TOPIC-SPECIFIC LEARNING JOURNEY

COURSE PACKAGE:

"ELECTRICITY"



ENTRIMA's Learning Platform lists a wide range of courses, all related to markets & trading. Some of these courses have been bundled to form a course package, as they all concerns the same field of expertise.

The Course Package "**Electricity**" consists of the following courses:

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4.	Balancing the electricity grid *– Balancing responsible parties & balancing markets*	6
5.	Ancillary services in power markets *(Bite-size insights)*	7
6.	Battery energy storage systems (BESS) *(Bite-size insights)*	8
7.	Power spot markets	9
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9.	Power markets – Market coupling	11
10.	Power markets – Day-ahead power auction	12
11.	Available transmission capacity *– The role of electricity transmission system operators*	13
12.	European electricity markets – The flow-based methodology	14
13.	European electricity markets – Flow-based parameters	15
14.	European electricity markets – Flow-based capacity calculation	16
15.	Power purchase agreements (PPAs) *– Introduction*	17
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Each of these courses ends with an exam. Upon passing the exam the learner will be certified instantly. The contents, duration and level of each course is set out in the pages hereafter.

Total duration*) of all sixteen (**16**) courses together: **1445** minutes.

- **Study hours:** 25
- **CPD points:** 25

*) *Excluding examination*

COURSE:
THE ELECTRICITY SUPPLY CHAIN

This course concerns the supply chain, or value chain, of electricity. This is why it sets out the process from generation to consumption, including transmission and storage. Obviously, attention is also given to the balancing of the electricity network, or power grid. Furthermore, renewables are covered, as well as the types of producers and consumers.

This course covers the following video lessons:

1. Introduction to the electricity supply chain
2. Power generation
3. Electricity storage
4. Electricity transmission
5. Electricity distribution & consumption
6. Key players in the electricity supply chain
7. The future of the electricity supply chain
8. Challenges regarding the electricity supply chain
9. Opportunities in the electricity supply chain

A. Examination
B. Certification

❖	Level:	Basic	No prerequisites
❖	Intensity:	45 minutes	Excluding examination
❖	Language:	Voice & text	English
❖	Including:	Examination	Certification upon passing

COURSE:
POWER MARKETS & TRADING

This course concerns the trading of electricity. This means the relevant power markets are covered, the products that trade in those markets and the pricing of those products. Attention is also given to the types of the power markets and the types of market participants.

This course covers the following video lessons:

1. Introduction to power markets
2. Market structures & participants
3. Power generation & grid infrastructure
4. Power market design & price formation
5. Wholesale power trading
6. Power derivatives & risk management
7. Intraday & balancing markets
8. Capacity markets & ancillary services
9. Renewable energy & PPAs
10. Regulatory & compliance frameworks
11. Emerging trends & future developments

A. Examination
B. Certification

❖	Level:	Basic	No prerequisites
❖	Intensity:	45 minutes	Excluding examination
❖	Language:	Voice & text	English
❖	Including:	Examination	Certification upon passing

COURSE:
POWER MARKETS & TRADING – *Q&A-STYLE LESSONS*

This sequence of bite-size video lessons covers video lessons in the form of question and answer (Q&A).
The series is about electricity markets, pricing and trading. Attention is given to market mechanisms, market characteristics, trading strategies, risk management, trading platforms, and other trading technology, plus various practicalities.

This course covers the following video lessons:

1.	Introduction to power markets	*33 videos*
2.	Impact of generation, transmission, storage & demand on trading	*30 videos*
3.	Electricity market mechanisms & power trading platforms	*30 videos*
4.	Electricity pricing in wholesale markets	*30 videos*
5.	Power trading strategies	*28 videos*
6.	Risk management in power markets	*31 videos*
7.	Regulatory & policy landscape regarding power trading	*31 videos*
8.	Technological trends & innovations in power trading	*30 videos*
9.	Operational aspects of power trading	*33 videos*
10.	Practicalities concerning power trading	*31 videos*
11.	Future of power markets	*32 videos*
12.	Characteristics of wholesale power markets due to renewables	*25 videos*
13.	Key trends and implications in wholesale power markets	*24 videos*
14.	Trading strategies with renewables	*23 videos*
15.	Challenges & opportunities in power markets	*25 videos*

A. Examination
B. Certification

❖	Level:	Basic	No prerequisites
❖	Intensity:	250 minutes	Excluding examination
❖	Language:	Voice & text	English
❖	Including:	Examination	Certification upon passing

COURSE:
BALANCING THE GRID, BRPs & BALANCING MARKETS

This course concerns the balancing of the high voltage electricity transmission network. This means the relevant mechanisms are covered, the roles of system operators and balancing responsible parties (BRPs), the rules of the system operators and the related balancing markets.

This course covers the following video lessons:

1. Introduction to electricity markets
2. Fundamentals of balancing in electricity markets
3. Balancing responsible parties (BRPs)
4. Balancing markets
5. Imbalance settlement
6. Tools & technologies for balancing
7. Case studies
8. Emerging trends & challenges

A. Examination
B. Certification

❖	Level:	Basic	No prerequisites
❖	Intensity:	40 minutes	Excluding examination
❖	Language:	Voice & text	English
❖	Including:	Examination	Certification upon passing

COURSE:
ANCILLARY SERVICES IN POWER MARKETS

This sequence of bite-size video lessons covers video lessons in the form of question and answer (Q&A).
The series is about alle relevant aspects of ancillary services, including frequency regulation, black starts, reserve margin, and capacity markets.

This course covers the following video lessons:

1.	Introduction to Ancillary Services in Electricity Markets	*34 videos*
2.	Types of ancillary services	*34 videos*
3.	Frequency Regulation	*34 videos*
4.	Voltage Control and Reactive Power Management	*34 videos*
5.	Operating Reserves	*35 videos*
6.	Black Start Capability	*34 videos*
7.	Load Balancing and Demand Response	*34 videos*
8.	Inertia and Synthetic Inertia	*33 videos*
9.	Reserve Margin and Capacity Markets	*33 videos*
10.	Ancillary Services in Renewable Energy Integration	*32 videos*
11.	Regulatory Framework and Market Design for Ancillary Services	*32 videos*
12.	Ancillary Services & Trading	*33 videos*

A. Examination
B. Certification

❖	Level:	Basic	No prerequisites
❖	Intensity:	200 minutes	Excluding examination
❖	Language:	Voice & text	English
❖	Including:	Examination	Certification upon passing

COURSE:
BATTERY ENERGY STORAGE SYSTEMS (BESS)

This sequence of bite-size video lessons covers video lessons in the form of question and answer (Q&A).
The series is about batteries, the risks and challenges of electricity storage, the relation between the power price and storage, and trading applications.

This course covers the following video lessons:

1.	Introduction to Battery Energy Storage Systems	*30 videos*
2.	Design Considerations for Market Participation	*30 videos*
3.	Trading Applications & Opportunities	*42 videos*
4.	Strategic Role of BESS in Power Trading	*30 videos*
5.	Market Participation Rules, Regulations and Market Access	*30 videos*
6.	Challenges & Risks for BESS in Power Trading	*30 videos*
7.	Future of BESS in Energy Markets and Power Trading	*29 videos*
8.	Practical Cases: BESS in Action	*30 videos*
9.	BESS & The Power Price	*29 videos*
10.	BESS & Trading	*30 videos*

A. Examination
B. Certification

❖	Level:	Basic	No prerequisites
❖	Intensity:	155 minutes	Excluding examination
❖	Language:	Voice & text	English
❖	Including:	Examination	Certification upon passing

COURSE:
POWER SPOT MARKETS

This course provides an introduction to intraday and day ahead markets and also looks into balancing markets. It covers the concepts of market coupling and auctions, while attention si also given to bidding zones and national markets.

This course covers the following video lessons:

1. Strategic design & implementation considerations
2. Market coupling - Projects around the globe
3. Market coupling - Developments over time
4. Market coupling - Calculation procedures
5. Market coupling – Benefits
6. Flexibility markets and solutions – Europe
7. Bidding zones versus national markets
8. Price area differentials & transmission rights - EPADs & LTTR
9. Single intraday market coupling – SIDC
10. What is single intraday market coupling?
11. The evolution of SIDC and its geographical scope
12. How does single intraday coupling work?
13. Intraday auctions on SIDC
14. How does the EUPHEMIA algorithm work?
15. Day-ahead auctions in power markets
16. Single day-ahead coupling (SDAC) - Introduction
17. How does single day-ahead coupling work?
18. Order types

A. Examination
B. Certification

❖	Level:	Basic	No prerequisites
❖	Intensity:	35 minutes	Excluding examination
❖	Language:	Voice & text	English
❖	Including:	Examination	Certification upon passing

COURSE:

POWER MARKETS – *CAPACITY MECHANISMS*

Energy-only markets often struggle to deliver sufficient investment signals for new capacity or to retain existing plants, especially in systems undergoing rapid decarbonisation or facing demand growth. Capacity mechanisms have emerged as a policy and market response to this challenge.

This course covers the following video lessons:

1. Introduction to electricity markets
2. Challenges in electricity markets
3. What are capacity mechanisms?
4. Types of capacity mechanisms
5. Design & implementation of capacity mechanisms
6. Global versus European context
7. Global perspective
8. Criticisms & challenges
9. Future of capacity mechanisms
10. Practical application

A. Examination
B. Certification

❖	Level:	Basic	No prerequisites
❖	Intensity:	45 minutes	Excluding examination
❖	Language:	Voice & text	English
❖	Including:	Examination	Certification upon passing

COURSE:

POWER MARKETS – *MARKET COUPLING*

Electricity markets in Europe were once largely isolated, each functioning within national borders with limited coordination. This fragmentation often led to inefficient outcomes – price disparities, suboptimal use of generation resources, and underutilised interconnections. Market coupling was introduced as a remedy, aiming to integrate national electricity markets in a way that better reflects the physical and economic realities of a connected grid.

This course covers the following video lessons:

1. Overview of electricity markets
2. Market design principles
3. What is market coupling?
4. Cross-border trade & congestion management
5. The evolution of European electricity market integration
6. Flow-based market coupling in Central Western Europe
7. Nordic & Baltic regional market integration
8. Role of EPEX SPOT in European electricity markets
9. Price coupling of regions
10. Price convergence & welfare gains
11. Market anomalies & limitations
12. Towards a pan-European market
13. Innovations & digitalisation in market coupling
14. Policy & regulatory landscape
15. The role & functioning of EUPHEMIA
16. CACM & market coupling in the European electricity market
17. Simulating market coupling
18. Case study: The 2021 decoupling incident
19. Case study: Market reaction during the 2022 Energy Crisis
20. Case study: Effects of new interconnections – *The North Sea Link*

A. Examination
B. Certification

❖	Level:	Basic	No prerequisites
❖	Intensity:	95 minutes	Excluding examination
❖	Language:	Voice & text	English
❖	Including:	Examination	Certification upon passing

COURSE:

POWER MARKETS – *DAY-AHEAD POWER AUCTION*

The day-ahead market is a central element of electricity trading in Europe, acting as the main reference point for prices and scheduling of generation and consumption. It is organised through a daily auction in which market participants submit their bids and offers for each hour of the next delivery day. This auction provides the opportunity to match supply and demand across interconnected countries efficiently, and is fundamental to the functioning of the broader electricity system.

This course covers the following video lessons:

1. Introduction to the European electricity market
2. Fundamentals of electricity trading
3. The day-ahead market
4. Mechanisms of day-ahead auctions
5. Market coupling & cross-border trading
6. Regulatory & policy framework
7. Technical & economic considerations
8. Tools & platforms for day-ahead trading
9. Risk management in day-ahead trading
10. Future trends & developments
11. Practical exercises & case studies

A. Examination
B. Certification

❖ Level:	Basic	No prerequisites
❖ Intensity:	45 minutes	Excluding examination
❖ Language:	Voice & text	English
❖ Including:	Examination	Certification upon passing

COURSE:

AVAILABLE TRANSMISSION CAPACITY (ATC) – *THE ROLE OF TSOs*

Available Transmission Capacity, or ATC, is a central concept in the efficient and secure operation of interconnected electricity systems. It represents the amount of cross-border transmission capacity that can be allocated to market participants for electricity trade without jeopardising grid security. TSOs are responsible for determining this value and making it available in a transparent and non-discriminatory manner.

This course covers the following video lessons:

1. Introduction to European electricity markets – Historical development
2. Introduction to European electricity markets – Market structure overview
3. Roles & responsibilities of TSOs – Core functions of TSOs
4. Roles & responsibilities of TSOs – TSOs & European regulation
5. Roles & responsibilities of TSOs – Coordination between TSOs
6. Transmission system fundamentals – Grid infrastructure
7. Transmission system fundamentals – Transmission system operation
8. Available transmission capacity – Definition & components
9. Available transmission capacity – Factors affecting ATC
10. Available transmission capacity – Methods for determining ATC
11. Cross-border electricity trade – Importance of cross-border capacity
12. Cross-border electricity trade – Allocation of transmission capacity
13. Cross-border electricity trade – Congestion management
14. Regulatory frameworks & market design – European market rules
15. Regulatory frameworks & market design – Market coupling & harmonisation
16. Innovations & future challenges – Decarbonisation & the energy transition
17. Innovations & future challenges – Digitalisation & smart grids
18. Innovations & future challenges – TSOs in a decentralised energy system
19. Case studies & practical applications – Real-life challenges
20. Case studies & practical applications – Simulation exercises

A. Examination
B. Certification

❖ Level:	Basic	No prerequisites
❖ Intensity:	85 minutes	Excluding examination
❖ Language:	Voice & text	English
❖ Including:	Examination	Certification upon passing

COURSE:
EUROPEAN ELECTRICITY MARKETS – *THE FLOW-BASED METHODOLOGY*

This course explains the flow-based methodology (FBMC) in the European electricity markets, which concerns a methodology used to allocate cross-border transmission capacity in a way that reflects the actual physics of the electricity grid. Unlike older approaches, which relied on simplified assumptions, the flow-based method takes into account how electricity physically flows through the interconnected network. Its main objective is to improve the efficiency and security of cross-zonal electricity trading by making more accurate use of the grid's available capacity.

This course covers the following video lessons:

1. Introduction to European electricity markets
2. Fundamentals of the flow-based methodology
3. Mathematical & technical aspects
4. Implementation of flow-based methodology
5. Advantages & challenges
6. Regional & pan-European applications
7. Regulatory & policy context
8. Hands-on training and practical application
9. Future developments

A. Examination
B. Certification

❖	Level:	Basic	No prerequisites
❖	Intensity:	35 minutes	Excluding examination
❖	Language:	Voice & text	English
❖	Including:	Examination	Certification upon passing

COURSE:
EUROPEAN ELECTRICITY MARKETS – *FLOW-BASED PARAMETERS*

This course covers the flow-based parameters concerning the flow-based methodology in the European electricity markets. Flow-based parameters form the backbone of the flow-based market coupling mechanism. They are the numerical and structural inputs that shape how capacity is allocated between bidding zones in the day-ahead electricity market. These parameters reflect the actual state and limits of the transmission network, ensuring that commercial exchanges do not compromise the physical security of the grid.

This course covers the following video lessons:

1. Introduction to flow-based parameters
2. Key components of flow-based parameters
3. Calculation & modelling of flow-based parameters
4. Security margins in flow-based parameters
5. Tools & software for flow-based parameter management
6. Practical implementation of flow-based parameters
7. Interaction between flow-based parameters and market outcomes
8. Challenges in flow-based parameter application
9. Training & exercises
10. Future developments in flow-based parameters

A. Examination
B. Certification

❖ Level:	Intermediate	Prerequisite: "Europ. El. Markets – *The Flow-based Methodology*"
❖ Intensity:	45 minutes	Excluding examination
❖ Language:	Voice & text	English
❖ Including:	Examination	Certification upon passing

COURSE:

EUROPEAN ELECTRICITY MARKETS – *FLOW-BASED CAPACITY CALCULATION*

This course covers the flow-based capacity calculation concerning the flow-based methodology in the European electricity markets. Capacity calculation lies at the heart of cross-zonal electricity trading in Europe. It determines how much power can be securely transferred between bidding zones without endangering the physical integrity of the interconnected transmission grid. As electricity trading across borders becomes more integrated and dynamic, the methodology used to calculate this available capacity must be both accurate and transparent. This is where the flow-based approach plays a central role.

This course covers the following video lessons:

1. Introduction to flow-based capacity calculation
2. Key concepts & terminology
3. Data requirements and iinput parameters
4. Methodology for flow-based capacity calculation
5. Security margins and their role
6. Tools & platforms for capacity calculation
7. Practical application in market coupling
8. Regional & pan-European implementation
9. Challenges & limitations
10. Hands-on training & exercises
11. Regulatory & stakeholder considerations
12. Future developments in flow-based capacity calculation

A. Examination
B. Certification

❖ Level:	Intermediate	Prerequisite: "Europ. El. Markets – *The Flow-based Methodology*"
❖ Intensity:	55 minutes	Excluding examination
❖ Language:	Voice & text	English
❖ Including:	Examination	Certification upon passing

COURSE:

POWER PURCHASE AGREEMENTS *(PPAs)* – *INTRODUCTION*

Covering power purchase agreements, including contract specifications, pricing and volume risk management.

This course covers the following video lessons:

1. Introduction
2. Lifecycle of a power generation project
3. Project finance
4. Bankability
5. Roles of actors
6. Overview of PPA obligations
7. Timing requirements
8. Tariff structures
9. Invoicing & payment
10. Risk allocation & mitigation
11. Commercial operational data
12. Development or construction risk
13. Operational phase risks
14. Change in law risk
15. Change in tax
16. Force majeure
17. Fuel supply & price risk
18. Insurance
19. Dispute resolution

A. Examination
B. Certification

❖ Level:	Basic	No prerequisites
❖ Intensity:	55 minutes	Excluding examination
❖ Language:	Voice & text	English
❖ Including:	Examination	Certification upon passing

COURSE:
POWER PURCHASE AGREEMENTS (PPAs) – *ESSENTIALS*

This sequence of bite-size video lessons covers video lessons in the form of question and answer (Q&A).
The series is about alle relevant aspects of power purchase agreements, including stakeholders, structures and models, legal aspects, risk management, investing, financing, attribute certificates, regulations, and performance and monitoring.

This course covers the following topics:

1.	Introduction to power purchase agreements (PPAs)	*31 videos*
2.	Key Players & Stakeholders in PPAs	*28 videos*
3.	PPA Structures and Models	*30 videos*
4.	Key Terms and Provisions in PPAs	*27 videos*
5.	Legal and Contractual Framework	*29 videos*
6.	Risk Management in PPAs	*35 videos*
7.	PPA Negotiation Strategies	*35 videos*
8.	Financing and Investment Considerations	*39 videos*
9.	Energy Attribute Certificates and PPAs	*35 videos*
10.	Impact of Market Dynamics on PPAs	*35 videos*
11.	Regulatory and Policy Landscape	*35 videos*
12.	PPA Performance and Monitoring	*36 videos*
13.	Emerging Trends & Future outlook in PPAs	*36 videos*

A. Examination
B. Certification

❖	Level:	Basic	No prerequisites
❖	Intensity:	215 minutes	Excluding examination
❖	Language:	Voice & text	English
❖	Including:	Examination	Certification upon passing