

## REGULATION OF THE POWER SECTOR

### 2020-21 Edition

Course Director: **Carlos Batlle** | Florence School of Regulation / Robert Schuman Centre for Advanced Studies / European University Institute

Course facilitators: **Daniela Bernardo, Chiara Canestrini** | Florence School of Regulation / Robert Schuman Centre for Advanced Studies / European University Institute

### COURSE STRUCTURE

The training is structured around two blocks: Block I reviews the regulatory fundamentals; then Block II is the core of the course, in which the key issues are analyzed and participants are asked to contribute with their own analyses.

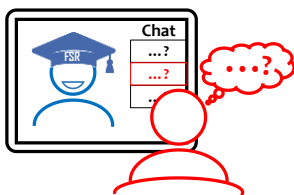
#### BLOCK I: THEORY AND PRINCIPLES OF REGULATION

Three introductory modules (one-week long) to review the fundamentals of regulatory practice needed to delve into the subsequent study of the regulation of the different energy activities.

#### BLOCK II: REGULATION OF ENERGY SUPPLY ACTIVITIES

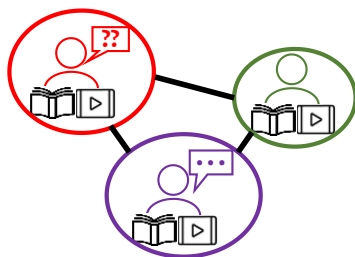
A three and a half-month online and interactive course during which the regulatory principles of electric power systems and real-life case studies are studied, in a well-structured, flexible e-learning environment that features live lectures and discussions with the course instructors and participants.

### LEGEND



#### Live Class

Weekly wrap up and Q&A with the module's instructor

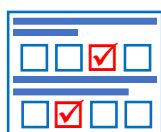


#### Review Period

- Time to review the lectures and the suggested reading materials

#### Discussions

- Discussion forums in which participants can share their knowledge and opinion on a specific topic, exchange their views and ask for clarification




#### Evaluation Quiz

Test your understanding: 5 to 10 multi-choice questions

Self-assessment quiz to give participants an overview of the content and information about their knowledge level.


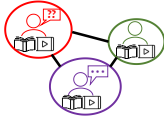

## INTRODUCTORY LIVE CLASS

Thursday, April 8 2pm CEST	 60'	<b>Prof. Carlos Batlle and course team</b> General introduction to the course. Scope, objectives, resources, platform.
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## BLOCK I: THEORY AND PRINCIPLES OF REGULATION

### I.1. REGULATORY MODELS FOR ENERGY SYSTEMS

Prof. Carlos Batlle | MIT Energy Initiative & Florence School of Regulation


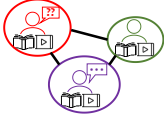

Thursday, April 8 3pm CEST	 20'	<b>Introduction to the module and video and reading material</b> <ul style="list-style-type: none"> <li>Energy services pricing: from regulated costs to price competition: Cost-of-service regulation. Incentive regulation. Competitive bidding. Market competition</li> <li>Energy systems' governance: activities, structure, and stakeholders' roles: Unbundling. System and market operation</li> </ul>
April 8 to April 15		<b>Forum</b>
Thursday, April 15, 1pm CEST		<b>Evaluation quiz submission deadline</b>

#### I.1.x. Live Class: Weekly Wrap up and Q&As


Thursday, April 15, 2pm CEST	 60'	<b>Prof. Carlos Batlle</b> Regulatory models for energy systems
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### I.2. FUNDAMENTALS OF ENERGY SYSTEMS ECONOMICS

Prof. Pablo Rodilla | Comillas Pontifical University


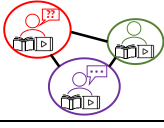

Thursday, April 15, 3pm CEST	 20'	<b>Introduction to the module and video and reading material</b> <ul style="list-style-type: none"> <li>Centralized versus market-based planning: Costs' characterization: investment, average and marginal costs. Cost minimization versus profit maximization</li> <li>Basics on energy contracts: Physical versus financial contracts</li> </ul>
April 15 to April 22		<b>Forum</b>
Thursday, April 22, 1pm CEST		<b>Evaluation quiz submission deadline</b>

*I.2.x. Live class: Weekly Wrap up and Q&As*


Thursday, April 22, 2pm CEST	 60'	<b>Prof. Pablo Rodilla</b> Fundamentals of energy systems economics
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*I.3. COST ALLOCATION METHODOLOGIES*


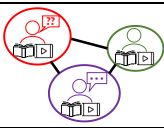

**Prof. Carlos Batlle**

Thursday, April 22, 3pm CEST	 20'	<b>Introduction to the module and video and reading material</b> <ul style="list-style-type: none"> <li>• Practical case example of cost allocation: Discussion of a real life (non-energy related) case example of cost allocation</li> <li>• Cost allocation theory: Efficiency and equity. Long-run marginal costs. Residual costs</li> </ul>
April 22 to April 29		<b>Forum</b>
Thursday, April 29, 1pm CEST		<b>Evaluation quiz submission deadline</b>


*I.3.x. Live class: Weekly Wrap up and Q&As*

Thursday, April 29, 2pm CEST	 60'	<b>Prof. Carlos Batlle</b> Cost allocation methodologies
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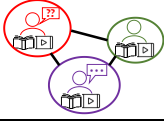

**BLOCK II: REGULATION OF ENERGY SUPPLY ACTIVITIES****II.1. WHOLESALE ELECTRICITY GENERATION****II.1.1. Pricing electricity generation****Prof. Carlos Batlle**

Thursday, April 29, 3pm CEST	 20'	<b>Introduction to the module and video and reading material</b> <ul style="list-style-type: none"> <li>Investment and operation planning: From central planning and operation to wholesale markets</li> <li>Energy markets design elements: Market-based economic scheduling: Market models, bidding formats and clearing algorithms</li> </ul>
April 29 to May 6		<b>Forum</b>
Thursday, May 6, 1pm CEST		<b>Evaluation quiz submission deadline</b>


**II.1.1.x. Live class: Weekly Wrap up and Q&As**

Thursday, May 6, 2pm CEST	 60'	<b>Prof. Carlos Batlle</b> Pricing electricity generation
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**II.1.2. Complements to energy markets: ancillary services and capacity mechanisms****Prof. Pablo Rodilla**

Thursday, May 6, 3pm CEST	 20'	<b>Introduction to the module and video and reading material</b> <ul style="list-style-type: none"> <li>Flexibility markets: Intraday, reserves and regulation markets.</li> <li>Capacity and RES-support mechanisms: Design elements of capacity and RES promotion mechanisms</li> </ul>
May 6, to May 13		<b>Forum</b>
Thursday, May 13, 1pm CEST		<b>Evaluation quiz submission deadline</b>

**II.1.2.x. Live class: Weekly Wrap up and Q&As**

Thursday, May 13, 2pm CEST	 60'	<b>Prof. Pablo Rodilla</b> Complements to energy markets
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### II.1.3. Leading expert webinar


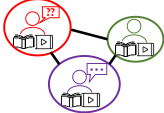

**Alberto Pototschnig** | FSR Part-time Professor. Former Director of ACER (2010-19)

Tuesday, May 18, 2pm CEST	 60'	<b>Current regulatory challenges of wholesale electricity markets</b>
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## II.2. ELECTRICITY NETWORKS

### II.2.1. Interplay between transmission and generation

**Prof. Pablo Rodilla**


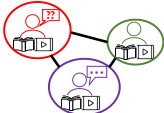
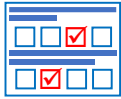
Thursday, May. 13, 3pm CEST	 20'	<b>Introduction to the module and video and reading material</b> <ul style="list-style-type: none"> <li>• Locational pricing: Fundamentals of nodal (and zonal) pricing.</li> <li>• Regulatory treatment of transmission investment planning: Golden rules, net-social welfare maximization</li> </ul>
May. 20, to May 27		<b>Forum</b>
Thursday, May 27, 1pm CEST		<b>Evaluation quiz submission deadline</b>

#### II.2.1.x. Live class: Weekly Wrap up and Q&As


Thursday, May 27, 2pm CEST	 60'	<b>Prof. Pablo Rodilla</b> Interplay between transmission and generation
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### II.2.2. Regulated revenues and cost allocation

**Prof. Carlos Batlle**

Thursday, May 27, 3pm CEST	 20'	<b>Introduction to the module and video and reading material</b> <ul style="list-style-type: none"> <li>• Remuneration mechanisms for distribution: Cost-of-service, RPI-X, TOTEX...</li> <li>• Network costs allocation: Transmission and distribution tariffs</li> </ul>
May 27, to Jun. 3		<b>Forum</b>
Thursday, Jun. 3, 1pm CEST		<b>Evaluation quiz submission deadline</b>

#### II.2.2.x. Live class: Weekly Wrap up and Q&As

Thursday, Jun. 3, 2pm CEST	 60'	<b>Prof. Carlos Batlle</b> Regulated revenues and cost allocation
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### II.2.3. Leading expert webinar


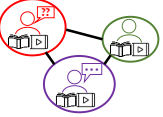

**Prof. Leonardo Meeus** | Vlerick Business School and Florence School of Regulation

Tuesday, Jun. 8, 2pm CEST	 60'	<b>The EU network codes</b>
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### II.3. END-USER ENERGY PRICING

#### II.3.1. End-user tariffs

**Prof. Carlos Batlle**

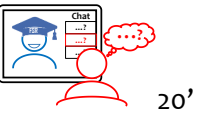
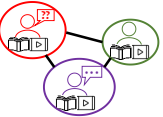
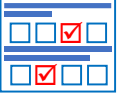
Thursday, Jun. 3, 3pm CEST	 20'	<b>Introduction to the module and video and reading material</b> <ul style="list-style-type: none"> <li>Principles and basic tariff structures: Efficiency &amp; equity. Additivity, components.</li> <li>Time and locational granularity: Dynamic, TOU, fixed, ...</li> </ul>
Jun. 10, to June 17		<b>Forum</b>
Thursday, Jun. 17, 1pm CEST		<b>Evaluation quiz submission deadline</b>

#### II.3.1.x. Live class: Weekly Wrap up and Q&As

Thursday, Jun. 17, 2pm CEST	 60'	<b>Prof. Carlos Batlle</b> End-user tariffs
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#### II.3.2. Retail markets

**Prof. Carlos Batlle**


Thursday, Jun. 17, 3pm CEST	 20'	<b>Introduction to the module and video and reading material</b> <ul style="list-style-type: none"> <li>Business models: Retail activities, stakeholders' roles.</li> <li>Consumer protection: Data management, switching, vulnerable customers</li> </ul>
Jun. 17, to Jun. 24		<b>Forum</b>
Thursday, Jun. 24, 1pm CEST		<b>Evaluation quiz submission deadline</b>

#### II.3.2.x. Live class: Weekly Wrap up and Q&As

Thursday, Jun. 24, 2pm CEST	 60'	<b>Prof. Carlos Batlle</b> Retail markets
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### II.3.3. Leading expert webinar


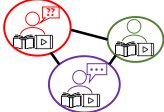
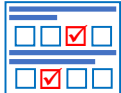
**Prof. Leonardo Meeus**

Tuesday, Jun. 29, 2pm CEST	 60'	<b>Citizen Energy Communities</b>
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## II.4. REGULATORY AUTHORITIES

### II.4.1. Case study on regulatory authorities


**Prof. Leigh Hancher** | University of Tilburg & Florence School of Regulation

Thursday, Jul. 1, 3pm CEST	 20'	<b>Introduction to the module</b> · Case study formulation: Instructors' description of the problem to be analyzed.
Jul. 1, to Jul. 8		<b>Forum</b>
Thursday, Jul. 8, 1pm CEST		<b>Evaluation quiz submission deadline</b>

### II.3.2.x. Live class: Weekly Wrap up and Q&As

Thursday, Jul. 8, 2pm CEST	 60'	<b>Prof. Leigh Hancher</b> Regulatory authorities
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## FINAL ACTIVITIES

Tuesday, Jul. 13 2pm CEST	 60'	<b>Prof. Carlos Batlle</b> Final Papers and Power System Projects
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