Intro. To Smart Systems & Cities, ESMA 2201

Electrical & Smart Systems Department, Islamic University of Gaza

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Fall 2019

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Instructor Information

Course: EMSA 2201 Intro. to smart systems & cities
Semester: **Fall 2019**
Prerequisites: NA
Textbook:

- Andries van Dijk & Hans Teuben, Smart Cities: How rapid advances in technology are reshaping our economy and society, Deloitte, The Netherlands, 2015
- Additional Reading Materials

Instructor: Dr. Hatem Elaydi, Room: B338, Phone: 2853,
email: helaydi@iugaza.edu.ps
Office Hours: 11-1230 ST, 10-13 SM

References

- H Song, R Srinivasan, T Sookoor, and S Jeschke (2017 Smart Cities: Foundations, Principles, and Applications, John Wiley &Sons, Inc.
- Albino, Vito & Berardi, Umberto & Dangelico, Rosa. (2015) Smart Cities: Definitions, Dimensions, Performance, and Initiatives. Journal of Urban Technology.
- A. Townsend(2014) Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia. New York: W.W. Norton & Company.
- P Nicopolitidis & M S Obaidat (2016) Smart Cities and Homes, Morgan Kaufmann.

Course description

- In recent decades, technology has become the primary factor in driving economic growth with innovative ideas. Technology innovation is on extraordinary pace and widespread; however, being familiar with its nature and understand its attributes will enable taking full advantage of it.
- This course intends to introduce important approaches to technology innovation, analyze key ICT innovation trends from a strategic perspective and discuss questions of managing innovation.

- Technology has been incorporated by cities for many years. However, the pace at which this adoption takes place is increasing rapidly as disruptive digital technologies have the potential to solve major metropolitan challenges.
- Students will gain an understanding of innovation concepts, terminology and current trends. They will be able to evaluate ideas based on their innovative value, feasibility and viability and also to make reasonable decisions using modeling and analysis.
- Students will also practice critical thinking and learn how to gather and purposely use qualitative and quantitative methods to assess and facilitate innovation.

Course Objectives

- to analyze the concept of smart systems in the context of smart cities.
- to study the concept of intelligent systems.
- to distinguish the meaning of smart and the degree of smartness
- to compare cities and systems in terms of smartness
- to design a smart application.

A major course objective is to identify smart systems and cities characteristics, use a variety of techniques to compare their performance, and finally follow up smart technology and innovations.

The fundamental objective of the course is to study smart systems and innovations and be able to set up metrics to compare their performance.

Course Grading

Exams	Quizzes	Homework	Project
Midterm 20%	10 quizzes	10%	20%
Final 40%	10%		

Homework

- Homework is an essential part of this course and will be issued on weekly basis and is due on the same day a week later (in class). No late homework will be accepted.

Quizzes

- **Quizzes** will be given during the lecture time totaling about 11 quizzes with lowest being dropped.

Outcomes

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

- Be familiar with the central concepts in innovation, like innovation cycles, sustained innovations, etc.
- Understand critical TI components like the third platform (cloud computing, Big Data and the power of social and mobile computing)
- Investigate the concept of Smarter Planet, smarter solutions
- Demonstrate the understanding of Startups, Open Innovation and API Economy, Artificial intelligence, smart systems and the cognitive era, IoE and mesh computing.
- Analyze the future trends based on technology outlooks – where are we now and where are we heading

Outcomes

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

- Applying of the techniques based on examples of significant ICT companies, from startups to industry leaders like Apple, IBM, Google, Amazon and others
- You will be able to critically analyze, even practice “how to enable” innovation

Detailed Syllabus

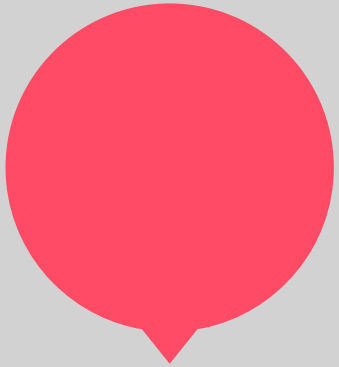
Weeks

- Week1: Syllabus, and introduction;
- Week 2: T he Digital Economy
- Week 3: Smart Cities: Overview, Benefits and Challenges
- Week 4: Innovation concepts, theories. The diffusion model and disruptive innovation
- Week 5-7: Disruptive Technologies: Mobile, Digital Platforms, Internet of Things, Big Data, Open Data, Cognitive Computing, 3D Printing, Social Robots, Self-Driving Vehicles, Drones
- Week 8: Smarter Planet, Openness and innovation eco systems (Instrumented, Interconnected, Intelligent)

Detailed Syllabus

Weeks

- Week 9-12: Smart Solutions per sector: Smart Mobility, Smart Safety, Smart Energy, Smart Water, Smart Waste, Smart Buildings, Smart Homes, Smart Health, Smart Education, Smart Finance, Smart Tourism and Leisure, Smart Retail, Smart Logistics, Smart Manufacturing, Smart Construction, Smart Government
- Week 13: Foundational Systems and Infrastructure
- Week 14: Smart Cities of the World



THANK YOU

For Your Attention

Any Questions?