



Energy Usage and Green Public  
Transportation in Future Smart Cities: An  
Innovative Teaching Program for Students,  
Stakeholders and Entrepreneurs  
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# Secondary Field Program Handbook

*Energy Usage and Green Public Transportation in Future Smart Cities:  
An Innovative Teaching Program for Students, Stakeholders and  
Entrepreneurs*



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### Secondary Program Structure

The proposed “Sustainable Transportation” secondary field program consists of seven courses which are derived from the modules prepared for EUGPUT project. We propose the secondary field program for the related faculties of the universities i.e. “Economics and Administration Sciences”, “Engineering”, “Transportation”, “Economics”, “Business” etc. The proposed program may be attached to the undergraduate programs as either a secondary field program or minor program.

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Title	SUSTAINABLE TRANSPORTATION
The Aim of Program	<p>The aim of this secondary field program is to improve the knowledge/awareness of undergraduate students in the field of Sustainable Transportation. Furthermore, to introduce smart mobility and different smart trends as a driver for assuring green future, and evaluate current public transportation technologies. Alternative sustainable and green transportation technologies, core concepts of intermodal public transport and different intermodal services as a sustainable mobility solution will be introduced in this program. The other objectives of the secondary field program are providing the overview of technologies and information systems across various sustainable and green public transportation modes and gaining an understanding of the role of fiscal policy in promoting public transport and financing methods of sustainable and green public transport. This program will also provide learners with the opportunity to; increase their awareness of intellectual property rights (IPR) and its types, conceive the role of IPR in future technologies and also green transportation systems in the future smart cities, utilize different business models and financial opportunities to realize their idea.</p>

Requirements of the Program		
Pre-requisite /	This program is open to all students.	
Co-requisite /	-	
Total number of courses /	Compulsory courses	2
	Elective courses	3 to 5
Total ECTS credits /	30 to 42	
Explanation (*)	Please read "Remarks" section for details.	

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Courses				
Course Code	Course Title	Credit	Pre-requisite	Type of Course
SUT 01	Smart Society for the Green Future	6	None	<input checked="" type="checkbox"/> Compulsory <input type="checkbox"/> Elective
SUT 02	The Role of Electromobility in the Energy-Related Smart Grids	6	SUT 01, SUT 03	<input type="checkbox"/> Compulsory / <input checked="" type="checkbox"/> Elective /
SUT 03	Green Public Transportation	6	None	<input checked="" type="checkbox"/> Compulsory / <input type="checkbox"/> Elective /
SUT 04	Intermodal Green Public Transport Planning	6	SUT 01, SUT 03	<input type="checkbox"/> Compulsory / <input checked="" type="checkbox"/> Elective /
SUT 05	Information Systems and Technologies for Smart Mobility	6	SUT 01, SUT 03	<input type="checkbox"/> Compulsory / <input checked="" type="checkbox"/> Elective /
SUT 06	Economics of Green Public Transportation Systems	6	SUT 01, SUT 03	<input type="checkbox"/> Compulsory / <input checked="" type="checkbox"/> Elective /
SUT 07	Intellectual Property Rights and Entrepreneurship Opportunities Considering Smart City Public Transportation	6	SUT 01, SUT 03	<input type="checkbox"/> Compulsory / <input checked="" type="checkbox"/> Elective /

Remarks	<p>1. In this program, Students are required to take 2 compulsory courses and 3 to 5 elective courses according to the number of secondary field courses specified by their department's curriculum.</p> <p>2. Students can choose elective courses from the "Courses" list above.</p> <p>3. Students cannot fulfill their secondary field requirements with their own departments' must courses.</p>		
	Name - Surname	Dr. Zafer Yılmaz	
	Phone	+90 312 585 0337	
Contact Person	E-mail	<a href="mailto:zafer.yilmaz@tedu.edu.tr">zafer.yilmaz@tedu.edu.tr</a>	
Prepared By	EUGPUT Members	Date	15.01.2023

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## COURSE NAME:

### Course #1: SUT 01- Smart Society for the Green Future

#### Course Information

The course can be in one of the three below forms depending on the availabilities of students and instructors.

##### Schedule:

**Mode of Delivery:** ☒ Face-to-face ☒ Online ☒ Hybrid

#### Instructor(s) Information

**Instructor(s):** Anton MANFREDA, Luka TOMAT, Kristina NAGODE

**E-mail:** anton.manfreda@ef.uni-lj.si, luka.tomat@ef.uni-lj.si, kristina.nagode@ef.uni-lj.si

#### Course Objectives

The aim of the course is to introduce the smart city concept and different trends that are assuring green future together with guidelines for smart city transformation. In this course, students will gain understanding of digital transformation as a key driver of change in cities and communities. The course will also provide students with the information about essential smart city elements, with special emphasis on the smart mobility. The aim of the course is also to present different smart city initiatives as well as issues related to developing smart cities and communities. The aim is also to learn how to analyze and compare existing smart city and community projects and to analyze smart community data using R and other related software.

The course will provide students with the opportunity to critically evaluate, optimize and manage smart solutions for citizens and organizations in the urban surroundings and other environments. The course will also provide the students with the opportunity to develop the skills of analyzing different approaches of smart city development as well as managing obstacles for it. In this course, learners will gain understanding of digital transformation as a key driver of change towards modern business world including change management issues. Besides, the course will introduce the concept of green future in general and relate

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it to the smart city context. The course aims also to present different innovative business models and their applicability to the mobility area.

## Learning Outcomes

Upon successful completion of this course, learners will be able to:

1. explain the drivers of digital transformation
2. determine the concept of smart city and green future
3. develop a broad and systematic insight into the importance of designing smart cities
4. recognize the key drivers of smart cities and communities and develop the ability to critically evaluate the situation at the level of technology and the needs of individual cities
5. develop the ability to empirically assess the importance of individual factors to the success of smart city design
6. apply innovative business models to transportation area
7. justify the importance of maturity models
8. develop the ability to understand the importance of data tools
9. identify main obstacles for developing smart cities and communities
10. assess future trends related to the mobility segment
11. analyze different implementation practices
12. assess advantages and disadvantages of implementing green mobility strategies in modern smart cities
13. discuss important actions for change management and policy creation in relation with green future

## Prerequisite Knowledge, Skills, Attitudes

No prerequisite is required. However, the learners are advised to read the teaching notes available on the course Moodle page. In addition, the learners can visit the EUGPUT project website (<http://eugput.com/>) in order to gain related knowledge prior to attending this course.

## Supplementary Materials

In addition to teaching notes, the following supplementary materials are advised to improve the knowledge about the concepts which will be introduced during the course.

Readings:

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- Selected chapters from Oliver Gassmann, Jonas Böhm, Maximilian Palmié (2019). Smart Cities: Introducing Digital Innovation to Cities. Emerald Publishing.
- Selected chapters from Bernard W. Wirtz (2020). Digital Business and Electronic Commerce. Springer.
- Selected chapters from Hajer, M., & Dassen, T. (2014). Smart about cities: Visualising the challenge for 21st century urbanism. Rotterdam: Nai Publishers.
- Selected chapters from Rodriguez Bolivar, M. P. (Ed.) (2015). Transforming city government for successful smart cities. New York: Springer.
- Selected chapters from Teisman, G. R., Van Buuren, A., & Gerrits, L. (Eds.) (2009). Managing complex governance systems: Dynamics, self-organization and coevolution in public investments. Routledge: New York.
- Selected chapters from Townsend, A. M. (2013). Smart cities: Big data, civic hackers, and the quest for a new utopia. New York: W.W. Norton & Company.
- Selected chapters from Campbell, T. (2012). Beyond smart cities: How cities network, learn and innovate. London: Earthscan.

#### Additional readings:

- Israilidis, J., Odusanya, K., & Mazhar, M. U. (2021). Exploring knowledge management perspectives in smart city research: A review and future research agenda. International Journal of Information Management, 56, 101989.
- Albino, V., Berardi, U., & Dangelico, R. (2015). Smart cities: Definitions, dimensions, performance, and initiatives. Journal of Urban Technology, 22(1), 3–21.
- Chauhan, S., Agarwal, N., & Kar, A. K. (2016). Addressing big data challenges in smart cities: A systematic literature review. Info, 18(4), 73–90.
- Yoo, Y., Kim, K., & Han, J. (2016). Comparative analysis of smart city projects - implications for U-city. International Journal of Applied Business and Economic Research, 14(5), 2913–2929.

#### Topical Outline

The methods of learning and teaching are based on modern learning, which includes interactive lectures, independent reading, work on case studies and the presentation of a project work. Apart from the lectures in the classroom, the lectures can also be held in the online or hybrid form. Note that the schedule below is not rigid and may require minor modifications as the course progresses.

Topics	WEEK
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Introduction, Digitalization and the society	1
The concept and the drivers of green future	2
Current challenges for cities and communities	3
Cases of digital transformation, innovative business models	4
Assignment presentations	5
The smart city concept and the elements of smart city	6
Underlying technologies in smart cities and their adoption, Designing Digital Twins	7
Smart city issues and initiatives (different cases)	8
Assignment presentations	9
Smart mobility and green future: The concept of smart mobility, Comparison between traditional and smart models	10
Managerial implications: Decision support, Business Intelligence and Analytics,	11
Policy creation, Change management	12
Project Presentation	13
Exam	14

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## Instructional Methods

<b>Instructional Methods and Techniques</b>	<input checked="" type="checkbox"/> Brainstorming <input checked="" type="checkbox"/> Case Study/Scenario Analysis <input checked="" type="checkbox"/> Cooperative Learning <input type="checkbox"/> Concept Mapping <input checked="" type="checkbox"/> Demonstrating <input checked="" type="checkbox"/> Discussions / Debates <input type="checkbox"/> Drama / Role Playing <input type="checkbox"/> Experiments <input type="checkbox"/> Field Trips	<input type="checkbox"/> Hands-on Activities <input type="checkbox"/> Inquiry <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Peer Teaching <input checked="" type="checkbox"/> Problem Solving <input checked="" type="checkbox"/> Project-Based Learning <input checked="" type="checkbox"/> Questioning <input type="checkbox"/> Seminars <input type="checkbox"/> Service Learning <input type="checkbox"/> Simulations & Games	<input type="checkbox"/> Think-Pair-Share <input checked="" type="checkbox"/> Video Presentations <input type="checkbox"/> Other(s):

## Assessment of Student Learning

<b>Assessment Methods</b>	<input checked="" type="checkbox"/> Case Analysis <input checked="" type="checkbox"/> Exam (in-class) <input type="checkbox"/> Exam (open-book) <input type="checkbox"/> Exam (take-home) <input type="checkbox"/> Oral exam <input type="checkbox"/> Oral presentation	<input type="checkbox"/> Peer evaluation <input type="checkbox"/> Portfolio or e-folio <input type="checkbox"/> Project <input type="checkbox"/> Quiz <input checked="" type="checkbox"/> Self-evaluation <input checked="" type="checkbox"/> Written reports	<input type="checkbox"/> Classroom assessment techniques (CATs) <input checked="" type="checkbox"/> Other(s): Pre- In class activities

## Grading/Evaluation

The total grade consists of scores from the following items:

Assessment Items	Weight (%)
------------------	------------

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In-class activities & Assignments	20
Project work & Presentation	40
Exam	40

### Course Policies

Learners are expected to actively participate in lectures and other forms of work. Learners are required to work on cases & projects in teams of 2-4 students. Groups for the final project should be formed at the beginning of the semester, while selection of the groups for the assignments and in-class activities will be let to the learners.

The course will be a mix of traditional lectures, class discussions, case analyses, and learning activities that involve all participants, either individually or in teams. During discussions and group work, learners should pay attention to other participants and respect different points of view.

### Academic Honesty

Plagiarism will be penalized (see <http://www.plagiarism.org/>).

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## COURSE NAME:

### Course #2: SUT 02 - The Role of Electromobility in the Energy-Related Smart Grids

#### Course Information

The course can be in one of the three below forms depending on the availabilities of students and instructors.

##### Schedule:

**Mode of Delivery:** ☒ Face-to-face ☒ Online ☒ Hybrid

#### Instructor(s) Information

**Instructor(s):** Aleš Groznik, Bor Krizmanič  
**E-mail:** ales.groznik@ef.uni-lj.si, bor.krizmanic@ef.uni-lj.si

#### Course Objectives

The aim of the course is to introduce a smart grids concept and current and future trends in energy usage in transportation. The course will provide learners with knowledge to recognize the role of smart grids and energy in smart cities and the relationship to mobility. In this course, learners will gain an understanding of the smart grid concept as it relates to data, energy, and mobility. Learners will also be introduced to the challenges and interconnectedness of urban planning of future smart cities, adoption of new mobility concepts and smart grids.

In this course, various examples of innovative use of technology and data to better manage grids and harness energy will be presented.

#### Learning Outcomes

Upon successful completion of this course, learners will be able to:

1. Explain the concept of smart grids.
2. Identify and critically evaluate green energy initiatives related to transportation and mobility.
3. Compare and explain current and future trends in energy supply and consumption.
4. Identify and analyze the main challenges of future energy-related urban planning.

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## Prerequisite Knowledge, Skills, Attitudes

No prerequisite is required. However, the learners are advised to read the teaching notes available on the course Moodle page. In addition, the learners can visit the EUGPUT project website (<http://eugput.com/>) in order to gain related knowledge prior to attending this course.

## Supplementary Materials

In addition to teaching notes, the following supplementary materials are advised to improve the knowledge about the concepts which will be introduced during the course.

- Sorebo, G. N., & Echols, M. C. (2011). *Smart grid security: an end-to-end view of security in the new electrical grid*. CRC Press.- Chapter 1, 1.1. Definition: Traditional Power Grid
- Kaplan, S. M. (2009, April). Electric power transmission: background and policy issues. Library of Congress, Congressional Research Service.
- California independent system operator. (2016). What the duck curve tells us about managing a green grid. Available on: [https://www.caiso.com/Documents/FlexibleResourcesHelpRenewables\\_FastFacts.pdf](https://www.caiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf) (Accessed 20 January 2022).
- ENTSO-E. (2021). ENTSO-E Position Paper: Electric Vehicle Integration into Power Grids. Available at: [https://eepublicdownloads.entsoe.eu/clean-documents/Publications/Position%20papers%20and%20reports/210331\\_Electric\\_Vehicles\\_integration.pdf](https://eepublicdownloads.entsoe.eu/clean-documents/Publications/Position%20papers%20and%20reports/210331_Electric_Vehicles_integration.pdf) (Accessed 2 March 2022).

## Topical Outline

The class sessions will be a mix of traditional lectures, class discussions, case analysis, learning activities, and project preparation that involve all students, either individually or in teams.

The schedule below is not rigid and may require minor modification as the course progresses.

Topics	WEEK
Introduction of Electrical Grid	1
Current Energy Usage, Renewable Energy Sources	2
Smart Grid	3

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Smart meter and Prosumers	4
Introduction of Renewable Energy Sources into the Grid	5
Case of Introduction of Photovoltaics into the Grid	6
E-Mobility, Electric Vehicles & Battery Technologies	7
EV Changing Technologies	8
Smart Changing	9
Electrification of public transport and freight transport	10
Alternatives to the electrification of mobility	11
New Smart Grid Enabled Business Models	12
Group Work for the Project	13
Project Presentation	14

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## Instructional Methods

<b>Instructional Methods and Techniques</b>	<input checked="" type="checkbox"/> Brainstorming <input checked="" type="checkbox"/> Case Study/Scenario Analysis <input checked="" type="checkbox"/> Cooperative Learning <input type="checkbox"/> Concept Mapping <input type="checkbox"/> Demonstrating <input checked="" type="checkbox"/> Discussions / Debates <input type="checkbox"/> Drama / Role Playing <input type="checkbox"/> Experiments <input type="checkbox"/> Field Trips	<input type="checkbox"/> Hands-on Activities <input type="checkbox"/> Inquiry <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Peer Teaching <input checked="" type="checkbox"/> Problem Solving <input checked="" type="checkbox"/> Project-Based Learning <input checked="" type="checkbox"/> Questioning <input type="checkbox"/> Seminars <input type="checkbox"/> Service Learning <input checked="" type="checkbox"/> Simulations & Games	<input type="checkbox"/> Think-Pair-Share <input checked="" type="checkbox"/> Video Presentations <input checked="" type="checkbox"/> Other(s): After Questionnaire to ask feedbacks of learners

## Assessment of Student Learning

<b>Assessment Methods</b>	<input checked="" type="checkbox"/> Case Analysis <input checked="" type="checkbox"/> Exam (in-class) <input type="checkbox"/> Exam (open-book) <input type="checkbox"/> Exam (take-home) <input type="checkbox"/> Oral exam <input checked="" type="checkbox"/> Oral presentation	<input type="checkbox"/> Peer evaluation <input type="checkbox"/> Portfolio or e-folio <input checked="" type="checkbox"/> Project <input type="checkbox"/> Quiz <input type="checkbox"/> Self-evaluation <input checked="" type="checkbox"/> Written reports	<input type="checkbox"/> Classroom assessment techniques (CATs) <input checked="" type="checkbox"/> Other(s): Pre-After Questionnaires and In class activities

## Grading/Evaluation

Your total grade consists of scores from the following items:

Assessment Items	Weight (%)
------------------	------------

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In class activities & Participation	10
Midterm Exam	30
Project Presentation & Report	50
Attendance	10

### Course Policies

Our class sessions will be a mix of traditional lectures, class discussions, case analysis, and learning activities that involve all participants, either individually or in teams. It is imperative that participants come prepared to class (by downloading and reading the course related documents which are available on course Moodle page & EUGPUT project website) and are fully engaged in our class meeting. During discussions and/or group work, I expect participants to pay attention to other participants and to respect different points of view. The instructor welcomes your questions during class and outside the classroom during breaks. The participants are expected to come to class or attend online and submit pre-after questionnaires, self-evaluating reports on time. Team work during case studies and active participation are encouraged in class assignments.

### Academic Honesty

Plagiarism will be penalized (see <http://www.plagiarism.org/>).

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## COURSE NAME:

### Course #3: SUT 03- Green Public Transportation

#### Course Information

The course can be in one of the three below forms depending on the availabilities of students and instructors.

##### Schedule:

**Mode of Delivery:** ☒Face-to-face ☒Online ☒Hybrid

#### Instructor(s) Information

**Instructor(s):** Zafer YILMAZ, Gizem ÇELİK

**E-mail:** zafer.yilmaz@tedu.edu.tr gizem.celik@tedu.edu.tr

#### Course Objectives

The aim of the course is to evaluate current public transportation technologies and introduce alternative future green transportation technologies in smart cities. The course aims to improve learners' knowledge about current public transportation technologies and increase the learners' sensitivity about the energy usage and air polluting problems caused by current public transportation technologies (i.e. in some European cities). The course will provide learners with the opportunity to practice the skill of identifying future green and intelligent vehicles and their integration to the future green public transportation technologies. The course will help the learners to develop the skills of;

- analyzing alternative green public transportation technologies
- comparing current and future public transportation technologies
- discussing information systems, efficient tools in green public transportation
- understanding economics of green public transportation

#### Learning Outcomes

Upon successful completion of this course, learners will be able to:

1. Explain current public transportation technologies

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2. Justify air pollution problems caused by the vehicles used in current public transportation
3. Identify green public transportation vehicle systems
4. Analyze green public transportation alternatives, traffic & data management systems
5. Compare current and future public transportation technologies
6. Discuss information systems, efficient methods and tools in public transportation network planning
7. Explain economics of green public transportation systems

### Prerequisite Knowledge, Skills, Attitudes

No prerequisite is required. However, the learners are advised to read the teaching notes available on the course Moodle page. In addition, the learners can visit the EUGPUT project website (<http://eugput.com/>) in order to gain related knowledge prior to attending this course.

### Supplementary Materials

In addition to teaching notes, the following supplementary materials are advised to improve the knowledge about the concepts which will be introduced during the course.

- European Environment Agency. Transitions toward a More Sustainable Mobility System. EEA Report 34. TERM 2016: Transport Indicators Tracking Progress Toward Environmental Targets in Europe, 2016.
- The future of road transport - Implications of automated, connected, low-carbon and shared mobility, EUR 29748 EN, Publications Office of the European Union, Luxembourg, 2019.
- Transport in the EU: Current Trends and Issues. European Commission, Directorate-General Mobility and Transport, B-1049 Brussels, 2019.
- Ibarra-Rojas, O. J., F. Delgado, R. Giesen, and J. C. Munoz. Planning, Operation, and Control of Bus Transport Systems: A Literature Review. Transportation Research Part B: Methodological, Vol. 77, 2015, pp. 38–75.
- Tozzi, M., U. Guida, and T. Knote. 3iBS: The Intelligent, Innovative Integrated Bus Systems. Presented at Transport Research Arena (TRA) 5th Conference: Transport Solutions from Research to Deployment, Paris, France, 2014.
- Egbue, O., and S. Long. Barriers to Widespread Adoption of Electric Vehicles: An Analysis of Consumer Attitudes and Perceptions. Energy Policy, Vol. 48, 2012, pp. 717–729.

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- Tzeng, G. H., C. W. Lin, and S. Opricovic. Multi-Criteria Analysis of Alternative-Fuel Buses for Public Transportation. *Energy Policy*, Vol. 33, No. 11, 2005, pp. 1373–1383.
- Morita, K. Automotive Power Source in 21st Century. *JSAE Review*, Vol. 24, No. 1, 2003, pp. 3–7.
- Jungmeier, G. Battery Electric Buses Project in Task 33 of the International Energy Agency (IEA) on Hybrid and Electric Vehicles (HEV). Presented at International Conference on Electric Mobility and Public Transport, Santiago, Chile, 2017. <http://www.ieahev.org/tasks/task-33-battery-electric-buses/>.
- Iliopoulou et al. (2019), Electric Transit Route Network Design Problem: Model and Application Transportation Research Record 2019, Vol. 2673(8) 264–274

### Topical Outline

Our class sessions will be a mix of traditional lectures, class discussions, case analysis, learning activities, and project preparation that involve all students, either individually or in teams.

You are required to work on cases & projects in teams of 3-4 students. Groups should be formed at the beginning of the semester and maintained throughout the semester.

The course slides and practice questions will be posted on course website. The instructor will explain the details of the topics given below at the beginning of the course.

Note that the schedule below is not rigid and may require minor modification as the course progresses.

Topics	WEEK
Introduction	1
Review of the current public transportation technologies	2
Air pollution problems (Examples from cities)	3
Transportation issues of SDGs	4
Current Green Public Transportation Vehicles (i.e. electric vehicles, hybrid vehicles, vehicles using alternative energy systems)	5
Future Green Public Transportation Vehicles (i.e. autonomous buses, cars, trains)	6
CASE STUDY (Examples from Ankara, Bucharest, Split, Ljubljana)	7

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Integration of green and intelligent public transportation vehicles into future public transportation technologies.	8
MIDTERM EXAM	9
Using information systems, efficient transportation methods and tools (i.e. GIS) in green public transportation planning.	10
Traffic Management, monitoring, data management systems for green public transportation	11
Economics of Green Public Transportation	12
Business Model CANVAS	13
Discussions on problems & solutions for green public transportation	13
Project Presentation	14

## Instructional Methods

<b>Instructional Methods and Techniques</b>	<input checked="" type="checkbox"/> Brainstorming <input checked="" type="checkbox"/> Case Study/Scenario Analysis <input checked="" type="checkbox"/> Cooperative Learning <input type="checkbox"/> Concept Mapping <input checked="" type="checkbox"/> Demonstrating <input checked="" type="checkbox"/> Discussions / Debates <input type="checkbox"/> Drama / Role Playing <input type="checkbox"/> Experiments <input type="checkbox"/> Field Trips	<input type="checkbox"/> Hands-on Activities <input type="checkbox"/> Inquiry <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Peer Teaching <input checked="" type="checkbox"/> Problem Solving <input checked="" type="checkbox"/> Project-Based Learning <input checked="" type="checkbox"/> Questioning <input type="checkbox"/> Seminars <input type="checkbox"/> Service Learning <input checked="" type="checkbox"/> Simulations & Games	<input type="checkbox"/> Think-Pair-Share <input type="checkbox"/> Video Presentations <input checked="" type="checkbox"/> Other(s): After Questionnaire to ask feedbacks of learners

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## Assessment of Student Learning

<b>Assessment Methods</b>	<input checked="" type="checkbox"/> Case Analysis	<input type="checkbox"/> Peer evaluation	<input type="checkbox"/> Classroom assessment techniques (CATs)
	<input checked="" type="checkbox"/> Exam (in-class)	<input type="checkbox"/> Portfolio or e-folio	<input checked="" type="checkbox"/> Other(s): Pre- In class activities
	<input type="checkbox"/> Exam (open-book)	<input checked="" type="checkbox"/> Project	
	<input type="checkbox"/> Exam (take-home)	<input type="checkbox"/> Quiz	
	<input type="checkbox"/> Oral exam	<input checked="" type="checkbox"/> Self-evaluation	
	<input type="checkbox"/> Oral presentation	<input checked="" type="checkbox"/> Written reports	

## Grading/Evaluation

Your total grade consists of scores from the following items:

Assessment Items	Weight (%)
In class activities & Participation	10
Case Study	10
Midterm Exam	30
Project Presentation & Report	40
Attendance	10

## Course Policies

Our class sessions will be a mix of traditional lectures, class discussions, case analysis, and learning activities that involve all participants, either individually or in teams. It is imperative that participants come prepared to class (by downloading and reading the course related documents which are available on course Moodle page & EUGPUT project website) and are fully engaged in our class meeting. During discussions and/or group work, I expect participants to pay attention to other participants and to respect different points of view. The instructor welcomes your questions during class and outside the classroom during breaks. The participants are expected to come to class or attend online and submit pre-after

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questionnaires, self-evaluating reports on time. Team work during case studies and active participation are encouraged in class assignments.

### Academic Honesty

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## COURSE NAME:

### Course #4: SUT 04- Intermodal Green Public Transport Planning

#### Course Information

##### Schedule:

**Mode of Delivery:** ☒Face-to-face ☒Online ☒Hybrid

#### Instructor(s) Information

**Instructors:** Dorinela COSTESCU

**E-mail:** dorinela.costescu@upb.ro

#### Course Objectives

The course aims to introduce core concepts of intermodal public transport and different intermodal services as sustainable mobility solutions. In this course, learners will gain an understanding of the role of intermodal public transport and of the key components of the intermodal urban mobility system. Learners will gain information about the characteristics of different transport modes, relationships between urban structure and public transport efficiency, and the necessity of correlation of different transport modes. The course will also present criteria to assess options of intermodal mobility services. Learners will gain information about models applied to assess the accessibility of the public transport network and potential measures to increase accessibility. The course will provide participants with the opportunity to identify measures to increase the attractiveness of intermodal public transport and to enhance the functionalities of intermodal hubs.

#### Learning Outcomes

Upon successful completion of this module, learners will be able to:

1. Discuss the necessity of developing all transport modes in an integrated approach
2. Describe the role of intermodal public transport in a smart city environment.
3. Identify the advantages and disadvantages of intermodal public transport.

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4. Examine the levels of integration for intermodal urban mobility development
5. Explain models applied to assess the accessibility of the public transport network.
6. Outline technical solutions for intermodal public transport.
7. Examine the stakeholders involved in the design and operation of intermodal hubs.
8. Recommend measures to increase the attractiveness of intermodal public transport.

### Prerequisite Knowledge, Skills, Attitudes

Completion of Course "*Green Vehicles and Green Public Transportation Network Design*"

### Supplementary Materials

The teaching notes are available on the project website. In addition to teaching notes, the following research is advised to gain knowledge about the concepts which will be introduced during the course.

- Bernal L.M.M.D. 2016. *Basic Parameters for the Design of Intermodal Public Transport Infrastructures*. Transportation Research Procedia 14 499-508
- Gebhardt L. et al. 2017. *Intermodality – key to a more efficient urban transport system?* ECEEE Summer Study Proceedings. Part 4. Mobility, transport, and smart and sustainable cities. 4-071-17. 759 – 769.
- ITF. 2012. *Seamless Public Transport for All*. Proceedings of a Joint Seminar held in Paris, France on 6 March 2012. International Transport Forum. OECD. (Chapter 4. Physical integration of the public transportation network, pp. 45-56).
- Litman T. 2021. *Introduction to Multi-Modal Transportation Planning Principles and Practices*. Victoria Transport Policy Institute 250-508-5150. [www.vtpi.org/multimodal\\_planning.pdf](http://www.vtpi.org/multimodal_planning.pdf)
- Luk J., Olszewski P. 2003. *Integrated public transport in Singapore and Hong Kong*. Road & Transport Research 12(4) 41-51.
- Miller, Eric J. 2020. *Measuring accessibility: Methods and issues*, International Transport Forum Discussion Paper, No. 2020/25, Organisation for Economic Cooperation and Development (OECD), International Transport Forum, Paris, <https://doi.org/10.1787/8687d1db-en>
- Rupprecht Consult (Ed.) 2019. *Guidelines for Developing and Implementing a Sustainable Urban Mobility Plan*. Second Edition.
- UN-Habitat. 2013. *Planning and Design for Sustainable Urban Mobility. Global Report on Human Settlements 2013*. United Nations Human Settlements Programme. (Chapter 3. Metro, rail, light rail and BRT)

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- Van Audenhove F. J., Korniiichuk O., Dauby L., Pourbaix J. 2014. *The Future of Urban Mobility 2.0. Imperatives to shape extended mobility ecosystems of tomorrow*. Arthur D. Little & The International Association of Public Transport (UITP).

## Topical Outline

Topic	
Introduction <ul style="list-style-type: none"> <li>• Domains of the mobility system performance</li> <li>• Intermodality in the guiding principles of sustainable mobility planning</li> </ul>	Week 1 & 2
The role of intermodal public transport in smart cities <ul style="list-style-type: none"> <li>• Definitions</li> <li>• Functions of intermodal urban mobility services</li> <li>• Examples of multimodal and intermodal solutions for different types of trips</li> </ul>	Week 3 & 4
The key components of the intermodal urban mobility system <ul style="list-style-type: none"> <li>• Intermodal service characteristics</li> <li>• Levels of integration for intermodal urban mobility development</li> <li>• Examples of intermodal mobility systems</li> </ul>	Week 5 & 6
Particularities of the intermodal public transport <ul style="list-style-type: none"> <li>• Characteristics of different transport modes and mobility facilities. Relationships between urban structure and public transport system. Categories of public transport modes. Solution for correlation between various mobility modes</li> <li>• Comparisons and complementarities of different transport modes. Operating characteristics of different transport modes. Complementarity of transport services.</li> <li>• Case studies. Intermodal public transport services</li> </ul>	Week 7, 8 & 9
Design and optimization of the intermodal public transport network <ul style="list-style-type: none"> <li>• Transport Network Design Problem. Objectives.</li> <li>• Hierarchy of infrastructure networks.</li> <li>• Network accessibility. Assessment of the spatial accessibility of public transport networks.</li> <li>• • Case studies. Measures to enhance public transport accessibility through smart mobility technologies.</li> </ul>	Week 10, 11 & 12

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<p>Measures to increase the attractiveness of the intermodal urban mobility</p> <ul style="list-style-type: none"> <li>• Journey chain and intermodal hubs. Disutility of intermodal transfers. Characteristics of the intermodal hubs</li> <li>• Stakeholders involved in the management of the intermodal mobility solutions. Examples of intermodal mobility solutions</li> <li>• Conclusion</li> </ul>	Week 13 & 14
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## Instructional Methods

<b>Instructional Methods and Techniques</b>	<input type="checkbox"/> Brainstorming <input checked="" type="checkbox"/> Case Study/Scenario Analysis <input type="checkbox"/> Cooperative Learning <input checked="" type="checkbox"/> Concept Mapping <input type="checkbox"/> Demonstrating <input checked="" type="checkbox"/> Discussions / Debates <input type="checkbox"/> Drama / Role Playing <input type="checkbox"/> Experiments <input type="checkbox"/> Field Trips	<input type="checkbox"/> Hands-on Activities <input type="checkbox"/> Inquiry <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Peer Teaching <input type="checkbox"/> Problem Solving <input type="checkbox"/> Project-Based Learning <input checked="" type="checkbox"/> Questioning <input type="checkbox"/> Seminars <input type="checkbox"/> Service Learning <input type="checkbox"/> Simulations & Games	<input type="checkbox"/> Think-Pair-Share <input checked="" type="checkbox"/> Video Presentations <input type="checkbox"/> Other(s):.....
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## Assessment of Student Learning

<b>Assessment Methods</b>	<input checked="" type="checkbox"/> Case Analysis	<input type="checkbox"/> Peer evaluation	<input checked="" type="checkbox"/> Classroom assessment techniques (CATs)
	<input type="checkbox"/> Exam (in-class)	<input type="checkbox"/> Portfolio or e-folio	<input type="checkbox"/> Other(s): Pre-After
	<input type="checkbox"/> Exam (open-book)	<input type="checkbox"/> Project	Questionnaires
	<input type="checkbox"/> Exam (take-home)	<input checked="" type="checkbox"/> Quiz	
	<input type="checkbox"/> Oral exam	<input type="checkbox"/> Self-evaluation	
	<input type="checkbox"/> Oral presentation	<input type="checkbox"/> Written reports	

## Grading/Evaluation

Your total grade consists of scores from the following items:

Assessment Items	Weight (%)
In class activities	90
Quiz	10

## Course Policies

Our class sessions will be a mix of traditional lectures, class discussions, case analysis, and learning activities that involve all participants (i.e., students, stakeholders, academics etc.), either individually or in teams. It is imperative that participants come prepared to class (by downloading and reading the course related documents which are available on project website) and are fully engaged in our class meeting. During discussions and/or group work, I expect participants to pay attention to other participants and to respect different points of view. The instructor welcomes your questions during class and outside the classroom during breaks. The participants are expected to come to class or attend online and submit pre-after questionnaires, self-evaluating reports on time. Teamwork during case studies and active participation are encouraged in class assignments.

## Academic Honesty

Plagiarism will be penalized (see <http://www.plagiarism.org/>).

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## COURSE NAME:

### Course #5: SUT 05 - Information Systems and Technologies for Smart Mobility

#### Course Information

The course can be in one of the three below forms depending on the availabilities of students and instructors.

##### Schedule:

**Mode of Delivery:** ☒ Face-to-face ☒ Online ☒ Hybrid

#### Instructor(s) Information

**Instructor(s):** Maja Ćukušić, Silvia Golem, Ivana Ninčević Pašalić, Tomislav Križan

**E-mail:** mcukusic@efst.hr, sgolem@efst.hr, nincevic@efst.hr, tkrizan@atmc.ai

#### Course Objectives

The course will provide participants with the overview of technologies and information systems across various transportation modes, whether these are used by pedestrians or implemented in bicycles, buses, and rails. Learners will be introduced to innovative and underlying concepts and technologies, in particular - cloud computing, big data, Internet of Things (IoT), and artificial intelligence, that enable public sector organisations to adapt to climate challenges and that lead to changes in organisational processes, operating models, and ways of providing services (Mobility as a Service, MaaS) to the general public. They will be given an opportunity to discuss the collection, sharing, integration and control of data derived from related information systems, as well as the potential for data analytics processes, development of prediction models, and tools for visual analytics. Upon reviewing real-life case studies provided by the industrial partner, learners will be supported in developing their decision support models that could ensure a better quality of service delivery and increase efficiency and effectiveness in the smart mobility segment.

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## Learning Outcomes

By the end of this course, learners will be able to:

8. Recognize the organization and technical challenges in future mobility scenarios.
9. Discuss general concepts, technologies and information systems needed for operation, optimisation and decision support in the smart mobility segment.
10. Recognize the challenges in collecting, storing, integrating and analysing data generated by various stakeholders in smart mobility.
11. Propose a solution using specific tools for optimising and managing mobility services for citizens in the urban surrounding.

## Prerequisite Knowledge, Skills, Attitudes

No prerequisite. However, the learners are advised to read the teaching notes available on the course Moodle page. In addition, the learners can visit the EUGPUT project website (<http://eugput.com/>) in order to gain related knowledge prior to attending this course.

## Supplementary Readings

There is no required textbook, however, the teaching notes are available on the project website.

- Dedrick, J. (2010). Green IS: Concepts and Issues for Information Systems Research. Communications of the Association for Information Systems: Vol. 27, Article 11.
- Djahel, S., Doolan, R., Muntean, G.-M., & Murphy, J. (2015). A Communications-Oriented Perspective on Traffic Management Systems for Smart Cities: Challenges and Innovative Approaches. IEEE Communications Surveys and Tutorials, Vol. 17(1), Article number 6857980, pp. 125-151.
- Docherty, I., Marsden, G., & Anable, J. (2018). The governance of smart mobility. Transportation Research Part A: Policy and Practice, Vol. 115, pp. 114-125.
- Li, H-R. (2016). Study on Green Transportation System of International Metropolises. Procedia Engineering, Vol. 137, pp. 762-771.
- Majumder, S., De, K., Kumar, P. & Rayudu, R. (2019). A green public transportation system using E-buses: A technical and commercial feasibility study. Sustainable Cities and Society, Vol. 51, 101789.
- Ogryzek, M., Adamska-Kmieć, D. & Klimach, A. (2020). Sustainable Transport: An Efficient Transportation Network—Case Study. Sustainability. Vol. 12(19), 8274.

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- Panday, A. & Bansal, H.O. (2014). Green transportation: need, technology and challenges, International Journal of Global Energy Issues, Vol. 37, Nos. 5/6, pp.304–318.

## Topical Outline

Our class sessions will be a mix of traditional lectures, class discussions, case analysis, learning activities, and project preparation that involve all students, either individually or in teams.

You are required to work on cases & projects in teams of 3-4 students. Groups should be formed at the beginning of the semester and maintained throughout the semester.

The course slides and practice questions will be posted on course website. The instructor will explain the details of the topics given below at the beginning of the course.

Note that the schedule below is not rigid and may require minor modification as the course progresses.

Topics	Week
Introduction	1
Smart mobility in the urban development context	2
Green smart mobility as a concept of smart city, walkable cities, 15-min cities	3
Enabling technologies for smart cities and smart mobility	4
Standardisation and interoperability of solutions for smart cities and smart mobility	5
The role and functions of AI technologies in supporting smart mobility systems	6
Dashboards and information systems across various (green) transportation modes	7
Data governance and open data in smart mobility	8
MIDTERM EXAM	9
Foresight in planning smart city services in the mobility segment: Scenario Exploration System	10
Predictive analytics for managing smart cities: using big data for making data-driven decisions: the benefits and issues based on REAL-LIFE MOBILITY CASES	11

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Process mining and service optimisation in cities	12
Simulation modelling of smart services in cities	13
PROJECT PRESENTATION: classification or prediction decision support model	14

## Instructional Methods

<b>Instructional Methods and Techniques</b>	<input checked="" type="checkbox"/> Brainstorming <input checked="" type="checkbox"/> Case Study/Scenario Analysis <input checked="" type="checkbox"/> Cooperative Learning <input type="checkbox"/> Concept Mapping <input checked="" type="checkbox"/> Demonstrating <input checked="" type="checkbox"/> Discussions / Debates <input checked="" type="checkbox"/> Drama / Role Playing <input type="checkbox"/> Experiments <input type="checkbox"/> Field Trips	<input checked="" type="checkbox"/> Hands-on Activities <input type="checkbox"/> Inquiry <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Peer Teaching <input type="checkbox"/> Problem Solving <input type="checkbox"/> Project-Based Learning <input type="checkbox"/> Questioning <input type="checkbox"/> Seminars <input type="checkbox"/> Service Learning <input checked="" type="checkbox"/> Simulations & Games	<input type="checkbox"/> Think-Pair-Share <input checked="" type="checkbox"/> Video Presentations <input type="checkbox"/> Other(s):.....

## Assessment of Student Learning

<b>Assessment Methods</b>	<input checked="" type="checkbox"/> Case Analysis <input checked="" type="checkbox"/> Exam (in-class) <input type="checkbox"/> Exam (open-book) <input type="checkbox"/> Exam (take-home) <input type="checkbox"/> Oral exam <input type="checkbox"/> Oral presentation	<input type="checkbox"/> Peer evaluation <input type="checkbox"/> Portfolio or e-folio <input checked="" type="checkbox"/> Project <input type="checkbox"/> Quiz <input checked="" type="checkbox"/> Self-evaluation <input checked="" type="checkbox"/> Written reports	<input checked="" type="checkbox"/> Classroom assessment techniques (CATs) <input type="checkbox"/> Other(s): .....

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## Grading/Evaluation

Your total grade consists of scores from the following items:

Assessment Items	Weight (%)
In class activities & Participation	10
Case analysis (decision support model developed in-class with written report)	25
Midterm exam	40
Essay and presentation (based on SES)	25

## Course Policies

Our class sessions will be a mix of traditional lectures, class discussions, case analysis, and learning activities that involve all participants, either individually or in teams. It is imperative that participants come prepared to class (by downloading and reading the course related documents which are available on course Moodle page & EUGPUT project website) and are fully engaged in our class meeting. During discussions and/or group work, I expect participants to pay attention to other participants and to respect different points of view. The instructor welcomes your questions during class and outside the classroom during breaks. The participants are expected to come to class or attend online and submit pre-after questionnaires, self-evaluating reports on time. Team work during case studies and active participation are encouraged in class assignments.

## Academic Honesty

All participants, both faculty members and students are expected to maintain academic standards of honesty and integrity. Students will be encouraged to adhere to the standards and be reminded of prohibited academic conduct (such as plagiarism, misuse of academic materials, and others).

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## COURSE NAME:

### Course #6: SUT 06 - Economics of Green Public Transportation Systems

#### Course Information

The course can be in one of the three below forms depending on the availabilities of students and instructors.

##### Schedule:

**Mode of Delivery:** ☒Face-to-face ☒Online ☒Hybrid

#### Instructor(s) Information

**Instructor:** İbrahim ÜNALMIŞ, Öykü YÜCEL

**E-mail:** ibrahim.unalmis@tedu.edu.tr , oyku.yucel@tedu.edu.tr

#### Course Objectives

In this course, learners will gain an understanding of demand for public transport, will learn determinants of the supply of public transport, will gain knowledge on the role of fiscal policy in promoting public transport and will learn financing methods of green public transport. In this sense, relative prices, cost and benefit advantages of different transportation options, fiscal policy choices and, alternative finance methods to finance green public transport technologies will be extensively covered.

#### Learning Outcomes

Upon successful completion of this course, learners will be able to:

1. Explain how relative prices can be used to promote green public transportation.
2. Compare how relative price policies can differ in terms of the country specifics.
3. Discuss how fiscal policies can be used to promote new green technologies in the transportation system.
4. Analyze how new and alternative finance methods can be used to invest in green transportation technologies.

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### Prerequisite Knowledge, Skills, Attitudes

No prerequisite. Introductory level of microeconomics knowledge would be useful.

### Supplementary Readings

No required textbook.

Teaching notes will be available on the project website and, supplementary readings will be provided by the instructor.

### Topical Outline

Our class sessions will be a mix of traditional lectures, class discussions, case analysis, learning activities, and a written report that involve all students, either individually or in teams.

You are required to work on the case in teams of 3-4 students. Groups should be formed at the beginning of the semester and maintained throughout the semester.

The course slides and practice questions will be posted on course website. The instructor will explain the details of the topics given below at the beginning of the course.

Note that the schedule below is not rigid and may require minor modification as the course progresses.

Topics	WEEK
Introduction	1
Demand for public transportation, and relative prices	2
Utility function of green public transportation	3
Relative prices' impact on supply side	4
Cost and benefit advantage of transportation options for suppliers	5
Fiscal policies to promote green public transportation system	6
Subsidizing green transportation	7
Case Study and review for the midterm	8

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Midterm Exam	9
Financing green public transport projects	10
NPV and IRR	11
Green bond investments,	12
Crowdfunding and impact investing	13
Case written report submission and presentations	14

## Instructional Methods

<b>Instructional Methods and Techniques</b>	<input checked="" type="checkbox"/> Brainstorming <input checked="" type="checkbox"/> Case Study/Scenario Analysis <input type="checkbox"/> Cooperative Learning <input type="checkbox"/> Concept Mapping <input type="checkbox"/> Demonstrating <input checked="" type="checkbox"/> Discussions / Debates <input type="checkbox"/> Drama / Role Playing <input type="checkbox"/> Experiments <input type="checkbox"/> Field Trips	<input checked="" type="checkbox"/> Hands-on Activities <input type="checkbox"/> Inquiry <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Peer Teaching <input type="checkbox"/> Problem Solving <input type="checkbox"/> Project-Based Learning <input type="checkbox"/> Questioning <input type="checkbox"/> Seminars <input type="checkbox"/> Service Learning <input type="checkbox"/> Simulations & Games	<input type="checkbox"/> Think-Pair-Share <input type="checkbox"/> Video Presentations <input type="checkbox"/> Other(s):.....

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## Assessment of Student Learning

<b>Assessment Methods</b>	<input checked="" type="checkbox"/> Case Analysis <input checked="" type="checkbox"/> Exam (in-class) <input type="checkbox"/> Exam (open-book) <input type="checkbox"/> Exam (take-home) <input type="checkbox"/> Oral exam <input type="checkbox"/> Oral presentation	<input type="checkbox"/> Peer evaluation <input type="checkbox"/> Portfolio or e-folio <input type="checkbox"/> Project <input type="checkbox"/> Quiz <input type="checkbox"/> Self-evaluation <input checked="" type="checkbox"/> Written reports	<input checked="" type="checkbox"/> Classroom assessment techniques (CATs) <input checked="" type="checkbox"/> Other(s): In Class Activities and after module questionnaire to ask feedbacks of learners

## Grading/Evaluation

Your total grade consists of scores from the following items:

Assessment Items	Weight (%)
In Class Activities	10
Case Study	30
Midterm Exam	30
Written report	20
Attendance	10

## Course Policies

Our class sessions will be a mix of traditional lectures, class discussions, case analysis, and learning activities that involve all participants, either individually or in teams. It is imperative that participants come prepared to class (by downloading and reading the course related documents which are available on course Moodle page & EUGPUT project website) and are fully engaged in our class meeting. During discussions and/or group work, I expect participants to pay attention to other participants and to respect different points of view. The instructor welcomes your questions during class and outside the classroom during breaks. The participants are expected to come to class or attend online and submit pre-after

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questionnaires on time. Team work during case studies and active participation are encouraged in class assignments.

### Academic Honesty

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## COURSE NAME:

### Course #7: SUT 07- Intellectual Property Rights and Entrepreneurship Opportunities Considering Smart City Public Transportation

#### Course Information

##### Schedule:

**Mode of Delivery:** ☐ Face-to-face ☐ Online ☒ Hybrid

#### Instructor(s) Information

**Instructor(s):** Seda Damla YÜCEL  
**E-mail:** seda.yucel@tedu.edu.tr

#### Course Objectives

This module will provide;

- knowledge about Intellectual Property Rights (IPR) which is all about human creativity and ingenuity and
- different business tools such as Business Canvas Model which is a tool used to project all the building blocks in the process of developing a new business and Business Plan
- general info about the project lifecycle and main milestones of project management.

This module will provide learners with the opportunity to;

- increase their awareness of intellectual property rights (IPR) and its types
- conceive the role of IPR in future technologies and also green transportation systems in the future smart cities.
- utilize different business models and financial opportunities to realize their idea
- develop new idea by using learning outcomes.
- prepare an application form for their idea while applying to any funding program

To encourage learners to develop their innovative solutions, learners will prepare and demonstrate their new idea included the following documents:

- A Business Canvas Model template for their new idea in the scope of green transportation systems
- A Simple Business Plan Template

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- A Simple Project Proposal Template

## Learning Outcomes

By the end of this module, learners will be able to;

- compare all forms of IPR (especially will be focused on patent)
- explain the relationship between IPR and technological development
- discuss the role and importance of IPR for entrepreneurship and also global market.
- develop an idea by using IPR
- select relevant type of IPR for protecting their idea
- differentiate a variety of business model tools.
- design a simple business plan and project proposal to reach different funding opportunities for financing their ideas.

## Prerequisite Knowledge, Skills, Attitudes

No prerequisite

## Supplementary Materials

No required textbook.

Teaching notes will be available on the project website and, supplementary readings will be provided by the instructor.

## Topical Outline

Topic	Week
Introduction	1
<b>Intellectual Property Rights (IPR) &amp; IP-Based Entrepreneurship</b> <ul style="list-style-type: none"><li>○ Introduction of Intellectual Property Rights (IPR) (core knowledge about intellectual property rights and their types will be presented)</li><li>○ Entrepreneurship Ecosystem and the Relationship Between IPR and Entrepreneurship</li></ul>	2 3 4

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○ IP & Technology Commercialization Instruments	
<b>Developing a New Idea in the scope of Green Transportation Systems and Smart Cities</b>	
○ Patent search by using free tools	5
○ Developing a new idea and researching the existing patent for this idea by using free patent search tools	6
○ Introducing of Business Canvas Model	7
○ Preparing a Business Model (Canvas Model) for that new idea	8
○ Review of each Business Model	9
<b>From Idea to Product</b>	
○ Introducing of Business Plan	10
○ Preparing a Simple Business Plan by Using the prepared Business Canvas Model	11
○ Providing Practical Guide about Project Management	12
○ Preparing a Project Proposal for developed idea	13
○ Review of each Simple Business Plan and Project Proposal Template	14

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## Instructional Methods

<b>Instructional Methods and Techniques</b>	<input type="checkbox"/> Brainstorming <input type="checkbox"/> Case Study/Scenario Analysis <input checked="" type="checkbox"/> Cooperative Learning <input type="checkbox"/> Concept Mapping <input checked="" type="checkbox"/> Demonstrating <input checked="" type="checkbox"/> Discussions / Debates <input type="checkbox"/> Drama / Role Playing <input type="checkbox"/> Experiments <input type="checkbox"/> Field Trips	<input type="checkbox"/> Hands-on Activities <input type="checkbox"/> Inquiry <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Peer Teaching <input type="checkbox"/> Problem Solving <input checked="" type="checkbox"/> Project-Based Learning <input type="checkbox"/> Questioning <input type="checkbox"/> Seminars <input type="checkbox"/> Service Learning <input type="checkbox"/> Simulations & Games	<input type="checkbox"/> Think-Pair-Share <input type="checkbox"/> Video Presentations <input checked="" type="checkbox"/> Other(s): An interview with an entrepreneur

## Assessment of Student Learning

<b>Assessment Methods</b>	<input type="checkbox"/> Case Analysis <input type="checkbox"/> Exam (in-class) <input type="checkbox"/> Exam (open-book) <input type="checkbox"/> Exam (take-home) <input type="checkbox"/> Oral exam <input checked="" type="checkbox"/> Oral presentation	<input type="checkbox"/> Peer evaluation <input type="checkbox"/> Portfolio or e-folio <input checked="" type="checkbox"/> Project <input checked="" type="checkbox"/> Quiz <input type="checkbox"/> Self-evaluation <input type="checkbox"/> Written reports	<input type="checkbox"/> Classroom assessment techniques (CATs) <input checked="" type="checkbox"/> Other(s): Pre-After Questionnaires

## Grading / Evaluation

Your total grade consists of scores from the following items:

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Assessment Items	Weight (%)
Presentation for	80
Business Canvas Model	40
Business Plan	25
Project Proposal	15
Quiz	20

### Course Policies

This module will cover the different methods, including project development, oral presentations, case studies as well as the traditional lectures to be involved all participants in the activities during the lessons. It is aimed to engage all participants in class-activities and team works. This will be a discussion-based module. It is expected that participants will attend the lessons and discuss their opinions by critically assessing the IPR rules.

### Academic Honesty

Plagiarism will be penalized (see <http://www.plagiarism.org/>).

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