

## Graduate Certificate in Urban Computing Checksheet

Computing is available to all graduate students in the university. Graduate students can select courses from the list below. At least 2 of the courses must be from outside the student's home department. All courses are 3-hour credit unless otherwise noted in the Graduate Catalog. Transfer credits are not permitted. No hours can be below the 5000 level.

Student Name: \_\_\_\_\_

Department: \_\_\_\_\_ Degree (MS/Ph.D.): \_\_\_\_\_

Advisor: \_\_\_\_\_ Co-Advisor: \_\_\_\_\_

	Credit Hours	Course	Grade
<b>A. Required Courses:</b>	<b>3</b>	_____	_____
<b>(6 credit hours minimum)</b>	<b>3</b>	_____	_____
CS 5834 Introduction to Urban Computing		Grade for final project	_____
CS 5024 Ethics and Professionalism in Computer Science			
<b>B. Restricted Elective Courses:</b>	<b>3</b>	_____	_____
<b>(6 credit hours minimum)</b>	<b>3</b>	_____	_____
<b>“Horizontal” (Data Science/Research Methods) Courses (Choose 1)</b>			
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			
<b>“Verticals” (Urban Informatics/Applications) Courses (Choose 1)</b>			
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			

\*\* = students in the UAP department pursuing the certificate are advised, based on their background, to take UAP 5114 Computer Applications in Urban Planning and Management prior to CS 5834 Introduction to Urban Computing.

The above student has successfully completed the program requirements.

Signed: \_\_\_\_\_ (Chair, Oversight Committee)

Date: \_\_\_\_\_

**Student: Based on what you have learned, please answer the following required essay question to the best of your ability. Attach your answer essay as a separate PDF document.**

The Graduate Certificate in Data Analytics emphasizes interdisciplinary perspectives by requiring courses be taken from all three host departments. Describe how you would take into account these three interdisciplinary perspectives -- namely computer science, statistical, and engineering perspectives -- when undertaking a challenging big data analytics problem. As an example, context, consider a scenario in which you are consulting for a major city government to tackle the problem of understanding new trends in citizen use of alternative transportation, such as ride sharing and rental scooters. Make sure your response addresses the specific issue of how you would apply the above three interdisciplinary perspectives in formulating a solution.