

AD204 Emerging Technologies and Smart Cities

ECTS credits: 5

Course Overview

This course provides an overview of the new technologies which have been emerging in recent years and explores their potential impact. It analyses how private companies currently apply them to develop business opportunities or resolve problems. Moreover, it describes the role of these technologies in the development of new urban services for the next-generation cities (usually called Smart Cities). The course places special emphasis on Big Data and Analytics and provides a vision of the future applications that these technologies will make possible. It also explores how the implementation of these technologies can disrupt the position of many incumbents, generating business conflicts and raising questions related to security and privacy. We will discuss all of them in class. Students will work on case studies in small groups provided by external experts (Barcelona City Hall, Enel, Nice City Hall, Airbnb...). Two visits are programmed to illustrate the application of emerging technologies to resolve business issues and improve quality of life for citizens. Students are required to present in groups a business opportunity able to resolve a problem which leverages the use of these new technologies. (Draft outline)

Course Objectives

This course seeks to assist you:

1. To describe the new emerging trends and their managing role in the business
2. To understand their role and their disruptive impact to solve issues and improve quality of citizens' life
3. To understand the challenges and risks related to their implementation
4. To analyze the conflicts that these technologies generate regarding the incumbent companies
5. To apply these technologies for developing alternative strategies or detecting new business opportunities

Learning Outcomes

By the end of this course, students should be able to have achieved the objectives set up for this course.

Course structure and calendar

AGENDA FOR THE SESSIONS: Below you can find a tentative schedule, subject to change if proceed.

The guest speakers are either directors of large IT innovation department from consolidated companies or owners of start-ups developing business based on IT emerging technologies. Their attendance is always to be confirmed since they may be suddenly unavailable for business reasons.

	Tuesday : 14:10 to 15:30	Thursday : 14:10 to 15:30
Week 1 07 and 09/02	Introduction. Exploring emerging technologies	Assessing their disruptive impact for business and society
Week 2 14 and 16/02	Current applications and future ones	Discussing security, privacy and conflict issues
Week 3 21 and 23/02	Introduction of different Smart Cities models	The case of Nice city
Week 4 28/02 and 02/03	The case of Barcelona Special guest: Carlos Carrasco	Barcelona City OS Special guest: Carlos Carrasco
Week 5 07 and 09/03	Visit of Barcelona Smart City Special: Mariano Lamarca	Feedback of the visit and definition of the topic presentation
Week 6 14 and 16/03	Smart grid Special guest: Miguel Pardo	Uberisation of the energy Special guest: Miguel Pardo
Week 7 28 and 30/03	Airbnb Part I Special guest: Carlos Carrasco	Airbnb Part II Special guest: Carlos Carrasco
Week 8 04 and 06/04	Big data and its application Special guest: Jaume Caihuelas	Big data and its application Special guest: Jaume Caihuelas
Week 9 18 and 20/04	Analytics Special guest: Jaume Caihuelas	Analytics Special guest: Jaume Caihuelas
Week 10 25 and 27/04	Entrepreneurship leveraging emerging technologies Special guest: David Nogué	Visit of ENEL innovation hub Special guest: Miguel Pardo
Week 11 09 and 11/05	Citizen participation in designing solutions	The School to Road project
Week 12 16 and 18/05	Topic Presentation	Topic Presentation
Week 13 23 and 25/05	Topic Presentation	Wrap-up and conclusions

Course evaluation

Students are required to attend all the classes. Failing to do so without justified reason can have important consequences in your final grade.

REQUIREMENTS, EXPECTATIONS, AND ASSESSMENT

It is required that students come to classes with a PC. For each assignment, it will score not only the content and the assertiveness of the demonstration but also the look and fill of the presentation and the way to convince, communicate to the rest of the class.

EVALUATION

The evaluation will be partly continuous but based also on a final topic presentation. Precisely, course grade will be based on the following point breakdown:

Item	Content	Presentation
Topic presentation	40%	10%
Final exam	40%	
Participation	10%	
Final grade (/10)	Sum of all sub-grades	

Class participation may improve the grading of the students. There are multiple ways to participate in discussion:

- Submit interesting comments and questions before each session,
- Submit questions/comments that can generate interesting discussion,
- Ask questions or make comments that show an interest in what another student says or the professor presents.
- Use body language (in only a slightly exaggerated way) to show interest in what different speakers are saying.
- Answer successfully to a "surprise" quizz at the beginning of the class.

RETAKE POLICY:

The re-take policy for this course will consist of re-taking failed coursework evaluations and/or a final exam that encompasses the entire course.

Methodology

The learning experience is based on a range of teaching methods that seek to foster your understanding of the course. The classes will be dynamic only if students come to class prepared and willing to contribute to class discussion.

Readings

In addition to the cases we will be discussing in class, you will be provided with a range of additional materials through the university intranet. You may also be requested to search for particular readings in the library databases.

Recommended Textbooks

Economist (2013). Mining the urban data. <http://www.economist.com/news/21566408-cities-will-become-smarter-different-ways-many-people-expected-mining-urban-data> (last access:04/09/2016).

Economist Intelligence Unit (2011). 2004-2011 Quality of Life Index. https://www.economist.com/media/pdf/quality_of_life.pdf (last access:04/09/2016).

Samet, R.H. (2013). Complexity, the science of cities and long-range futures. *Futures* 47, 49-58.

Gartner (2015). 2015 Hype Cycle Special Report. The Hype Cycle for Emerging Technologies. Technical report.

McKinsey (2011). Big Data: The next frontier for innovation, competition and productivity. McKinsey Global Institute.

McKinsey (2014). The Internet of Things: Mapping the Value Beyond the Hype. Technical report.

McKinsey Global Institute Report, R. (2013). Disruptive technologies: Advances that will transform life, business, and the global economy.

World Commission on Environment and Development (1987). Our common future. Oxford, UK. *Oxford University Press*.

Neal, Z.P. (2013). The connected city: How networks are shaping the modern metropolis. Routledge, New York & London.

M. E. J. Newman (2010). *Networks: An Introduction*. Oxford University Press, Oxford.

Townsend, A.M. (2013). *Smart Cities: Big data, civic hackers, and the quest for a new utopia*. W.W. Norton & Company Inc. New York.

Smart Cities Council (2015). *Smart cities readiness guide: The planning manual for building tomorrow's cities today*.

Yigiscanlar,T, O'Connor, K. Westerman, C (2008). The making of knowledge cities: Melbourne's knowledge-based urban development experience. *Cities* 25 (2008) 63-72

Mayer-Schonberger, V. & Cukier, K. (2013). *Big Data: A revolution that will transform how we live, work and think*. John Murray (Publishers), London.

About the professors

Professor: Didier Grimaldi

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Office Hours: By appointment.

Class Meeting Time: each monday morning

About the Professor:

Didier Grimaldi holds an Executive Education in IESE business school through the program "*Programa de perfeccionamiento para Dirección General*" (PDG). Besides, he obtained in the past a Degree in Industrial Engineering. SUPELEC School. Paris (web site : http://www.supelec.fr/374_p_14603/welcome.html).

For almost 20 years, Didier Grimaldi has hold different positions in IT consulting in large Consulting Companies assessing CIOs and CEOs in their transformation mission. Nowadays, he is developing his own Consulting company in the Strategic innovation.

Since 2006 he is teacher in Spain and abroad, He is member of IESE Entrepreneurship and Innovation Center (EIC) and member of IESE "*Red de Inversores Privados y Family Offices*" He is PH.D Candidate in Business Administration and Management department from the Polytechnic University of Catalonia. His thesis is related to Innovation and Smart Cities contribution.