TEL AVIV UNIVERSITY
INTERNATIONAL

Smart Cities
Dr. Ronit Purian
Summer Semester 2021

Instructor Contact Information: PurianRo@TAUex.TAU.ac.il
Out of Class Availability and Best Ways to Contact: WhatsApp or Signal group
Office Hours: After class

Course Credits: 4 TAU Semester Credits (minimum 52 academic hours)
Course dates: June 29-July 30 (3 weeks)

For course times/days and location, please visit the TAU International web site (Study Abroad Course Offerings and Schedules): https://international.tau.ac.il/Smart_Cities

Please note that all information below is subject to change and/or adjustment as necessary.

Course Description

The smartification of cities and the global pandemic make the design of effective and trustworthy systems an essential topic to study – and to further develop.

In this course we will review practical solutions that cities implement, try to scrutinize the hidden mechanisms and the unobservable outcomes of urban technologies, and consider their economic, ecological, and societal impact. We will study national and international initiatives that are being developed to enhance data ownership and security, reduce administrative burden, and empower citizens to control their data – while giving an identity to the "undocumented".

A historical overview of cities, urban networks, economic and technological transformations, and the rise of platforms and sharing economy will frame the discussion on smart and global cities.

This framework will help us absorb and integrate the richness of urban domains, and the phases of data life cycle, as we will explore methodologies and analyze data in various disciplines.

Data is constantly generated in the smart city. Urban data will be one of the main course topics: We will review current tools for big data and spatial analysis and emphasize the need in data standards to integrate data from different sources and to create meaningful data frameworks and indicators. The fusion of technologies into city life depends on keystone practices of commitment, communication, and connection to place – to fulfill the promise of sustainable and compassionate smart cities. Accordingly, we welcome students from different educational backgrounds and will consider work experience in addition to academic qualifications to encourage diverse perspectives and to create a broad base of knowledge and skills in a culturally inclusive classroom community. Students will work on problems according to their field and research interests.

Course Requirements and Expectations

This program is open to undergraduates enrolled at accredited higher education institutions who have a grade point average of 80%; 3.0/4.0 scale; research students (master's degree or PhD), researchers and data scientists. Urban planners, policy makers, officials in managerial or technological roles, entrepreneurs, product managers and developers may also enroll in this program.

No previous coursework in Smart Cities is required, although prior knowledge and interest in urban studies is recommended, in subjects such as transportation, Mobility as a Service (MaaS), the network economy and sharing platforms, walkability and navigation, smart construction and smart buildings, remote sensing, energy management, water management, supply chain of food and nutrition, wellbeing and community building, urban cognition, stress and uncertainty, and related domains. Please let us know if you are familiar with QGIS, Postgres; VR technologies; python, etc., or have special interests or skills (from data science and product development to nutrition or community engagement).

Learning Outcomes

In your group project and personal paper, you will:

1. Identify the potential impact of technological mechanisms on their surroundings.

2. Integrate silos into a holistic view; choose and analyse systems, services and products.

3. Design technological interfaces that take into account psychological principles.

4. Plan partnerships between the public and the private sectors, NGOs etc.

5. Propose principles for collective action; trace the roots of principal-agent problems.

6. Expand the understanding of Data Science, its relevance and ways to implement.

7. Design your own life, not only the system\ society, by observing reality.

Course Schedule

Sun	Mon	Tue	Wed	Thu
Introduction; urban systems	WPs	Mobility, spatial behaviors	SaaS vs. urban morphology	Pedestrian analysis; Q&A
Presentations	Urban domains *Big questions*	Urban taxonomy *Why standards*	PPP case studies *Revise a model*	Data lifecycle *Compare cases*
Digital skills	Analysis	Development	Implementation	Presentations

Evaluation Criteria

A key component of this course is the participation in class discussion and group work packages:

- Presenting a paper – individually or in pairs. A list of papers will be provided (Sun);

- Work packages (WPs) – can be carried out in groups of 3-5 students (Mon-Thu);

- Group project – in groups of 3-5 students (proposal & progress report: Mon-Wed);

- Presenting the group project (Thu).

- Final project report (one month: Sept. 1 2021).

The goal of the tasks – paper presentation, work packages and group projects, and final project report – is to dive into one or more of the areas studied in this course, and to carry out original research. Students are free to choose their partners and their research project.

In their projects students will be free to choose their research question and goals, e.g., to outline participatory planning in municipalities or organizational data maturity models; to propose new private-public partnerships and business models; to design user interfaces in digital products; to assess the physical impact of mobile applications, or to envision how smartphones could change the current landscape of urban behaviors.

Potential topics and research questions will be provided.

Students will submit a proposal, a progress report (including literature review, market analysis), give a project presentation, and submit a final project report.

Grades

Attendance and participation	20%
First presentation (2nd week)	20%
Work packages (2nd week)	20%
Group project (3rd week)	20%
Group presentation (last day)	10%
Final project report	10%

Course Readings and Materials

Course readings and required materials will be provided to students.

OECD (2021). Metropolitan areas (database). https://doi.org/10.1787/data-00531-en

OECD (2021). Regional Statistics (web) https://doi.org/10.1787/region-data-en

OECD Urban Studies (2020). Seven thematic reports https://doi.org/10.1787/b261814f-en

"Smart, Sustainable and Fair Cities" (2020). Geography Research Forum (GRF) Special Issue (40), http://www.geog.bgu.ac.il/GRF

Previous courses:

2019 course: https://en-urban.tau.ac.il/events/Course_2019

2018 photo gallery: https://urban.tau.ac.il/CourseTAU2018

Instructor Biography

Dr. Ronit Purian studies smart cities and the behavioral and social aspects of digital-urban life. She co-chairs CODATA's task group to apply data science in smart cities; and collaborates with the industry. She teaches courses on smart cities in Tel Aviv University, where she got her BA and MA in Psychology, and PhD in technology management and information systems. Between 2017-2019 she was the director of TAU City Center–Research Center for Cities and Urbanism at Tel Aviv University. Following her professional experience as a journalist at Israel's top newspapers, her courses and papers cover a range of civic and technological topics, proposing a theory on urban segregation, AI ethics and digital identities.

Required Application Documents

A complete application consists of a submission of all of the required documents in an attachment to the online application.

Absence Policy

Please note the TAU International Absence Policy as outlined on the next page. If your course has additional requirements (or a stricter policy) beyond what we specify, you should list this information here.

TAU International Academic Guidelines

Students may only attend classes which they are officially registered for. No auditing of courses is permitted. Students are responsible for reading and adhering to all policies and procedures in the TAU International Academic Handbook posted here at all times. Below is a summary of some of these relevant policies and procedures.

Learning Accommodations

In accordance to University guidelines, TAU International may be able to accommodate students with learning disabilities or accommodation requests if these requests are also honored at the student's home university or home school. To be considered, students must submit official documentation from their home school or university (if not in English, a notarized official copy translated into English is required) to TAU International in advance of arrival describing in detail any specific needs and how these are accommodated at the home school or university. Students must also bring a copy of this documentation with them on-site and give it to their faculty on the first day of class while introducing themselves so that the faculty know who they are and what sorts of needs or accommodations they may have. **Without official documentation from the home school submitted on or before the first day of courses, TAU will not be able to honor accommodation support.**

With supporting documentation and by following the correct procedure as outlined above, TAU International and its faculty will do the best it can to make any suitable accommodations possible. However, we cannot guarantee that all accommodations received at the home school can be similarly met at TAU. For example, TAU is usually not able to offer note-taking services in English, private testing rooms, or advance viewing of classroom presentations, exams, or assignments.

It may be an option to provide a student with additional tutoring or support outside the classroom as needed. Students should be aware that this additional support cannot be guaranteed and is based on teacher availability in the subject as well as the specific student level. If available, the cost of additional tutoring or support will be the sole responsibility of the student.

In-Class Exams
TAU does not permit, under any circumstances, taking any in-class (including mid or final) exams early or later than the scheduled exam day. When selecting courses, it is thus very important to note if there is an in-class midterm or final exam as this date/exam cannot be changed. It is also the student's responsibility to clarify exam dates with the professors at the beginning of a course, with the understanding that not all exam dates can be decided up front as it can

sometimes depend on the pace of the course and class learning. It is the student responsibility to plan to be present for all courses including the final day of class for this reason. Early departures from the program are not approved, nor are early or exception in-class exams.

TAU International Absence Policy
Attendance is mandatory in all of the courses including Hebrew Ulpan. Faculty can and will take attendance regularly. Missing classes will be reflected in the final grade of the course. Up to three justified and properly documented absences from classes may be accepted (for example: emergency matter or illness, both of which will require a doctor's note). Such cases of absence should be reported to the faculty immediately and again, a doctor's note is required. Teachers are entitled to treat any lateness or absence without documentation as unexcused. Some of our courses such as Service Learning or the Internship Seminar require more practical in-class work; thus, attendance policies may be stricter in some courses and students then must adhere to the stricter attendance policy as outlined by the faculty/syllabus.

Students are required to arrive on time for classes. Teachers are entitled to treat any single case of lateness and/or repeated lateness as an unjustified absence.

Please note that according to official TAU Academic Policy, if a student's behavior or attendance during is disagreeable his/her course participation may be cancelled at the discretion of TAU with no due refund.

Grade Appeals
Students are responsible for checking grades once posted or distributed by faculty. The limited grade appeals window and the detailed procedure for appealing a grade – whether a graded assignment, exam or final grade – is outlined clearly in the policies and procedures in the TAU International Academic Handbook posted here.