INLS 073
Smart Cities
Spring 2022

Mon/Wed, 10:10 – 11:25, Manning 304

(**SILS Plan: Courses that are scheduled to meet on campus (in person) will be held remotely from January 10-28 and resume as in-person on-campus on January 31.)**

Instructor:

Arcot Rajasekar

Office Hours: 11:30 – 12:15 PM Mon, or by email appointment

Email: rajasekar at unc dot edu

Course Description: A smart city creates long-lasting successful socio-economic development making use of state-of-the-art technology in order to make a smarter use of social and environmental resources enhancing the cities competitiveness, livability, sustainability, innovation and inclusiveness. This seminar will present students with topics and trends in sustainable and smart cities and connected communities. Role of information in the design of network resources and impact on urban design, development and urban living will be explored. This seminar will make you think about whether my city/town/village is smart, how can I measure its smartness and how can I make it smarter? A group project will help you compare many cities across the world in various dimensions and give them your own rating of smartness. No prerequisites needed. Bring your thinking caps.

Prerequisite(s): None

1. Course Objectives

A smart city is one where the needs of a populace meet the needs of environmental sustainability. The balance between the social and environmental issues is governed by Information and Communication Technologies (ICT) that power a smart city infrastructure. In this course, we learn about the influence of urban networks, smart city urban planning, energy as a catalyst of sustainable development, smart city infrastructure, sustainable transportation, flow of information and communications, smart grids, digital infrastructure and the role of data and information technology. We will discuss criteria for measuring the smartness of a city, including quality of life, citizen governance, and discuss issues that go towards the making of a future smart city. Several case studies will be presented with guest lecturers invited to present on critical thinking and practices in smart city development.

2. Graded Work

Your grade will be based as follows:

Grading Scheme:

1. Class attendance & participation 20%
2. Class Presentation 20%
3. Project Assignment 30%
4. Exams 30% (two exams – 15% each)

Attendance and Participation

I require all students to participate actively in class discussions throughout the class. Attendance is required. Every absence will drop 4% of the grade, unless there is a very good reason for the absence and supported with evidence. For each class, there will be some material to read before coming to class. Class will participate in discussions in some of the classes. Apart from this, as the class proceeds, we will be looking for questions, comments and a lively dialogue on the material presented by the instructor. Don't be afraid of asking questions, raising doubts or making a point. We want everyone to participate and

equally guide the discussions. I don't require sakai forum discussions but welcome it as an intellectual engagement out of class and as a way to share ideas with your colleagues. A general discussion sakai forum will be created for this type of engagements.

Class Presentation
Each student is expected to make a 10-minute presentation, followed by class discussion, based on a topic of their choice related to Smart Cities, once during the semester. A signup sheet is set up in sakai. I want an in-depth presentation and raise some discussion questions that will engage the whole class. You should circulate papers (or other media) that you used to gather material for your presentation one week earlier, in sakai forum, so that your colleagues can read them and be prepared for class discussion. A sakai thread for posting presentation information will be created. A one-page pdf report (sent by email) is needed within a week after the presentation on the topic and using the discussion in class. The presentation will be 20% of total grade and it will be divided into three parts: 5% for the depth of the research on the topic; 10% for the presentation and discussion; 5% for the summary paper.

Project Assignment
I plan to give a term-long project on smart cities. These assignments will involve group participation and will require research, video and presentation. No report will be needed. I will provide information about the assignment in class.

Exam
There will be two exams, one mid-term and a final. Each will carry equal weight.

3. Grading Policies

The following grade scale will be used AS A GUIDELINE:
A 100-90%
B 89-80%
C 79-70%
D 69-60%
F Below 60%
This scale will be used as a GUIDELINE ONLY. The final grade scale may differ.

Requests for Extensions and Absences
If a serious illness or other events prevents you from coming to any of the classes, send your instructors an e-mail message, describing your condition before the class or as soon as possible. Also, to establish a valid excuse for an illness you must get a note from a physician or the University infirmary.

4. Course Communication (Sakai)

Sakai-based course website has been set up and it is the responsibility of every student to **check the Sakai website regularly** for announcements, presentation materials and other digital handouts. Your instructor may announce tests, assignments, or changes to assignments in class, but there is no guarantee or promise that such announcements will be made in class. The sakai website is the **only** official, reliable source for announcements, changes, etc. from the instructor. If something the instructor says in class conflicts with information posted by the instructor on the website, then the information posted on by the instructor **on the Sakai website takes precedence**. Verbal instructions are easily misinterpreted, and they do not leave a documentation trail. All students should be able to access the system.

5. Honor Code

The UNC Honor Code is in effect for all work in this course. When work or ideas are not your own, you must attribute them. Unless otherwise stated, all non-project assignments in this class are individual assignments, meaning that the substance of the work you turn in must be your own. If you have any doubts or questions about a course of action or a specific situation, please ask for clarification. Students

should NOT receive (or give) major creative assistance or ongoing minor support on individual assignments. If you have any questions about this, please ask us.

6. Special Accommodations

If any student needs special accommodations, please contact the instructor during the first week of classes.

7. Course outline (tentative schedule)

Cl No	Date	Topics in Smart Cities	Topics in Information Science
1	Jan 10	Introduction	
2	Jan 12	Smart Governance	
3	Jan 19	Smart Environment	
4	Jan 24	Smart Economy	
5	Jan 26	Smart Living	
6	Jan 31	Smart People	
7	Feb 02	Smart Mobility	
8	Feb 07	Smart Energy & Smart Water	
9	Feb 09		What is Data?
10	Feb 14		Data Organizations & Databases
11	Feb 16		Sensor Networks
12	Feb 21	Urban Platforms	
13	**Feb 23**	**Exam - 1**	
14	Feb 28	**Project Work Time**	
15	Mar 02		Data Grids
16	Mar 07		Information Analytics
17	Mar 09		Cloud Computing
	Mar 14-16	**Spring Break**	
18	Mar 21		Machine Learning & Deep Learning
19	Mar 23		Visual Informatics
20	Mar 28	**Project Work Time**	
21	Mar 30	**Guest Lecture/Special Topics – 1**	
22	Apr 04	Urban Planning	
23	Apr 06	Coherence, Efficiency & Networks	
24	Apr 11	Standards & Normalization	
25	Apr 13	**Project Work Time**	
26	Apr 18	**Guest Lecture/Special Topics – 2**	
27	Apr 20	**Project Presentations**	
28	Apr 25	**Project Presentations**	
29	Apr 27	Future of Smart Cities	
30	**Apr 29 Friday**	**Final Exam (Exam-2)**	**8:00-10:00 AM (note change in day & timing)**