EUBILD-UNAKLIM

Erasmus+

Compendium of Education and Training Modules

"Clima-, Environment-, Nature- Protection and Renewable Energy - Professional"

May 2018

Program research and development board:

EUBILD-UNAKLIM

Introduction

Aim of the project to develope a course to train and qualify professionals in Clima-, Environmental-, Nature-Protection and Renewable energy are the charge of issues in the practical areas of clima-, environmental -, nature protection and environmental management, in assessment of plans in the field of environment, as well as strategic assessment of environmental impact to work in the area of environmental conservation, nature conservation and environmental protection in the respective of agencies, authorities and companies, research and educational institutions.
The objective of the practical orientated specialty is also to diversify career options in the areas of policy, local, regional, national and international activities.
Employment opportunities in the field include working for consultancies, local authorities, utilities providers and contractors and organizations within the voluntary sector. Public and private organizations more and more are also looking for competent personnel capable of operating environmental management systems and skills that comply with national, EU-wide and international legislation, practical experience and best-practise.

This curriculum concept based on research about existing furthering education programs, experiences, needs and requirements in the participating countries Germany, Hungary, Poland and Romania and respect so the futural needs of an EU-wide approach. The Design of the curriculum setup innovative training methods in combination of theoretical knowledge, case studies and practical key skills.
Successfull participants are part of the futural skill base for work in a complex environment that requires an interdisciplinary approach.
In the internship time also want to be offered a language in-depth training in the language of the country, where the internship want to be or when origin mother language of the participant than in english.

Curriculum want to be tested and provide by exchanging potential european trainers and trainees within the participating countries.

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Programme Structure

EUBILD-UNAKLIM Course Overview

„Environmental-, Nature- and Clima Protection – Professional"

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Mod.No.	Module	ECTS	Month 21 days/m = 168 hrs/m				Workload = 1.512 hrs					Workload 40 Credits 1 Credit = 30 hrs)			contribution to
			1.	2.	3.	4.	5.	6.	7.	8.	9.	on campus hours	group work in projects	self-study hours	final certificate
Section I – Fundamentals, Methods and Tools															21,7%
M 01 – 01	Introduction to Sustainability in Environment, Renewable Energy and Grow	0	16									12		4	1,1%
M 01 – 02	Urban Sustainability Assessment Framework	1	32									20	4	8	2,1%
M 01 – 03	Green Marketing and Services in Environment and Renewable Ennergy	1	24									16	4	4	1,6%
M 01 – 04	Career Opportunity in Green Economy / Job Coaching		8	4		4						8	4	4	1,1%
M 01 – 05	Sustainability Finance and Funding in Urban, Environmental and Renewable Energy Projects	1	24			8						16	8	8	2,1%
M 02 – 01	Project Management in Environmental and Renewable Energy Projects	3	64	16								32	32	16	5,3%
M 03 – 01	GIS in Urban, Environmental and Renewable Energy Projects	4		64	32	32						48	48	32	8,5%
Gesamt		*10*	*168*	*84*	*32*	*44*	*0*	*0*	*0*	*0*	*0*	*152*	*100*	*76*	
	Buchführung, Jahresabschluss und internes Rew e														
	Einführung in die Steuerlehre, Int. Rechnungslegung und Konzernrechnungslegung														
Section II – Clima-, Environment and Nature Protection															22,8%
M 04 - 01	Facts in Environment and Nature Protection (EU- and National Framework)	0		8								8			0,5%
M 04 – 02	Circular Economy – Act and Law	0,5		16								8	8		1,1%
M 04 – 03	Ecological footprint	0		8								8			0,5%
M 04 – 04	Water management, Protection and Law	0,5		16								16			1,1%
M 04 - 05	Waste Management, Separation and Recycling	1		32								20	8	4	2,1%
M 04 – 06	Soil Management, Protection and Law	1			32							8	16	8	2,1%
M 04 – 07	Emission and Pollutants in soil, air and water	1		4	28							24		8	2,1%
M 04 – 08	Environment in Logistic and Packaging	0			4							4			0,3%
M 04 – 09	Landfill – Management and Law	0			4							4			0,3%
M 04 – 10	Environmental criminal law	1				16							8	8	1,1%
M 04 – 11	Nature protection – Management and Law	1			32							16	8	8	2,1%
M 04 – 12	NATURA 2000 Directive, Water Framework and Stakeholders	2			36	28						32	32		4,2%
M 04 – 13	Project work in Environment and Nature Protection	2				80						8	40	32	5,3%
Gesamt		*10*	*0*	*84*	*136*	*124*	*0*	*0*	*0*	*0*	*0*	*156*	*120*	*68*	
Section III – Sustainability in Renewable Energy															21,2%
M 05 – 01	Introduction to EnergyDistribution, SmartGrid and Future Mobility	0					16	16				20	8	4	2,1%
M 05 – 02	Introduction to Photovoltatics and Storages	1					40					24	12	4	2,6%
M 05 – 03	Introduction to Solarthermal Energy and Storages	1					24	8				24	4	4	2,1%
M 05 – 04	Introduction to Wind Energy and Power – to – Gas	1					24	8				20	8	4	2,1%
M 05 – 05	Introduction to Bioenergy, Bio-Fuels and Storages	1					24	8				20	8	4	2,1%
M 05 – 06	Introduction to Water flow energy, Hydro Power and Storages	0						8				8			0,5%
M 05 – 07	Introduction to Geothermal Energy, District Heating, Climatization and Cooling	1					32	8				20	12	8	2,6%
M 05 – 08	Sustainability in green energy-efficient building	1						32				24	4	4	2,1%
M 05 – 09	Sustainability in energy-efficient production with energy management	1						32				24	4	4	2,1%
M 05 – 10	Study project in green energy and energy-efficiency	3						40				8	24	8	2,6%
		10	*0*	*0*	*0*	*0*	*160*	*160*	*0*	*0*	*0*	*192*	*84*	*44*	
Section IV - Profile and Practice – Internship															34,4%
M 06 – 01	Language In-Depth Training / Internship	2							40	40	4	40	4	40	5,6%
M 06 – 02	Company Project / Internship	10							132	132	152	16		400	27,5%
M 06 – 03	Course Final / Project Kolloquium	0									20	8	12		1,3%
Gesamt		*12*	*0*	*0*	*0*	*0*	*0*	*0*	*172*	*172*	*176*	*64*	*16*	*440*	
Workload / month			168	168	168	168	160	160	172	172	176				100,0%

Section 1 Module 01
Topic 01 to 05 - Fundamentals, Methods and Tools

Module No./Code	M1 - 01
Module Designation	Introduction to Sustainability in Environment and Grow
Units of the Module (if applicable)	1: Introduction in the qualification content, goals, schedule and certification 2: Sustainable Development Goals and EU
Module Content	This module provides all information about the qualification, module orientation, goals, schedule and certification. Also it provides specific knowledge in sustainable development for people, economy, politics and society. Specific topics: 1. Introduction to the qualification "Environment-, Nature-, Clima- Protection and Renewable Energy Professional" ● EU-wide approach ● Curriculum, Learning Goals and Lectures ● Guidelines, Organisation and Schedule ● Examination, Internship and Certification ● Learning Outcomes and ECTS-System 2: Sustainable Development Goals and EU ● Sustainable Development Goals – Problematic and orientation for devlopment and grow ● EU-Framework for Development ● Cycle of Environment and Sustainability
Qualification Goals	Participants obtain specific knowledge ● of guidelines in sustainable development in all fields of the society Furthermore, participants should get an interdisciplinary view to challenges in the fields Clima-, Environment-, Nature-Protection and Renewable Energy in the society.
Planing period	1st week of the qualification / 1st month
Module Duration	2 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	0

Total Workload and Type (individual studies + contact hours)	16 hours (Contact hours 12 h = 75 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	none
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	participation
Contribution to Final Grade	1,1%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises and presenting the results
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: http://www.un.org/sustainabledevelopment/sustainable-development-goals/ https://ec.europa.eu/europeaid/policies/european-development-policy/2030-agenda-sustainable-development_en http://www.sdgfund.org/library https://sustainabledevelopment.un.org/content/documents/GE%20Guidebook.pdf

Module No./Code	M1 - 02
Module Designation	Urban Sustainability Assessment Framework
Units of the Module (if applicable)	1: Governance, Policy and Resilience 2: Framework of Methods 3: Stakeholder, Relationship and Urban Sustainability Assessment
Module Content	This module provides introduction of governance, resilience and the main important methods for sustainability assessment in international, EU- and national context. Also it provides specific knowledge in sustainable development and policies for people, economy, politics and society. Specific topics: 1: Governance, Policy and Resilience ● Policy approach ● Resilience as goal in a sustainability development ● Monitoring and Uncertainty 2: Framework of Methods ● Environmental Impact Assessment (EIA) ● Strategic Environmental Assessment (SEA) ● Cost-Benefit Analysis (CBA) ● Multi-Criteria Analysis (MCA) ● Life-Cycle Analysis (LCA) ● Other methodologies ● European Research Area Network (ERA-NET) ● Sustainability rating systems 3: Stakeholder, Relationsship and Urban Sustainability Assessment ● Stakeholder approach for Sustainability ● Relationship of land-use, urban development and energy ● Sustainability assessment for urban development in building (LEED/BREEAM/DGNB/NA)
Qualification Goals	Participants obtain basic and specific knowledge in the methods relevant for sustainability analysis to a specific problem, distinguish between systemic, normative and procedural aspects of sustainability, apply the sustainability solution space to a real world problem, assess and evaluate a series of options from a sustainability perspective. Furthermore, participants should get an

	interdisciplinary view to challenges in the fields of Clima-, Environment-, Nature-Protection and Renewable Energy in the society.
Planing period	1st month
Module Duration	4 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1 (based on 30 hours = 1 credit)
Total Workload and Type (individual studies + contact hours)	32 hours (Contact hours 20 h = 62,5 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	none
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and Presentation of group work results
Contribution to Final Grade	2,10%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises and presenting the results
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Group work
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: Karin Heinrichs, Fritz Oser, Terence Lovat Handbook of Moral Motivation: Theories, Models, Applications, Springer Science & Business Media, 12.06.2013

	Paul James, Urban Sustainability in Theory and Practice: Circles of sustainability, Routledge, 19.09.2014 Angus Morrison-Saunders, Jenny Pope,Alan Bond Handbook of Sustainability Assessment, Edward Elgar Publishing, 25.09.2015 Kimberly Etingoff, Sustainable Cities: Urban Planning Challenges and Policy, CRC Press, 16.03.2017 https://unhabitat.org/books/building-sustainability-assessment-and-benchmarking/

Module No./Code	M1 - 03
Module Designation	Green Marketing and Services in Environment and Renewable Energy
Units of the Module (if applicable)	1: Introduction to Green Marketing and Services 2: Introduction to Costumer- and Service-Orientation 3: Itroduction to the Method Service Blueprinting
Module Content	This module provides an introduction about strategic and practise of green marketing, costumer- and service-orientation. Also it provides specific knowledge to participation of citizen and costumer in a sustainable development for people, economy, politics and society. Specific topics: 1. Introduction to green marketing ● Green marketing vision, mission and strategies ● Green Marketing principles (8 P`s) ● Identification of marketing actions design to influence supply and demand for human impact on the atmosphere ant to reduce climate change, water, energy and biodiversity ● Sustainable green marketing action designed to influence pre-purchase decisions, purchases, consumption and post-purchase decisions 2: Introduction in Costumer- and Service-Orientation ● Role of Consumption and Costumer ● Costumer-orientated and -centric Services ● Green Marketing communication, certifications and labeling ● Participation of Citizen 3: Method Frameworks and Service Blueprinting ● Product- and process innovation frameworks – idea generation, business case preparation, product and service development. UX, testing and validation ● Group work in idea generation and service development with Service Blueprinting
Qualification Goals	Participants obtain specific knowledge ● of principles of green marketing and the improve to the environment from the perspective of consumers, costumers, public welfare, businesses, citizens and society. ● of the environmental effects of market strategies to the development in local, regional, national and international context.

	● of methods to develop and integrate costumer-orientated products- and services ● of methods to participate the citizen in the society Furthermore, participants should get an inter-disciplinary view to challenges in the fields Clima-, Environment-, Nature- Protection and Renewable Energy.
Planing period	1st month
Module Duration	3 day`s (+ 6 hours integrated in the Module M5 – 01 Introduction to EnergyDistribution and Smart Grid)
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1 (based on 30 hours = 1 credit)
Total Workload and Type (individual studies + contact hours)	24 hours (Contact hours 16 h = 66 %) + 6 hours in M5 – 01 for ECTS Credits
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	none
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Presentation of group work results
Contribution to Final Grade	1,60%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises and presenting the results
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Group work
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: Madu Christian N, Kuei Chu-hua; Handbook Of Sustainability Management; World Scientific,

26.03.2012

Akkucuk, Ulas; Handbook of Research on Developing Sustainable Value in Economics, Finance and Marketing; IGI Global, 31.10.2014

Groonroos, C., 2007: Service Management and Marketing. 3rd ed. London: John Wiley.

Lovelock, C.; Wirtz, J., 2010: Services Marketing: People, Technology, Strategy. 7th ed. New York, NY: Prentice Hall.

Palmer, A., 2011: Principles of Service Marketing. 6th ed. New York, NY: McGraw-Hill.

Lucia A. Reisch, John Th_Gersen;Handbook of Research on Sustainable Consumption; Edward Elgar Publishing, 27.02.2015

Kaufmann, Hans-Ruediger; Handbook of Research on Consumerism in Business and Marketing: Concepts and Practices; IGI Global, 31.03.2014

Dr Victoria Hurth, Jules Peck, David Jackman, Dr Enrico Wensing; Reforming marketing for sustainability: towards a framework for evolved marketing; https://friendsoftheearth.uk/sites/default/files/downloads/reforming-marketing-sustainability-full-report-76676.pdf

Harry Beckwith; Selling the Invisible: A Field Guide to Modern Marketing; Grand Central Publishing; Auflage: Reprint (20. März 2012) ISBN 0446672319

Ryan Deiss, Russ Hennesberry; Digital Marketing for Dummies; For Dummies; 1 edition (January 17, 2017) ISBN: 1119235596

M.J. Bitner, "Managing the Evidence of Service," in The Service Quality Handbook; E.E. Scheuing and W. F. Christopher, ed. American Management Association, 1993), pp. 358-70

J. Gadrey and F. Gallouj; Productivity, Innovation and Knowledge in Services, New Economic and Socio-Economic Approaches; Cheltenham, Edward Elgar, 2002

Module No./Code	M1 - 04
Module Designation	Career Opportunity in Green Economy
Units of the Module (if applicable)	1: Introduction in Career Oportunity in Green Economy 2: Job Profile and Job Coaching
Module Content	This module provides an introduction and overview of career opportunities and human research methods in the green economy. Also it provides specific knowledge in job profiling, skill and reference deployment in behaviour of the participants themselve. Personal and Specific Job Coaching are integrated. Specific topics: 1: Introduction in Career Opportunity in Green Economy ● Challenges of demography and skills shortage ● Career Opportunities in green economy and futural society ● Modern methods of Human research and development ● Skill and Job Search in the market ● Importance of Internship and Skill References ● Social Media in the Job Market and Research 2: Job Profiling and Job Coaching ● Organize personal Skill, References and Work-Life-Balance ● Storytelling ● Quality of documents in Human research ● Job offer and Human assessment ● Approach of Gender and Equity in the Society
Qualification Goals	Participants obtain specific knowledge to research and develop skill profiles and participate in the proof of documents and human research assessment in the process. They are able to organize their own personal skills, references and Work-Life-Balance in deep understanding of the principles of Gender and Equity in the society. Furthermore, participants should get an interdisciplinary view to challenges and career opportunities in the fields Clima-, Environment-, Nature-Protection and Renewable Energy.
Planing period	1st to 6th month (Introduction in the 1st week of the 1st month)

Module Duration	2 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	0
Total Workload and Type (individual studies + contact hours)	16 hours (Contact hours 8 h = 50 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	none
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	participation
Contribution to Final Grade	1,10%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing personal specific business vita, skill and reference profile • Job coaching
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Additional field trips to Carreer day`s / Job coaching
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: NN

Module No./Code	M1 - 05
Module Designation	Sustainabil Finance and Funding in Urban, Clima-, Environment-, Nature-Protection and Renewable Energy Projects
Units of the Module (if applicable)	1: Introduction to sutainability in finance and funding 2: Introduction in financial modeling and value 3: Introduction to commercial and technical due dilligence
Module Content	This module will explore the key commercial, legal, economic and policy issues affecting the development and financing of infrastructure projects focused for Clima-, Environment-, Nature-Protection and Renewable energy. It will include financial models, problem sets and mini case studies. The financial modeling will be designed to take into account the varying levels of participants experience. An important aspect for the participants are to learn some of the analytical tools used by practitioners to make investment decisions. While no specific Participants also learn to appreciate the roles of technology, policy and finance in the transition to a clean energy and low to zero carbon economy. They also get an introduction to the role, the opportunities and limitations of finance and of different mechanisms to support sustainability in project finance. 1: Introduction to sutainability in finance and funding ● Introduction to policies and EU – Frameworks ● Introduction to tender and public private partnership ● Introduction to contracting in financing approach 2: Introduction in financial modeling and value ● Basic financial concepts ● Capital structure (debt vs. equity) Importance of market conditions ● Different types of financing (public and private funds, loans, crowd-funds, donations and sponsoring) ● Tax aspects of financing ● Basics of financial modeling ● Maturity Model and Ways in which early-stage / mature / late-stage projects and technologies are financed ● Introduction to Fundraising

	3: Introduction to commercial and technical due dilligence Many of these topics will be raised in the context of comparative, real-world case studies of different types of energy and infrastructure projects.
Qualification Goals	This module will explore the key commercial, legal, economic and policy issues affecting the development and financing of green infrastructure projects focused to investments in Clima-, Environment-, Nature-Protection and Renewable energy projects. Participants obtain specific knowledge of mobilizing capital to meet the growing demand for Clima-, Environment-, Nature- Protection, Renewable energy and other critical infrastructure. They should gain an understanding of • commercial and financial interests, regulation, tenders, private and public contracting and market factors dynamically interrelate; • optimize and analyze financing structures, leverage and investor return; • identify, allocate, mitigate and price the various project risks, roles of contracts, hedges and insurance in managing risk; • regulatory incentives and public policy in the choices of particular investment opportunities; • the role of finance and funding in moving concepts, projects and technologies from lab to market, from small-scale deployments to large-scale; • guidelines for commercial and technical due dilligence in sustainable finance and funding Furthermore, participants should get an interdisciplinary view to challenges in the fields of Clima-, Environment-, Nature-Protection and Renewable Energy.
Planing period	1st month
Module Duration	4 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1 (based on 30 hours = 1 credit)
Total Workload and Type (individual studies + contact hours)	32 hours (Contact hours 16 h = 50 %)
Type of Lecture	Compulsory

(compulsory, elective, etc.)	
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	none
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	participation
Contribution to Final Grade	2,10%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises and presenting the results
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: World Economic Forum, "The Green Investment Report: The ways and means to unlock private finance for green growth." World Economic Forum, Geneva, Switzerland, 2013. Available at http://www3.weforum.org/docs/WEF_GreenInvestment_Report_2013.pdf The Aspen Institute, "Nature as Foundation of Economy: Investing in Natural Infrastructure for Conservation Supporting Human Development", 2011, Available at http://www.aspeninstitute.org/sites/default/files/content/docs/pubs/Nature%20as%20Foundation%20of%20Economy%20%5BFINAL%5D.pdf World Economic Forum, "From the Margins to the Mainstream: Assessment of the Impact Investment Sector and Opportunities to Engage Mainstream Investors", September 2013. Available at http://www3.weforum.org/docs/WEF_II_FromMarginsMainstream_Report_2013.pdf Linda S Spedding; Due Diligence Handbook;

	1st Edition October 2008; Corporate Governance, Risk Management and Business Planning; eBook ISBN: 9780080942681; CIMA Publishing Recommended Web-Sources: https://europa.eu/european-union/business/public-contracts_en https://simap.ted.europa.eu/ https://e3p.jrc.ec.europa.eu/articles/energy-performance-contracting https://ec.europa.eu/energy/en/topics/energy-efficiency/financing-energy-efficiency https://climatepolicyinitiative.org/publication/european-renewable-energy-policy-investment http://www.ecosystemmarketplace.com https://www.environmental-finance.com http://www.naturalcapitalproject.org http://water.nature.org http://www.wri.org/our-work/project/aqueduct http://www.naturalcapitalproject.org http://www.rockefellerfoundation.org http://waterriskmonetizer.com

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Section 1 Module 02 Topic 01

Project Management

Module No./Code	M2 - 01
Module Designation	Project Management in Environment-, Nature-, Clima Protection and Renewable Energy Projects
Units of the Module (if applicable)	1: Introduction in Project Management 2: Project Management Tools 3: Project Controlling and Responsibilities 4: Leadership 5: Problem solving, analysis and impact 6: Practical group projection
Module Content	This module provides knowlgde and first practical experience with project orientated work and project management. Also it provides specific knowledge and first experience in the challenges of the project life cycle for environment-, nature-, clima- and renewable energy projects in practise. Specific topics: 1: Introduction in Project Management ● Definitions, scope and processes in project ● Characteristics of projects in Environment, NatureProtection and Renewable Energy context ● Project - Challenges and LifeCycle ● Goals/no-goals and target conflicts ● Project team and Stakeholders ● Risk Management in project ● Budget estimation and scenarios ● Project - Communication and collaboration ● International aspects of project management 2: Project Management Tools ● Work assignment, packages and WBS ● Timetables, GANTTDiagram, Milestones ● CriticalPath Analysis ● Software and Services 3: Project Controlling and Responsibilities ● Milestone Trend Analysis ● Capability Analysis ● 0-100 Method ● GANTT-Tracking ● Task & Allocation ● Pesponsibilities

	4: Leadership 5: Problem solving and impact ● Problem Tree ● Logical Framework Analysis ● Impact 6: Practical group projection ● trying methods and tools on a selected topic ● Group presentation
Qualification Goals	Participants obtain specific knowledge in the Framework and Methods of project management. They are able to work and participate as member in project teams and matrix organizations. First skills in generation, preparation, design, execution, controlling and managing of small scale projects in group work and in teams want to be developed. Furthermore, participants should get an interdisciplinary view to challenges of project orientated decisions, processes and workload in the field of Clima-, Environment-, Nature-Protection and Renewable Energy.
Planing period	1st to 2nd month
Module Duration	10 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	3 (based on 25 hours = 1 credit)
Total Workload and Type (individual studies + contact hours)	80 hours (Contact hours 32 h = 40 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	none
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit	Participation, project report and group

Award	presentation
Contribution to Final Grade	5,30%
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises, group projection and presenting the results

Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature:

- Fisher, R. & Sharp, A. (1998): Getting it done, how to lead when you're not in charge. – Harper Business Book, New York
- Gilsa, M.; Huber, R. & Ruß, Th. (2004): Virtuelle Projektarbeit. - Erich Schmidt Verlag
- Gareis, Roland (2005): Happy Projects. – Manz Verlag Vienna
- Herrman, N. (1996): The Whole Brain Business Book. – Mac Graw Hill Professional
- IT Team (2001): Project Management. - Three CDs: Organising, Planning, Controlling a Project. – NCC Education Series
- Magness, Fred (1990): Fundamentals of Project Management. - Qualitech Systems Inc. Washington
- Orr, Alan D. (2004): Advanced Project Management. - Kogan Page Ltd.
- Patzak, G. & Rattay, G. (2004): Projektmanagement. - 4. Auflage Linde Verlag Wien
- Pryor, Fred (1995): How to Manage Priorities and Meet Deadline, - Nightingale Concent Niles
- Rattay, G. (2007): Führung von Projektorganisationen. - 2. Auflage Linde Verlag Wien
- Tracy, Brian (2002): Executive Time Management, Seminar Series (Video, Audiotapes and Handbook). – Nightingale Conant Corporation
- Verzuh, Eric (1999): The Fast Forward MBA in Project Management. - John Wiley & Sons Inc.
- Young, Trevor (2004): The Handbook of Project Management. - Kogan Page Ltd.

Section 1 Module 03 Topic 01

Geografical Information System (GIS)

Module No./Code	M3 - 01
Module Designation	Geografical Information Systems (GIS) in Urban Planning, Clima-, Environment-, Nature-Protection and Renewable Energy Projects
Units of the Module (if applicable)	1: Introduction to Urban Planning, Geografical research and information systems 2: Introduction to Geospatial Technology and GIS 3: Introduction to Spatial Analysis 4: Data Aquisition and Data Management 5: Cartographic Design and Outputs 6: Introduction to Remote Sensing 7: Practical group projection within a GIS-Framework
Module Content	This module provides core principles, concepts, models, and phenomena of geographical informations and systems. It develope skills and competencies in analyze and apply geographical based research and communication effectively appropriate for professional audiences. Participants learn the ability to identify and use spatial principles, methods and techniques for problem-solving and decision-making in geographical systems and urban planning. They get basic geographic information knowledge and first spatial analytic skills to make the world a better place through engagement in public policy-making and discourse on social and environmental issues. Specific topics: 1: Introduction to Urban Planning, Geografical research and information systems ● Introduction to Sustainable Land Use Planning and Participation Processes ● Plans, Planning Processes and Site Planning ● Environmental Planning Techniques ● Issues in Growth and deGrowth Management ● Sustainability and Future of Built Environment 2: Introduction to Geospatial Technology and GIS ● Understanding Geospatial Data Models ● Understanding Coordinate Systems and Map Projections ● Creating and Displaying Geospatial Data ● Understanding Remote Sensing and Aerial Photography ● Basic Geospatial Analysis Techniques ●

	3: Introduction to Spatial Analysis ● Introduction to Geospatial Analysis ● Introduction to Data Exploration ● Introduction to Vector Data Analysis (Overlay techniques, Site Selection Model, Network Analysis) ● Raster Data Analysis 4: Data Aquisition and Data Management ● Introduction to Geospatial Data and Database ● Vector Data Structure and Quality ● Spatial Data Quality ● Raster Data Structure ● Data Sources 5: Cartographic Design and Outputs ● Introduction to Cartographic Design ● Geodesy and Map Projections ● Map Types, Elements and Design Principles ● Data, Symbols and Visual Variables fot Maps ● Introduction to Location based Services 6: Introduction to Remote Sensing ● Introduction to Image Composite, Mosaic and Subset ● Introduction to Image Rectification, Classification and Assessment 7: Practical group projection within a GIS-Framework (GRASS / QGIS / Inkscape / ArcView or other) ● trying methods and tools on a selected topic from Environment-, Nature-, Clima Protection or Renewable Energy given problem ● Report and Group presentation of the results
Qualification Goals	Participants will be able to understand, work and monitore with core principles, techniques and application of geographic information systems, remote sensing and computer cartography in a professional skill level. Learning Outcome ● Participants know the key principles of design and policy in the field of urban planning and strategies for their implementation in the field ● Participants get a basic professional experience in design, compile and develop a spatial database and set of analytical tools within a GIS framework appropriate to a given problem.

	Furthermore, participants should get an interdisciplinary view of use from GIS frameworks in the field of Clima-, Environment-, Nature-Protection and Renewable Energy.
Planing period	2nd to 6th month
Module Duration	16 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	5 (based on 25 hours = 1 credit)
Total Workload and Type (individual studies + contact hours)	128 hours (Contact hours 48 h = 37,5 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	none
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation, projection report and group presentation
Contribution to Final Grade	8,50%
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises, group projection and presenting the results
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Group work
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: Markus Neteler, Helena Mitasova (2008), Opensource GIS: A GRASS GIS Approach, Springer Science Business Media, LLC

	Peter L. Croswell & co. (2012), The GIS Management Handbook, Kessey Dewitt Publications & URISA Christopher J. Post, Samuel T. Esswein, Elena A. Mikhailova (2012), GIS Exercises for Natural Resource Management: Second Edition, CSIPP Robert Scally (2006), GIS for Environmental Management, ESRI Paul A. Longley, Mike Goodchild, David J. Maguire, David W. Rhind, (2010), Geographic Information Systems and Science 3e, Wiley and Sons Publisher https://www.esri.com/training/catalog/57630434851d31e02a43ef28/getting-started-with-gis/ http://www.spatialanalysisonline.com/HTML/index.html

Section II Module 4 Topic 01 - 13
Clima-, Environment- and Nature-Protection

Module No./Code	M4 - 01
Module Designation	Facts in Environment and Nature Protection (EU- and National Framework)
Units of the Module (if applicable)	1: Introduction
Module Content	NN Specific topics: NN
Qualification Goals	NN

Planing period	2th month 1st day of the module
Module Duration	1 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	0
Total Workload and Type (individual studies + contact hours)	8 hours (Contact hours 8 h = 100 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	All lectures in M1. M2 and M3 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	0,6%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: NN

Module No./Code	M4 – 02
Module Designation	Circular Economy - Act and Law
Units of the Module (if applicable)	1: Introduction
Module Content	NN Specific topics: NN
Qualification Goals	NN

Planing period	2th month
Module Duration	2 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	0,5 (1 in addition with 0,5 by successful participation in M4 – 04 Water management, Protection and Law)
Total Workload and Type (individual studies + contact hours)	16 hours (Contact hours 8 h = 50 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	M4-01 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	1,1%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • workout a study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: NN

Module No./Code	M4 - 03
Module Designation	Ecological Footprint
Units of the Module (if applicable)	1: Introduction
Module Content	NN Specific topics: NN
Qualification Goals	NN

Planing period	2th month
Module Duration	1 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	0
Total Workload and Type (individual studies + contact hours)	8 hours (Contact hours 8 h = 100 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	none
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	0,6%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: NN

Module No./Code	M4 - 04
Module Designation	Water Management, Protection and Law
Units of the Module (if applicable)	1: Introduction – Facts and Figures, Water Footprint 2: Water Protection Law 3: Excursion to water treatment plant
Module Content	The Topics as above will be presented both as theoretical input by trainer, including single and group exercises, own research, evaluations and assessments by participants, films, presentations and excursions will complete the training
Qualification Goals	Overview of water problem in national and international context, Overview of relevant acts and directives, specific clauses and their implementation into practice

Planing period	2nd month
Module Duration	2 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	0,5 (1 in addition with 0,5 by successful participation in M4 – 02 Circular Economy)
Total Workload and Type (individual studies + contact hours)	16 hours (Contact hours 16 h = 100 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	M4 - 01 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	1,1%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: Water and Hydrological footprint Federal and European Water Law Water Framework Directive, WRRL

Module No./Code	M4 - 05
Module Designation	Waste Management, Separation and Recycling
Units of the Module (if applicable)	1: Introduction – Facts and Figures, Ecological Footprint 2: Circular Economy Act 2.1 Act and directives 2.2 European and National Waste Catalogue 2.3 Waste separation, pricing and recycling
Module Content	NN Specific topics: NN
Qualification Goals	NN

Planing period	2th month
Module Duration	4 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1
Total Workload and Type (individual studies + contact hours)	32 hours (Contact hours 20 h = 63 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	M4 - 01 and M4 – 02 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit	Participation and study report

Award	
Contribution to Final Grade	2,1%
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Workout of a study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Field trip to an regional waste handling and recycling center
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: Statistics European and National, Statistica, OECD, Umweltbundesamt for Germany Circular Economy Act, Closed Cycle management Act, Krw-Gesetz and Directives European Waste Calalogue, AVV, LAGA for Germany

Module No./Code	M4 - 06
Module Designation	Soil Management, Protection and Law
Units of the Module (if applicable)	1: Soil Protection Law 2: Pollutants in Soil, air, water 3: Field LAB - Field work soil sampling, evaluation, reporting and assessment
Module Content	The Topics as above will be presented both as theoretical input by trainer, including single and group exercises, own research, evaluations and assessments by participants, films, presentations and excursions will complete the training
Qualification Goals	Overview of water problem in national and international context, Overview of relevant acts and directives, specific clauses and their implementation into practice Sea water treatment in practice

Planing period	3th month
Module Duration	4 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1
Total Workload and Type (individual studies + contact hours)	32 hours (Contact hours 8 h = 25 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	M4 – 01 and M04 - 02 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	2,1 %

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Active participation in the field lab, writing an test protocol and study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Field lab
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: EPA, UBA and other National environmental agency websites

Module No./Code	M04 - 07
Module Designation	Emission and Pollutants in soil, air and water
Units of the Module (if applicable)	1: Emissions – Protection and Law 2: Pollutants in soil, air and water 3: Weather and clima problematic for emissions
Module Content	The Topics as above will be presented both as theoretical input by trainer, including single and group exercises, own research, evaluations and assessments by participants, films, presentations and excursions will complete the training
Qualification Goals	Overview of emission problem in national and international context, Overview of relevant acts and directives, specific clauses and their implementation into practice

Planing period	2th month
Module Duration	4 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1
Total Workload and Type (individual studies + contact hours)	32 hours (Contact hours 24 h = 75 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	M04 - 01 and M04 – 02 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	2,1 %
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input

	• Active participation by the participants through discussion and contributions • Workout a study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: NN

Module No./Code	M04 - 08
Module Designation	Environment in Logistic and Packaging
Units of the Module (if applicable)	1: Introduction
Module Content	NN Specific topics: NN
Qualification Goals	NN

Planing period	3rd month
Module Duration	0,5 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	0
Total Workload and Type (individual studies + contact hours)	4 hours (Contact hours 4 h = 100 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	M2-08 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	0,3%
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input

	• Active participation by the participants through discussion and contributions
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: NN

Module No./Code	M04 - 09
Module Designation	Landfill – Management and Law
Units of the Module (if applicable)	1: Introduction
Module Content	NN Specific topics: NN
Qualification Goals	NN

Planing period	3rd month
Module Duration	0,5 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	0
Total Workload and Type (individual studies + contact hours)	4 hours (Contact hours 4 h = 100 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	M04 - 01, M04 – 02, M04 – 04, M04 – 05, M04 - 06 and M04 - 07 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	0,3%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: NN

Module No./Code	M04 - 10
Module Designation	Environmental criminal law
Units of the Module (if applicable)	1: Laws and directives 2: Security data sheets and hazard assessment 3; Environmental criminal law
Module Content	The Topics as above will be presented both as theoretical input by trainer, including single and group exercises, own research, evaluations and assessments by participants, films, presentations and excursions will complete the training
Qualification Goals	Overview of problem in national and international context, Overview of relevant acts and directives, specific clauses and their implementation into practice, usage of the safety data sheets

Planing period	3rd month
Module Duration	2 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1 (in addition of 14 hours M04 – 13 Project work focus of challenges in Nature Protection)
Total Workload and Type (individual studies + contact hours)	16 hours (Contact hours 4 h = 20 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	M04 – 01 to M04 – 09 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and case study report
Contribution to Final Grade	1,1 %

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Group work to built a case study and present the result
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Case study
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: EPA website (Environmental Protection Agency)

Module No./Code	M04 - 11
Module Designation	Nature Protection – Management and Law
Units of the Module (if applicable)	1: Laws and directives – Protected Areas 2: Biodiversity 3; FFH and Birds Protection Directive 4: Management of Natura 2000 Areas
Module Content	The Topics as above will be presented both as theoretical input by trainer, including single and group exercises, own research, evaluations and assessments by participants, films, presentations and excursions will complete the training
Qualification Goals	Overview of problem in national and international context, Overview of relevant acts and directives, specific clauses and their implementation into practice, interpretation of Area protection maps, red lists and implications

Planing period	3rd month
Module Duration	4 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1
Total Workload and Type (individual studies + contact hours)	32 hours (Contact hours 16 h = 50 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	M04 - 01 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation, presentations, tests, written contributions as single or team work
Contribution to Final Grade	2,1 %

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Workout a study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: National and European Laws Water Framework Directive, WRRL NATURE2000 Directive and newsletters

Module No./Code	M04 - 12
Module Designation	NATURA 2000 – Directive, Water Framework and Stakeholders
Units of the Module (if applicable)	1: Laws and directives 2: Research and Field Work Challenges 3; Water Framework in Nature 2000 Directive 4: Stakeholder Management in Nature 2000 Projects
Module Content	The Topics as above will be presented both as theoretical input by trainer, including single and group exercises, own research, evaluations and assessments by participants, films, presentations and excursions will complete the training
Qualification Goals	Overview of problem in national and international context, Overview of relevant acts and directives, specific clauses and their implementation into practice, interpretation of Area protection maps, red lists and implications

Planing period	3rd month
Module Duration	8 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	2
Total Workload and Type (individual studies + contact hours)	64 hours (Contact hours 32 h = 50 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	M04 – 01 and M04 – 11 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation, Presentations, tests, written contributions as single or team work

Contribution to Final Grade	4,2 %
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Group work in a Case study preparation and report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	practical exercises in class and in the field, films, discussions rounds and presentations by the students
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: National and European Laws Water Framework Directive, WRRL NATURE2000 Directive and newsletters

Module No./Code	M04 - 13
Module Designation	Project work in Environment and Nature Protection
Units of the Module (if applicable)	1: Introduction 2: Group work project
Module Content	Practical project will be designed planned and implemented by the course participants. Using all tools and knowledge gained in the theoretical lectures. Trainer helps and coaches. But preferably keeps in the background.
Qualification Goals	Overview of problem in national and international context, Overview of relevant acts and directives, specific clauses and their implementation into practice, interpretation of Area protection maps, red lists and implications.
Planing period	4th month
Module Duration	11 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	2
Total Workload and Type (individual studies + contact hours)	88 hours (Contact hours 8 h = 8 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	M04 - 01 to M04 – 12 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation, presentation, filled and worked project management templates and visualisations in a study report
Contribution to Final Grade	5,8 %

Teaching and Learning Methods of the Module	• Case study, self learning, research, Field work, emphasis is put on team work and implementing all learned methods, presentation and marketing aspects as well as entrepreneurial thinking • Active participation by the participants through discussion and contributions • Group work in a project to a given problem
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Field work, presentations and digital collaboration, Team and Group Project work
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: NN

- Fisher, R. & Sharp, A. (1998): Getting it done, how to lead when you're not in charge. – Harper Business Book, New York
- Gilsa, M.; Huber, R. & Ruß, Th. (2004): Virtuelle Projektarbeit. - Erich Schmidt Verlag
- Gareis, Roland (2005): Happy Projects. – Manz Verlag Vienna
- Herrman, N. (1996): The Whole Brain Business Book. – Mac Graw Hill Professional
- IT Team (2001): Project Management. - Three CDs: Organising, Planning, Controlling a Project. – NCC Education Series
- Magness, Fred (1990): Fundamentals of Project Management. - Qualitech Systems Inc. Washington
- Orr, Alan D. (2004): Advanced Project Management. - Kogan Page Ltd.
- Patzak, G. & Rattay, G. (2004): Projektmanagement. - 4. Auflage Linde Verlag Wien
- Pryor, Fred (1995): How to Manage Priorities and Meet Deadline, - Nightingale Concent Niles
- Rattay, G. (2007): Führung von Projektorganisationen. - 2. Auflage Linde Verlag Wien
- Tracy, Brian (2002): Executive Time Management, Seminar Series (Video, Audiotapes and Handbook). – Nightingale Conant Corporation
- Verzuh, Eric (1999): The Fast Forward MBA in Project Management. - John Wiley & Sons Inc.
- Young, Trevor (2004): The Handbook of Project Management. - Kogan Page Ltd.

Section III Module 5 Topic 01 - 10
Sustainability in Renewable energy

Module No./Code	M5 - 01
Module Designation	Introduction to Energy Distribution, Smart Grid and Future Mobility
Units of the Module (if applicable)	1: Introduction to Energy Distribution and Smart Grid 2: Future Mobility in the Smart Grid
Module Content	This module provides an overview and knowlegde about modern grid systems and grid management in quarters, regions and smart cities. It spend deeper understanding of the needs in production, distribution and consumption of energy in the sectors electrical, heating/cooling and traffic. The relations and interconnections in national, european and global context want to be displayed. Participants get an first understanding about the relations, dispatch and integration in the different kinds of grid (Electric, NatGas, DistrictHeating/Cooling, Water-and WateWater, Air-, Rail- and Street - Traffic, Sea- and RiverTransportation, a.s.o.) and the use for a modern approach in the society, Specific topics: 1: Introduction to Energy Distribution and Smart Grid ● Basics of electric energy distribution and grid topologies in european countries ● Optimized intelligent grids (virtual and smart grid concepts) in respect to losses switching possibilities, high performance and fast structure manipulation ● Future storage grid and distribution behaviors Leading and control performances to intelligent grid switching Development of grid parameters, loss minimization ● Monitoring leading control performances and switching ● Mobile and long run efficient distribution systems ● High efficient high power static converter systems ● Other types and use of grid connections in energy distribution ● Relations, dispatch and integration in different kinds of grid (Electric, NatGas, DistrictHeating/Cooling, Water- and WasteWater, Air-, Rail- and Street - Traffic, Sea- and RiverTransportation, a.s.o.)

	2: Future Mobility in the Smart Grid ● Planning and integration of Future Mobility solutions ● Electrical Mobility and problematic of Charging in the grid
Qualification Goals	Participants obtain specific knowledge in structure, development and resilience of modern grid architecture and distribution systems, special for intelligent controlled mixed alternative energy supply. Also they know multi role grids, necessary controls and algorithm for high efficient grid leading, regulation utilities and problems in modern dispatch. The participants know the basics of grid hardware, seen in cable and tower supply systems switching, substation transformer of new art for mixed alternative suppliers.

Planing period	5th month 1st week of the module
Module Duration	4 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	0
Total Workload and Type (individual studies + contact hours)	32 hours (Contact hours 20 h = 66,6 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	All lectures in M01 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	2,1%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises and writing an study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Field trip to an monitoring and dispatch center of an regional elctrical grid provider
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: James Momoh; Smart Grid: Fundamentals of Design and Analysis; Wiley-IEEE Press; April 2012 ISBN: 978-0-470-88939-8 Zhaoyang Dong, Pei Zhang, Jian Ma, and Junhua Zhao: Emerging Techniques in Power System Analysis, Springer, 2010 Mumtaz Siddiqui and Thomas Fahringer: Grid Resource Management: On-demand Provisioning, Advance Reservation, and Capacity Planning of Grid Resources , Springer, 2010 Thomas Georgiadis: Renewable Energy Grid Integration: Building and Assessment, Nova, 2010 Lambert M. Surhone, Miriam T. Timpledon, Susan F. Marseken: Power transmission: Power, Electric Power Transmission, Energy, Time, Alternating Current, Transformer, Electrical Grid, Electrical Resistance, Betascript Publishing, 2010 https://low-emission-project.de/sites/low-emission-project.de/files/documents/klimaschutz_en_161128_screen.pdf (handbook available in Polish and English) Buczkowski K. (ed.), 2015 - Efektywność energetyczna. Międzynarodowe Centrum Rozwoju Lokalnego, Płock. Innowacja Rozwoju Nr 1/2015 (6), ISSN 2353-3269 Fawkes S., 2013 - Energy efficiency: The Definitive Guide to the Cheapest, Cleanest, Fastest Source of Energy. ISBN 9781409453598, October 9, 2012, Routledge European Renewable Energy Council, 2015 - Renewable Energy in Europe: Markets, Trends and Techniologies, December 21, 2015 by Routledge, ISBN 9781138985148

	Twidell J. and Weir T., 2015 - Renewable Energy Resources. January 26, 2015 by Routledge, ISBN 9780415584388 Franz Mayinger; Mobility and Traffic in the 21st Century; 2001; Springer; ISBN: 978-3-662-04392-9 Arthur D. Little Future Lab; The Future of Urban Mobility 2.0; 2014; www.adl.com/FUM2.0

Module No./Code	M05 - 02
Module Designation	Introduction to Photovoltatics and Storages
Units of the Module (if applicable)	1: Basics of Photovoltatics and electrical Storages 2: Composition of stand-alone PV 3: Composition of grid-connected PV 4. Life-Cycle and Environmental Impact of PV-Projects (Peparation, Citizen-Participation, Planning, Permission, Funding, Construction, Maintanance and Sevice)
Module Content	The module gives an overview of technologies and use in the field of photovoltaic facilities as well as the use of these technologies in building and power industry. Advantages and challenges for energy suppliers will be discussed. Environmental issues during the production of photo-voltaic cells and equipment and the potential for green house gas reduction will also be reviewed. The contribution of photovoltaic systems to the local, regional, EU and international energy supply will be analyzed. Specific topics: 1: Basics of Photovoltatics and electrical Storages Physical fundamentals • Solar radiation on Earth • Absorption, reflexion, and shadowing effects • Photovoltaic effect Photovoltaic Technologies • Photovoltaics on the basis of inorganic and organic semiconductors • electrical description of solar cells and modules • energy storage (batteries, fuel cells, redox-flows) 2: Composition of stand-alone PV ● Systems and Sizing ● Case examples and references 3: Composition of grid-connected PV ● Systems and Sizing ● Case examples and references 4. Life-Cycle and Environmental Impact of PV-Projects (Peparation, Planning, Permission, Funding, Construction, Maintanance and Sevice) • Simulation, Planning and Permission Process • Ecological analysis and Environmental-Assessment,

	• Life cycle analysis and assessment • Potential for GHG-reduction • Investments, operational costs, electricity costs, cost effectiveness and Funding • Case examples and reference facilities • National and international service capacity with case examples • General Installation guidelines
Qualification Goals	Participants obtain specific fundamental knowledge and understanding of photovoltaics • Awareness for the interdependencies between technological, economic and ecological aspects • Classification of photovoltaics within the national and international energy business competence • Elements and Design of grid connected and off-grid PV systems, Micro-Grid and emergency electrical power systems with PV • Ability of analyzing and evaluating photovoltaic technologies and systems • Ability of evaluating economical and environmental aspects of PV-systems
Planing period	5th month
Module Duration	5 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1
Total Workload and Type (individual studies + contact hours)	40 hours (Contact hours 24 h = 60 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	lecture in M05 - 01 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	2,6%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises and writing an study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Field trip to an Photovoltaic power plant and it`s monitoring and dispatch center in the region and to an building integrated PV-system
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: Archer, M.D. (Hrsg.); Green, M. (Hrsg.): Clean Electricity from Photovoltaics, Imperial College Press, 2010 Falchuk, E. (Hrsg.); Woodlee, C.: Photovoltaics - Local Industry Development, Installed Cost Trends and Mineral Commodities Used, Nova Science Publishers Inc., 2012 Andrews, J. and Jelly, N.: Energy science: Principles, Technologies and Impacts, Oxford University Press 2013 Boyle, G., Everett, B., Ramage, J.: Energy Systems and Sustainability, Oxford University Press 2011 Boyle, G.: Renewable Energy: Power for a Sustainable Future, Oxford University Press 2012

Module No./Code	M05 - 03
Module Designation	Introduction to Solar Thermal Energy and Storages
Units of the Module (if applicable)	1: Basics of Solar Thermal Systems and Storages 2: Basics of Concentrated Solar Power Systems 3: Life-Cycle and Environmental Impact of Solar Thermal Systems and Projects
Module Content	In this module participants get an introduction in the potential of solar energy use in thermal applications and best-practise in this field. Focused on small and medium size systems they are able to understand solar thermal integration in heating, climatization and colling processes up to thermal storage in building and district infrastructure. In the discussion and field trip also want to orientated for environmental impact of solar thermal use. Specific topics: 1: Basics of Solar Thermal Systems and Storages ● importance of solar thermal systems for hot water and heating systems ● fundamentals and components of an solar thermal system with vacuum and flat collector integration ● fundamentals of thermal storage in small and medium size ● Basics of Power-to-Heat integration ● Smart Home and Smart building systems in heating and climatization with solar thermal use ● Integration of thermal storages in district infrastructure and smart grid connection 2: Basics of Concentrated Solar Power Systems ● fundamentals and best-practise of concentrated solar power systems ● project integration of solar thermal power systems and waste heat in district infrastructure and smart grid 3: Life-Cycle and Environmental Impact of Solar Thermal Projects ● Preparation, Planning, Permission, Funding, Construction, Maintanance and Sevice of solar thermal systems ● Environmental impact of solar thermal systems ● Local and regional potential of solar thermal use in infrastructure and climate protection

Qualification Goals	Participants get an overview and first knowlegde in the field of solar thermal use and integration in building, smart grid and infrastructure. They are able to understand solar thermal solution and storages and it`s integration in projects in local and regional as important part for climate protection and energy efficiency. By practical orientation and visiting best-practise with solar thermal integration they understand the key factors for solar thermal energy use and storage in the daily work.
Planing period	5th month
Module Duration	4 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1 (in addition with 6 hours focused on Power-to-heat and PV-Cooling in Module M05 – 02)
Total Workload and Type (individual studies + contact hours)	32 hours (Contact hours 34 h = 67%)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	lecture in M05 – 01 and M05 – 02 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	2,1%
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises and writing an study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Field trip to an Solar Thermal System with power-to-heat-integration in the region
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures.

	Recommended literature: John A. Duffie & William A. Beckman; Solar Engineering of Thermal Processes , 3rd Edition, ISBN 978-0-471-69867-8, Wiley 2006 Deutsche Gesellschaft für Sonnenergie; *Planning and Installing Solar Thermal Systems:* *A Guide for Installers, Architects, and Engineers*, Earthscan, 2005 Karl Ochsner: *Geothermal Heat Pumps:* *A Guide for Planning and Installing* G. Lorenzini, C. Bisemi, G. Flacco; Solar Thermal and Biomass Energy; 2010, WIT Press (UK); ISBN-13: 9781845641474 Dorota Chwieduk; Solar Energy in Buildings: Thermal Balance for Efficient Heating and Cooling; 2014, Academic Press; ISBN-13: 9780124105140 H.P. Garg, S.C. Mullick, Vijay K. Bhargava; Solar Thermal Energy Storage; 2011, Springer; ISBN-13: 9789401088411 Ibrahim Dincer; Thermal Energy Storage: Systems and Applications; 2nd Edition; 1999; Wiley; ISBN-13: 978-0470747063 Burt J. Alexander, Ted F. Richardson; Concentrating Solar Power: Data & Directions for an Emerging Solar Technology 2012, Nova Science Publishers Inc; ISBN-13: 9781620814239 Alasdair Cameron; Desert Energy: A Guide to the Technology, Impacts and Opportunities; 2013, Earthscan Ltd; ISBN-13: 9781849711845 Peter Heller; The Performance of Concentrated Solar Power (CSP) Systems: Analysis, Measurement and Assessment; 1st Edition; 2017; Woodhead Publishing; ISBN-13: 978-0081004470

Module No./Code	M05 - 04
Module Designation	Introduction to Wind energy and Power to Gas
Units of the Module (if applicable)	1: Introduction to wind energy 2: Composition of smale-scale wind energy systems 3: Composition of medium- and large-scale systems 4. Life-Cycle and Environmental Impact of Wind-Energy-Projects (Peparation, Citizen-Participation, Planning, Permission, Funding, Construction, Maintanance and Sevice)
Module Content	The module gives an overview of technologies and use in the field of wind energy use in the power industry. Advantages and challenges for energy suppliers will be discussed. Environmental issues during the production of equipment and the potential for green house gas reduction will also be reviewed. The contribution of wind energy systems to the local, regional, EU and international energy supply will be analyzed. Specific topics: 1: Introduction to wind energy 2: Composition of smale-scale wind energy systems 3: Composition of medium- and large-scale systems 4: Life-Cycle and Environmental Impact of Wind-Energy-Projects • Simulation, Planning and Permission Process • Ecological analysis and Environmental assessment, life cycle analysis and assessment, Potential for GHG-reduction • Investments, operational costs, electricity costs, cost effectiveness and Funding • Case examples and reference facilities • National and international service capacity with case examples • General Installation guidelines

Qualification Goals	Participants obtain specific fundamental knowledge and understanding of wind energy • Awareness for the interdependencies between technological, economic and ecological aspects • Classification of wind energy concepts within the national and international energy business and competence • Elements and Design of small and on-shore wind energy projects (off-grid and on-grid connected) • Ability of analyzing and evaluating wind energy technologies and systems • Ability of evaluating economical and environmental aspects of wind energy systems and projects
Planing period	5th month
Module Duration	4 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1
Total Workload and Type (individual studies + contact hours)	32 hours (Contact hours 16 h = 67 %)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	lecture in M05 - 01 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	2,1%
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises and writing an study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Field trip to an Wind – Energy project and it`s monitoring and dispatch center in the region and to an small wind power system

Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: David Wood; Small Wind Turbines: Analysis, Design, and Application; 2011; Springer; ISBN 978-1-84996-175-2 https://windexchange.energy.gov/small-wind-guidebook Paul Gipe; Wind Power: Renewable Energy for Home, Farm, and Business, 2nd Edition; 2004: Chelsea Green Publishing; ISBN-13: 9781603581639 Tony Burton, Nick Jenkins, David Sharpe; Wind Energy Handbook; 2011: Wiley; ISBN-13: 978-0470699751 http://www.ewea.org/ http://www.wwindea.org/

Module No./Code	M05 - 05
Module Designation	Introduction to Bio-Energy, Bio-Fuels and Storages
Units of the Module (if applicable)	1: Basics of Bio-Energy - Ressources and Systems for renewable energy heating systems 2: Basics of Bio-Gas – Ressources and Systems 3: Basics of Bio-Fuel – Ressources and Systems 4: Life-Cycle and Environmental Impact of Bio-Energy Use, Systems and Projects
Module Content	Specific topics: 1: Basics of Bio-Mass for Heat Energy Use - Ressources and Systems - Fundamentals of biomass combustion technologies and challenges - System approach of wood-burning, biomass pellet and biomass gasification 2: Basics of Bio-Gas – Ressources and Systems - Fundamentals of Gasification - Technical concepts 3: Basics of Bio-Fuel – Ressources and Systems 4: Life-Cycle and Environmental Impact of Bio-Energy Use, Systems and Projects (Peparation, Planning, Citizen-Participation, Permission, Funding, Construction, Maintanance and Service)
Qualification Goals	NN
Planing period	5th month
Module Duration	4 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1
Total Workload and Type (individual studies + contact hours)	32 hours (Contact hours 20 h = 67%)
Type of Lecture	Compulsory

(compulsory, elective, etc.)	
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	lecture in M05 – 01 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	2,1%
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises and writing an study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Field trip to a Bio-Gas-Plant with integration in the NatGas-Grid and Bio-fuel-use for trucks in the region
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: Sandra D. Eksioglu, Steffen Rebenack, Panos M. Pardalos; Handbook of Bioenergy Bioenergy Supply Chain - Models and Applications; 2015; Springer; ISBN 978-3-319-20092-7

Module No./Code	M05 - 06
Module Designation	Introduction to Water flow energy, Hydro Power and Storages
Units of the Module (if applicable)	1: Basics of Water flow energy and Hydro Power 2: Basics to Pump-Water-Storage systems
Module Content	Specific topics: Basics of Water flow energy and Hydro Power ● Introduction to Water flow energy, Hydro Power Systems and best-practise ● Introduction to Pump Water storages, grids and agro-hydro-power-systems in use for energy efficient capacities and solutions ● Life-Cycle and Environmental Impact of Water flow and Hydro Power Systems and Projects
Qualification Goals	NN
Planing period	6th month
Module Duration	1 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	0
Total Workload and Type (individual studies + contact hours)	8 hours (Contact hours 8 h = 100%)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	lecture in M05 – 01 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian

Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	0,3%
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: Fichtner; Hydroelectric Power: A Guide for Developers and Investors; International Finance Corporation Morgan, G., Environmental and social impacts of small-scale hydropower: Issues and Challenges; Presentation at World Bank Water Week; 2009. http://siteresources.worldbank.org/EXTWAT/Resources/4602122-1213366294492/5106220-1234469721549/14.3_Environment_and_Social_Impacts_Small_Hydro.pdf Guide on How to Develop a Small Hydropower Plant; 2004; European Small Hydropower Association - ESHA

Module No./Code	M05 - 07
Module Designation	Introduction to Geothermal Energy, District Heating, Climatization and Cooling
Units of the Module (if applicable)	1: Introduction to Geothermal Energy 2: Introduction to District Heating 3: Introduction to Climatization and Cooling 4: Best-Practise and Environmental Impact of Geothermal use in our energy system
Module Content	This module and lectures introduce the participants in the fundamentals and potential of geothermal ressources and systems in the energy sectors and systems. By built a general understanding of the ressource use and technology approach participants are able to understand the economical and environmental impact of geothermal ressource usage in projects with district heating and cooling (small, medium and big scale). **Specific topics:** 1: Introduction to Geothermal Energy • Geology and Earth heat • Basics of geothermal systems • Energy reservoirs and energy network • Investments, operating costs, costs of current production, efficiency • Case studies and reference installations • National and international utilisation potentials 2: Introduction to District Heating and Cooling • Concept and Components of District Heating and Cooling Systems • Calculation of energy prices and cost effectiveness • Case studies and reference installations • Local and regional utilisation potentials and impact 3: Introduction on Climatization and Cooling with Geothermal use in our energy system • Heating pumps and Climatization • Basics of Climatization and Cooling • Case studiesy and reference installations • Local and regional utilisation potentials and impact 4: Best-Practise and Environmental Impact of Geothermal use in our energy system • Ecological and life cycle analysis • Environmental Impact of Geothermal and District Heating and Cooling Projects

Qualification Goals	The learning goal is to train the participants to understand and implement current technical concepts of the geothermal use in energy concepts and soltution. They are able to achieve commerciality while meeting legal, social and environmental challenges from the aspect of geothermal ressources and use in the local and regional matter. The lectures want to built an understanding of: • Basic concepts of exploration and use of geo-thermal resources, the characterisation of geothermal reservoirs and the production of heat and power; • Integrated management techniques to deliver a geothermal energy project; • Present and future potential of geothermal energy in the global and regional energy resource portfolio. • District heating, climatization and cooling concepts, projects and best-practise
Planing period	5th month
Module Duration	5 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1
Total Workload and Type (individual studies + contact hours)	40 hours (Contact hours 20 h = 50%)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	M05 – 01 Introduction to Energy Distribution and M05 - 03 Introduction to Solarthermal Energy and Storage must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	2,6%

Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises and writing an study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Field trip to an geothermal energy project and/or and district heating project in the region
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: Mary H. Dickson and Mario Fanelli; Geothermal energy: utilization and technology; UNESCO Publishing by John Wiley & Sons; 1995 William E. Glassley; Geothermal Energy: Renewable Energy and the Environment, Second Edition; 2014, CRC Press; ISBN-13: 9781482221749 Ingrid Stober, Kurt Bucher; Geothermal Energy: From Theoretical Models to Exploration and Development; 2013; Springer Verlag Colin Harvey, Graeme Beardsmore. Inga Moeck and Horst Rüter; Geothermal Exploration - Global Strategies and Applications; 2016; IGA Academy Books; ISBN: 978-3-9818045-0-8 Billy C. Langley; Heat Pump Technology 3rd Edition; 2001, Pearson; ISBN: 978-0130339652 Keith E. Herold; Absorption Chillers and Heat Pumps; 2016, Productivity Press; ISBN: 9781498714341 Jay Egg; Geothermal HVAC: Green Heating and Cooling; 2010, McGraw-Hill Education ISBN: 9780071746106 Marc A. Rosen, Seama Koohi-Fayegh; Geothermal Energy: Sustainable Heating and Cooling Using the Ground; 2017; John Wiley & Sons Inc.; ISBN: 9781119180982 Sven Werner; International review of district heating and cooling; Science direct https://www.sciencedirect.com/science/article/pii/S036054421730614X Dietrich Schmidt, Anna Kallert, Markus Blesl; Sven Svendsen, Hongwei Li, Natasa Nord, Kari Sipilä; Low

	Temperature District Heating for Future Energy Systems; https://www.sciencedirect.com/science/article/pii/S1876610217322592 Dietrich Schmidt, Anna Kallert, Janybek Orozaliev, Isabelle Best, Klaus Vajen, Oliver Reul, Jochen Bennewitz, Petra Gerhold; Development of an Innovative Low Temperature Heat Supply Concept for a New Housing Area; Energy Procedia, Volume 116, 2017, pp. 39-47 District Energy in Cities: Unlocking the Potential of Energy Efficiency and Renewable Energy; www.unep.org/energy/des Billy C. Langley; Heat Pump Technology 3rd Edition; 2001, Pearson; ISBN: 978-0130339652 Keith E. Herold; Absorption Chillers and Heat Pumps; 2016, Productivity Press; ISBN: 9781498714341

Module No./Code	M05 - 08
Module Designation	Introduction to Systainability in green-efficient building
Units of the Module (if applicable)	1: Introduction to Green-energy efficient building 2: Best-Practise and Environmental Impact of green energy efficient building
Module Content	Specific topics: 1: Introduction to Green-energy efficient building ● Energy efficiency value chain and ecosystem ● Buildings as systems ● Energy efficiency drivers and opportunities for commercial building markets ● The residential market for energy efficiency ● Home energy management ● Next generation lighting and HVAC solutions ● Green buildings and integrated design 2: Best-Practise and Environmental Impact of green energy efficient building
Qualification Goals	NN
Planing period	6th month
Module Duration	4 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1
Total Workload and Type (individual studies + contact hours)	32 hours (Contact hours 24 h = 75%)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	lecture in M1 – 03 and M05 – 01 to M05 - 09 must have been completed and passed
Responsible Coordinator	Program Director

Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	2,1%
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises and writing an study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Field trip to an best-practise and certified green and energy-efficient building in the region
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: NN

Module No./Code	M05 - 09
Module Designation	Introduction to Sustainability in energy-efficient production with energy management
Units of the Module (if applicable)	1: Introduction to Energy Efficiency in industrial and manufacturing systems 2: Introduction to Energy Management 3: Best-Practise and Environmental Impact of Energy Management and Energy Efficient Production
Module Content	This module will introduce methodologies and procedures that can be used to significantly improve energy efficiencies of various industrial processes and systems. The main objectives are: ● fundamentals of energy management and cost analysis necessary for assessing energy saving opportunities in a wide range of industrial processes. ● procedures for energy saving decision-making. Specific content: 1: Introduction to Energy Efficiency in industrial and manufacturing systems ● Thermal Insulation ● Cogeneration and waste-heat recovery ● Pressured Air and Steam Distribution Systems ● HVAC Systems ● Lighting Systems ● Control and Monitoring Systems 2: Introduction to Energy Management ● Introduction to the Energy Audit process, Certification and Monitoring with ISO 50 001 ● Economic impact and analysis 3: Best-Practise and Environmental Impact of Energy Management and Energy Efficient Production

Qualification Goals	NN
Planing period	6h month
Module Duration	4 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	1
Total Workload and Type (individual studies + contact hours)	32 hours (Contact hours 24 h = 75%)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none
Enrolment Prerequisites	lecture in M1 – 03 and M05 – 01 to M05 - 09 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	2,1%
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing exercises and writing an study report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Field trip to an energy-efficient production with an energy-management-system in the region
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: Jürgen Hesselbach, Christoph Herrmann; Glocalized Solutions for Sustainability in Manufacturing; Springer Science & Business Media, 2011

Module No./Code	M05 - 10
Module Designation	Study project in green energy and energy-efficiency
Units of the Module (if applicable)	01: Study project
Module Content	This module deepens knowledge and competences of renewable energy and energy-efficiency in practise and already gained. Specific topics: 1: Study project group work Content varies with respect to the chosen study project: • Research, assessment or practical project: introduction to the chosen research topic and project implementation including documentation of results • Social project: development of suitable methods for critical reflection, evaluation, citizen`s participation and documentation of the project • Case studies: Introduction to different case studies in renewable energy and energy-efficiency in local or regional context
Qualification Goals	• Deepened understanding of planning and project tools in requirements for renewable energy and energy-efficiency • Introduction to specialized research, assessment or practical knowledge • Increase in responsibility for the execution and evaluation of projects and reaching goals and sub-goals • Improved ability to interact in a new practical orientated contexts
Planing period	6th month
Module Duration	10 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	3
Total Workload and Type (individual studies + contact hours)	16 hours (Contact hours 16 h = 20%)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none

Enrolment Prerequisites	lecture in M1 and M05 – 01 to M05 - 11 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and study report
Contribution to Final Grade	5,3%
Teaching and Learning Methods of the Module	• Practice-oriented lecturer input • Active participation by the participants through discussion and contributions • Completing study project, writing and presenting the results in an project report
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Study project
Literature (compulsory reading/additional literature)	Relevant articles and cases will be handed out by the lecturer during the lectures. Recommended literature: NN

Section IV Module 06 Topic 01 – 03

Profile and Practise – Internship – Language In-Depth Training

Module No./Code	M06 - 01
Module Designation	Business Language In-Depth Training in one of the program national languages or english (english - german – hungarian – polish - romanian)
Units of the Module (if applicable)	1: In-Depth training in the program national language or english II: Publication in the program national language
Module Content	In-Depth Language madule serves to deepen the inter-cultural competencies of the participants and the deeper understanding of the development and framework of the country of internship. The knowlegde built are integrated in the daily work and support the understanding of task and success in a practical orientated way. It offers also one more an opportunity for networking within a public or private organzation. The publication development in team with the prationeers in the organization helps to form key corporate functions, participants can add to their own personal profile and references. The teme have to be defined based on a concret practical project focused Clima-, Environment-, Nature- Protection and/or Renewable energy with the decisionmaker in the internship organisation and in agreement with the supervisor.
Qualification Goals	Learning Goals • Develop awareness of intercultural relationship in concrete job-related tasks • Acquire specific career-related knowledge and specific job-related knowledge, depending on the nature of the internship • Develop knowledge of company processes and built stakeholder information and research paper about it Qualification Goals • Insight into the intercultural participation and networking • Application of language knowledge gained during study to deal with challenges of work • Train the language skills in practice Competence Goals

	• Ability to work in international interdisciplinary teams, also in an EU-wide and intercultural context • Ability to work in stakeholder information and public relations projects • Build ability to develop and maintain network and contact
Planing period	7th to 9th month
Module Duration	13 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	2
Total Workload and Type (individual studies + contact hours)	84 hours (Contact hours 40 h = 47,6%)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	The internship allows participants to put the competencies they have acquired into practice and earn a reference for their personal skill profile.
Enrolment Prerequisites	All lectures in M01 – M05 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	All lecturers from Modules 1 – 3 can act as internship supervisors
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation, publication and Reference
Contribution to Final Grade	5,60%

Teaching and Learning Methods of the Module	Group discussions, Online and blended learning tools Teaching and learning in the daily working process and tasks, Take part and report in national language based meetings in the organisation, Independent desk research in the national language and translations of newsletters, papers and documents
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Various forms of communication, e.g. • Online conference • Team and Personal meeting • Forums and Workshops • Email and Newsletters • Social networks

Module No./Code	M06 - 02
Module Designation	Internship in the field with project in practise
Units of the Module (if applicable)	1: Internship within a Company Project
Module Content	Internship module serves to deepen participants ability to practically implement previously acquired knowledge and skills as well as offers an opportunity for networking within a public or private organization. Via acquired indepth knowledge of key corporate functions, participants can add to their own personal profile. They defines a concret project focused Clima-, Environment-, Nature- Protection and/or Renewable energy with the decisionmaker in the internship organisation and in agreement with the supervisor. At the end of the internship the participant reflects on his/her experiences in practice and how they relate to the theories and models that were covered during his/her education in the course.
Qualification Goals	Learning Goals • Develop awareness of concrete job-related tasks • Acquire specific career-related knowledge and specific job-related knowledge, depending on the nature of the internship • Develop knowledge of company processes Qualification Goals • Insight into company decision making processes • Application of theoretical knowledge gained during study to deal with challenges of work • Application of methods to solve problems of practice Competence Goals • Ability to work in interdisciplinary teams, also in an EU-wide and international context • Ability to work independently on complex practice-related projects • Build a profile that spans disciplines and functions • Build ability to develop and maintain network and contact
Planing period	7th to 9th month
Module Duration	61 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	10

Total Workload and Type (individual studies + contact hours)	416 hours (Contact hours 16 h = 3,9%)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	The internship allows participants to put the competencies they have acquired into practice and earn a reference for their personal skill profile.
Enrolment Prerequisites	All lectures in M01 – M05 must have been completed and passed
Responsible Coordinator	Program Director
Name of the Lecturer	All lecturers from Modules 1 – 3 can act as internship supervisors
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and Reference, Internship study report
Contribution to Final Grade	27,5%

Teaching and Learning Methods of the Module	Working in daily process and tasks, working in project teams, take part and report in meetings in the organisation, independent desk research
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	Various forms of communication, e.g. • Online conference • Team meetings • Personal meeting • Brainstorming • Forums and Workshops • Email • Social networks

Module No./Code	M06 - 03
Module Designation	Project Kolloquium as Final of the course
Units of the Module (if applicable)	1: Project Colloquium
Module Content	Project Colloquium reflect and demonstrate the acquired knowlegde and skills of all participants by presenting their Internship report to the audience by poster, structured presentation and feedback. It demonstrate participants skills in event preparation and execution, Stakeholder participation and process, communication and presentation. As final event of the course it reflect the success of the program and the voice of costumer about it. It celebrate also the certifications handing over to the participants.
Qualification Goals	Participants obtain and demonstrate their specific skills from their study and practical results of their participation in the course and internship. The participants organise this event for themselves as final event, demonstrate and earn also basic skills in event management. They reflect again their skills in project management. Furthermore, participants should get an interdisciplinary view to challenges in the fields Environment-, Nature Protection and Renewable Energy from the presentations of the internship results of other participants in the course.
Planing period	9th month – last week
Module Duration	3 day`s
Module Frequency	On Requirement
Number of Assigned ECTS Credits	0
Total Workload and Type (individual studies + contact hours)	20 hours (Contact hours 8 h = 40,0%)
Type of Lecture (compulsory, elective, etc.)	Compulsory
Usability of the Module for Other Study Programs	none

Enrolment Prerequisites	All lectures M01 to M05 and M06 – 01 Internship must have been completed
Responsible Coordinator	Program Director
Name of the Lecturer	N.N.
Teaching Language	English/German/Hungarian/Polish/ Romanian
Testing Category / Requirements for Credit Award	Participation and Reference from Internship, Internship project report
Contribution to Final Grade	1,3%
Teaching and Learning Methods of the Module	• Practice-oriented field input • Active participation by the participants
Special Features (e.g. share of distance learning, field trips, guest lectures, etc.)	none