

230687 - INE - Internet and Networked Economy

Coordinating unit:	230 - ETSETB - Barcelona School of Telecommunications Engineering		
Teaching unit:	744 - ENTEL - Department of Network Engineering		
Academic year:	2019		
Degree:	MASTER'S DEGREE IN ADVANCED TELECOMMUNICATION TECHNOLOGIES (Syllabus 2019). (Teaching unit Optional) MASTER'S DEGREE IN TELECOMMUNICATIONS ENGINEERING (Syllabus 2013). (Teaching unit Optional)		
ECTS credits:	5	Teaching languages:	English

Teaching staff

Coordinator:	Jose Luis Melús Moreno
Others:	Marcos Postigo Boix

Teaching methodology

- Lectures
- Application classes
- Individual work (distance)
- Exercises
- Exams

Learning objectives of the subject

The economics of Internet is crucial since technology and economy interactions are bidirectional. This field is challenging to study because of the lack of publicly available data on ISP's cost structures and the difficulty of collecting well-calibrated consumer data. In this sense, this course studies how companies obtain the appropriate returns that guarantee its economic feasibility. The returns are obtained from ISPs' users that choose among the offered services and the used pricing model.

Undoubtedly the formation and growth of Internet is driven in part by economic considerations that have allowed a fast growing of services that lies on its infrastructure. There are many examples of successful services that today form an important part of our society and our life. All of them have contribute to develop what people name network economy. Thus, this course describes the underlying analytic characteristics that support them. This evaluation allows us to know the basic technical concepts that support them. In this course the analysis of scalability of P2P systems such as Skype and Bit Torrent is studied as well as the basic tools used from Netflix, Amazon or Wikipedia in the aim to adopt their decisions. Other examples of interest include some basic features of Google such as: the Page Rank algorithm and the used auction mechanism for ads. All of these services are successful examples of interactions between economy and technology.

Study load

Total learning time: 125h	Hours large group:	39h	31.20%
	Self study:	86h	68.80%

230687 - INE - Internet and Networked Economy

Content

<p>1. Pricing services</p>	<p>Learning time: 22h 26m Theory classes: 7h Self study : 15h 26m</p>
<p>Description: 1.1. Charging services 1.2. Smart data pricing 1.3. Economic models of pricing services</p>	
<p>2. Google services</p>	<p>Learning time: 25h 38m Theory classes: 8h Self study : 17h 38m</p>
<p>Description: 2.1. Search service. Page Rank 2.2. Advertisement service. Google adds</p>	
<p>3. Smart heuristics in P2P scalability</p>	<p>Learning time: 19h 14m Theory classes: 6h Self study : 13h 14m</p>
<p>Description: 3.1. The Bit Torrent case 3.2. The Skype case</p>	
<p>4. Recommendation by collaborative filtering: Netflix</p>	<p>Learning time: 19h 14m Theory classes: 6h Self study : 13h 14m</p>
<p>Description: 4.1. Predictors (least squares problem, temporal models, convex optimization) 4.2. Neighborhood model (similarity, weighted prediction) 4.3. Latent-factor model (matrix factorization, alternating projection)</p>	

230687 - INE - Internet and Networked Economy

<p>5. Bayesian Ranking: Amazon</p>	<p>Learning time: 19h 14m Theory classes: 6h Self study : 13h 14m</p>
<p>Description:</p> <ul style="list-style-type: none"> 5.1. Bayesian estimation 5.2. Bayesian ranking 5.3. Amazon ranking 5.4. Reviewing reviews (Adaptive boosting: Ada Boost) 	
<p>6. Consensus Formation: Wikipedia</p>	<p>Learning time: 19h 14m Theory classes: 6h Self study : 13h 14m</p>
<p>Description:</p> <ul style="list-style-type: none"> 6.1. Voting Models <ul style="list-style-type: none"> 6.1.1. Plurality model and Kemeny rule 6.1.2. Positional voting (Borda count) 6.1.3. Condorcet voting 6.2. Arrow's impossibility result 6.3. Sens impossibility result (the prisoner's dilemma) 	

Qualification system

First Part (Lessons 1, 2 and 3): Exam 30%, Continuous Assessments 20%
Second Part (Lessons 4, 5 and 6): Exam 30%, Continuous Assessments 20%

Bibliography