

## Smart Cities Dr. Ronit Purian Summer Semester 2022

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**Instructor Contact Information:** [PurianRo@TAUex.TAU.ac.il](mailto:PurianRo@TAUex.TAU.ac.il)

**Out of Class Availability:** Email, online forum

**Office Hours:** After class

**Course Credits:** 4 TAU Semester Credits (minimum 52 academic hours)

**Course dates:** July 12-August 10, 2022

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](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, and consider their economic, ecological, and societal impact. We will study national and international initiatives that are being developed in the context of Smart Cities (the examples of Israel), Big Data Analysis, Urban Planning, Social Networks, Internet of Things, and possible approaches to integrating the themes of smart cities and urban data.

Urban networks, economic and technological transformations, and the rise of platforms and sharing economy will frame the discussion on smart and global cities. 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 tools.

Students will produce several outputs, in personal and group projects, to practice various phases in urban development processes. Potential topics and research questions for student projects will be provided to class, to frame the wide scope of urban issues in a coherent and integrated plan. Among them, transportation, Mobility as a Service (MaaS), the network economy and sharing platforms, walkability and navigation, supply chain of food and nutrition, wellbeing and community building, privacy and principles to enhance data ownership and security, reduce administrative burden, and empower citizens to control their data.



### 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 and data scientists.

In their projects students will choose research question and goals, e.g., to outline participatory planning in municipalities; to propose new private-public partnerships and data 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.

Students 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) will contribute – in personal and group projects – through independent study, knowledge creation and knowledge sharing, to raise their grade. All students are expected to gain an extra grade for excellent performance and leadership, and for joint efforts. This is a target directly related to course objectives, enhancing innovation management and teamwork. Urban planners, policy makers, officials in managerial or technological roles, entrepreneurs, product managers and developers should coordinate to improve city management. Organizational success is a product of organizational coordination. In this course, every student and the whole class will:

Engage in collective activities (course assignments; every student will produce three outputs).

Practice coordination in parallel\sequential moves (individually, with a partner).

Completing a series of outputs together as a class.

Students will submit a personal project that includes literature review, market analysis etc. Some students will present a paper and/or their personal project. A project deliverable could be a report, a software product, evaluation criteria, and other deliverables provided to class as building block of an overall city project.

Personal projects will be developed through two integrative tracks:

- **Class project:** We will establish a teamwork project, inspired by crowdsourcing project management methods, to practice the operation in a productive smart-city workplan, e.g., to define assignments and coordinate outputs we already have (personal projects); and plan those we wish to produce (personal project – advanced).
- **Personal project (advanced):** Students will apply methods and tools to practice new skills. Peer assessment will be introduced. Evaluation of personal reports will be supervised (literature review, market analysis, data analysis, design, etc.).



### Learning Outcomes

Knowledge on domains and applications, and on challenges and opportunities in cities today.

In their group project and personal paper, students will learn how to:

- Define and evaluate the impact of new services; identify unexpected outcomes.
- Integrate silos into a holistic view in municipalities; analyse systems, services and products.
- Design technological interfaces, data models, and business models and partnerships between the public and the private sectors, NGOs etc.

### Evaluation Criteria

Course evaluation is based on effort and performance, to encourage both independent study and contribution to class knowledge sharing, in personal and in group projects.

Steps to achieve and track student progress:

- **Personal project.** Optional: Presenting a paper and/or the personal project – individually or in pairs. A list of topics and papers will be provided.
- **Group project** – in groups of 4 students.
- **Personal project – advanced.** Optional: Peer review.

### Grades

Personal project	10%
Personal project – advanced	10%
Group project	20%
Presentations (personal\ group)	20%

### Performance and leadership

Attendance and participation	20%
Independent study	10%
Sharing and joint efforts	10%

### Course Schedule (detailed program will be provided to students)

Sun	Mon	Tue	Wed	Thu
		July 12	July 13	July 14
July 17	July 18	July 19	July 20	July 21
July 24	July 25	July 26	July 27	July 28
July 31	Aug 01	Aug 02	Aug 03	Aug 04
	Aug 08	Aug 09	Aug 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>

OECD AI Policy Observatory <https://www.oecd.ai>

"Smart, Sustainable and Fair Cities" (2020). Geography Research Forum (GRF) Special Issue (40), <https://grf.bgu.ac.il/index.php/GRF/issue/view/44>

UN-Habitat Open Data <https://urban-data-guo-un-habitat.hub.arcgis.com>

WEF: <https://www.weforum.org/reports>

Previous courses:

2019 course: [https://en-urban.tau.ac.il/events/Course\\_2019](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. <https://roniturban.wixsite.com/urbanit/about>



### 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](#).

