** (wanah92@vt.edu).

Appendix A

For the most up-to-date course list, see the Check Sheet at:
https://sanghani.cs.vt.edu/academics/data-analytics/

Core Courses: (Choose 2)

CS 5805 Machine Learning I **or** STAT 5525 Data Analytics I
CS 5806 Machine Learning II **or** STAT 5526 Data Analytics II **or** ECE 5424G Advanced Machine Learning

Restricted Elective Courses: (Choose 2)

CS 5234 Advanced Parallel Computation
CS 5604 Information Storage and Retrieval
CS 5614 Database Management Systems
CS 5624 Natural Language Processing
CS 5764 Information Visualization
CS 5804 Introduction to Artificial Intelligence
CS 5814 Deep Learning
CS 5864 Learning-based Computer Vision
CS 6604 Advanced Topics in Data and Information
STAT 5114 Statistical Inference
STAT 5314 Monte Carlo Methods in Statistics
STAT 5414 Time Series Analysis I
STAT 5444 Bayesian Statistics
STAT 5444G Advanced Applied Bayesian Statistics
STAT 5504 Multivariate Statistical Methods
STAT 5544 Spatial Statistics
ECE 5524 Pattern Recognition
ECE 5554 Computer Vision
ECE 5605 Stochastic Signals and Systems
ECE 5606 Signal Detection and Estimation
ECE 5734 Convex Optimization
ECE 6524 Deep Learning
ECE 6554 Advanced Computer Vision