



Content
of the taught module
European Union Leadership in Climate Change Mitigation

No	Title	Brief content	Learning outcomes	Hrs
1	Climate change threat and international agenda for addressing the problem	Introduction to climate change, related international agenda and implications for policy making	- awareness of the climate change problems; - understanding the need of global response.	2
2	Key EU climate action programmes and frameworks	An overview of the relevant EU programmes and frameworks in the context of climate change mitigation: - Second European Climate Change Programme; - The 2020 climate and energy package; - 2030 framework for climate and energy policies; - Roadmap for moving to a low-carbon economy in 2050 <i>etc.</i>	- knowledge of the EU policy documents focusing climate change mitigation; - understanding of practical implications of climate change mitigation policy for current and future industrial development.	4
3	EU Climate change mitigation tools and strategies to mobilise climate finance	EU financial tools and strategies for mitigation of and climate adaptation to climate challenge are presented: EU greenhouse gases monitoring mechanism; - The EU Emissions Trading System (EU ETS); - Lessons learnt from Kyoto Protocol implementation, and certified emission reduction (CER) units mechanism; - results of COP21 Paris Summit and a vision for the new climate agreement.	- knowledge of the EU GHG monitoring approach; - understanding of market based climate change mitigation mechanisms (cap-and-trade system etc); - understanding how investments and technology transfer might be supported through carbon financial schemes; - understanding of the Kyoto Protocol approach; - understanding how modern world is different compared to those at the time of Kyoto Protocol adoption (why developing countries also should share binding reduction targets).	4
4	Intra-EU policies and EU international outreach for climate change	Climate change policies in different EU Member States. The concept of the Effort Sharing Decision in establishing binding annual greenhouse gas emission targets for Member States for the period 2013–2020. EU international policy for climate change. How the EU is working to promote global action to limit climate change through the UNFCCC, Global Energy Efficiency and Renewable Energy Fund and other initiatives.	- general understanding of intra-EU climate policy; - general knowledge of the international EU climate policy outreach	2
5	EU key technology platforms in the climate change mitigation context	EU technology platforms relevant to the Metallurgy & Materials subject area will be presented: - European Steel Technology Platform; - European Technology Platform on Sustainable Mineral Resources; - European Technology Platform for Advanced Engineering Materials and Technologies; - The Zero Emissions Platform. Case studies on the activities in the climate change mitigation context will be presented.	- understanding of the EU industrial policy for climate change mitigation; - awareness of the EU technology platforms.	6

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6	EU leadership in low-carbon technologies	<p>The EU leadership in low-carbon technologies will be demonstrated. Following topic will be focussed:</p> <ul style="list-style-type: none"> - Carbon Capture and Geological Storage: legal framework and the EU's CCS Directive; - NER 300 programme for commercialisation of carbon capture and renewable energy technologies (case studies); - Research Fund for Coal and Steel and ULCOS (Ultra Low CO₂ Steelmaking) project (case studies); - European Steel Association (Eurofer); - SPIRE: A sustainable process industry through resource and energy efficiency (case studies). 	<ul style="list-style-type: none"> - knowledge of the ongoing industry-specific projects aimed to bring about breakthrough technologies with the potential to drastically reduce carbon dioxide emissions; - understanding of the need for inter-industry synergies for maximising the effect of energy efficient low-carbon technologies; - understanding the role of EU policies in mobilising the resources for breakthrough carbon dioxide emissions reduction. 	10
7	Implications for Ukraine in the context of EU climate change mitigation policies	<p>Ukrainian context in relationship to climate change and implications from the EU experience:</p> <ul style="list-style-type: none"> - key players (state agencies, policy making bodies, NGOs, Universities, research organisations) and planned reforms, - indicators (statistic trends and targets), - plausible scenarios (role of Ukraine in the global and regional scenarios, carbon-constrained socioeconomic scenarios), - challenges and opportunities for Ukraine's economy under new climate agreement. 	<ul style="list-style-type: none"> - knowledge of policy-making pattern in Ukraine in EU harmonisation context; - knowledge of the local and global development trends; - awareness of scenario-building methodology and understanding the implications for sustainable development and competitiveness from the carbon-constrained scenarios; - understanding the socioeconomic and technology challenges for future sustainable development; - understanding the opportunities for Ukraine to boost investments and technology transfer to meet climate change mitigation goals. 	8
8	Seminar 1: EU leadership in breakthrough low carbon technologies	<p>Students will choose the topic, relevant to their background, demonstrating EU achievements in technologies for tackling climate change mitigation:</p> <p>1) Technologies being developed under ULCOS project</p> <ul style="list-style-type: none"> - ULCOS-BF, modernised blast furnace with low to zero CO₂ emissions - Hlsarna, innovative smelting-reduction furnace - ULCORED, novel method to produce direct reduced iron - ULCOLYSIS and ULCOWIN, radically innovative technologies for producing iron through electrolysis and electro-winning processes <p>2) CO₂ capture and storage technologies</p>	<ul style="list-style-type: none"> - knowledge of breakthrough technologies being developed in the EU; - understanding the role of carbon capture and storage technologies for climate change mitigation. - Skills: - ability to present and to discuss climate-related technological issues with respect to socio-economic challenges and EU climate agenda; - ability to summarise and to reflect multidisciplinary information in the international context. 	8
8	Seminar 2: EU leadership in energy efficiency, advanced materials and renewable energy	<p>Students will choose the topic, relevant to their background, demonstrating EU achievements in energy efficient technologies, advanced materials and renewable energy:</p> <p>1) Energy efficiency of the EU steel industry</p> <p>2) EU led projects in sustainable biomass and biofuels</p> <p>3) EU leadership in advanced materials</p>	<ul style="list-style-type: none"> - knowledge of advanced energy-efficient technologies and materials; - understanding the role of renewables in the current and future energy mix. - ability to present and discuss energy efficiency in the broader context of socioeconomic challenges and EU climate agenda; - ability to summarise and to reflect multidisciplinary information in the international context. 	5