

## ПРОЕКТ КОМБИНИРАНО ОБУЧЕНИЕ ЗА МАГИСТЪРСКА ПРОГРАМА ПО ЕНЕРГИЙНА ИКОНОМИКА

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**РЕЗЮМЕ.** Магистърската програма по енергийна икономика е проектирана и ще бъде изпълнена в съответствие с "Детайлната програма за постигане целите на европейските системи за образование и обучение" на Европейския съвет, приета и утвърдена на 14.02.2002 г. Очертават се три основни тенденции:

- Подобряване качеството и ефективността на системите за образование и обучение в Европейския съюз, като фокусът ще бъде поставен върху директните ползи, които носи прилагането на получаващия все по-голяма популярност "Комбиниран подход за преподаване";
- Осигуряване на достъп до възможно най-качествените системи за образование и обучение: Същността на Комбинирания подход за преподаване е дистанционно, чрез Интернет, осигуряване на активности, които да съчетаят всички иновативните формални (и неформални) форми на образование и обучение;
- Разширяване на пространството на системите за образование и обучение – целта с прилагането на Комбинирания подход на преподаване е осигуряването на достъп по-широк кръг от бенефициенти до по-висококачествени форми на образование и обучение.

### BLENDED LEARNING PROJECT FOR MASTER OF SCIENCE PROGRAM IN ENERGY ECONOMICS

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**ABSTRACT.** M.Sc. Program in Energy Economics is designed and shall be implemented as to accomplish outputs in conformity with 3 strategic objectives (as per "Detailed work program on the follow-up of the objectives of education and training systems in Europe," the 'Education' Council of 14.Feb.2002), namely:

- Improving the quality and effectiveness of education&training systems in the EU: the focus will fall of the benefits derived from an directional enhancement of the innovative "Blended Learning Approach", that has recently gaining increased popularity;
- Facilitating access to quality-enhanced (as part of the whole lot of) education and training systems: the core of this Blended Learning Approach involves Internet-secured (distance learning) portion of activities, materials, modules, thus facilitating the combination of all innovative formal (non-formal and informal) forms of education and training;
- Opening up the education and training systems to the wider world – the projected enhancement in the Blended Learning Approach is targeted to provide access of a wider universe of beneficiaries to a higher quality education and training forms.

### I. Main characteristics

The objectives of the program are attainable through complete the program's scheduled activities built up around the following Priority Themes:

- Foreign-languages in school teaching and multilingualism. In particular, our innovative approach is intended to enhance the efforts towards diversification and intensification of the teaching of and competence in foreign languages, thus adding value to our endeavor in respect with "Improving foreign language teaching" priority (as per the Objective 3.3 of the Lisbon agenda);

- Tackling learning difficulties in education and training;

Further in part I on briefly Target groups, Main activities, and Anticipated outcomes from the program are discussed.

#### 1. Target groups

- First tier beneficiaries: professionals and graduate students pursuing greater expertise in the field of Energy Economics;

- Second tier beneficiaries: academicians and practitioners; economists, engineers, senior and mid-level researchers and strategists, analysts, financial experts, who already possess some fundamental understanding in the field and related areas, who need to drill down and master in the newly applicable concepts and tools or to whom the value added will be the highest from innovations developed and offered by the program to meet the identified sector-specific needs of education & training.

#### 2. Main activities

The Master Programme Body of Knowledge is backed up by authoritative academic body and expertise exchange of several (usually 5) partners (diversified teaching approaches); state-of-the-art reference texts, guides and materials selected as to best meet the needs and objectives of the program courses & activities attendants (first & second tier beneficiaries, as stated in the section above). The latter shall constitute an ideal opportunity not only to graduate students, academicians and researchers but also to professionals seeking to upgrade their

knowledge and gain an innovative insight on using applied concepts and models in the field's major and related areas. Extra benefit is derivable from the coverage of new aspects and availability of software packs and proprietary developed tools for enhanced problem modelling.

The program is designed to offer to the attendants an innovative approach to developing of case-sensitive research methodology and to shape an orientation towards generating skills for performance self-sustained individual and independent research in Energy & Environmental sector.

For in-depth understanding of the currently applicable and newly introduced concepts and instruments, and for further enhancement of their professional skills the participants are encouraged to attend the 8 core disciplines plus another 4 elective out of 12 complementary courses, such as: Energy Economics, Policy & Technology; Energy Supply Planning & Environment; Energy Demand Analysis & Forecasting; Renewable Energy Resources, Decision Analysis & Operations Research Methods; Investments & Risk Management, etc.

### 3. Anticipated outcomes

By establishing multifarious links between the focus on practical questions, solutions implied and answers provided by the highlighted field-specific concepts (grounded on the underlying economic fundamentals) and innovative approaches, the courses will also address the especially important two-band need: (1) enhance the applied researchers' capacity of pursuing highly perspective employments with policy formulation bodies, institutions, intermediaries and consulting/advisory firms, and (2) offer a stepwise approach towards satisfying the sharply increasing needs of the latter of highly qualified professionals with a new innovative orientation.

By the means of exploiting all opportunities accessible through the partnership of project implementing bodies (such as: exchanges of experience/experts; forming sector and activity specific network, widening access to innovative approaches, etc.), the major anticipated outcome can also be sub-divided by currently accomplished and future anticipated multidimensional effects, summarised as follows:

- Overall impact: the project will be carried over as to distill and make widely accessible a superb guide to the field's frontier. In particular, the successful completion of the program will provide a fair fundamental base for further education & training in the areas of Economics, Management, Law, Environmental Science and Sociology;

- Official policy makers will have the choice to involve a wider universe of prepared experts in the policy formulation process;

- Industry/Sector (Energy & Environmental Economics) impact: generate innovative insights with and make accessible to all sector players a wider network of expertise in both directly related and adjacent areas, where the needs are most severe;

- Final beneficiaries: building up their capacity to advanced policy formulation; master in decision and data modelling concepts & tools; exploit the newly arising opportunities in the field - to address rigorous real business, energy economics and environmental problems (thus fuelling the increasing demand for experts with innovative insights and enhanced problem solving abilities).

## II. Internet e-Learning & Blended Approaches

### 1. Overview, Prerequisites and Key Features of the e-Learning Approach

The Internet (www) has been acknowledged as a most hyped yet a most underestimated tool. It has rapidly become clear it is more than a tool. It brings people together and it has an enormous repository capacity with respect to knowledge and information. In particular, both Distance-learning and Blended e-learning approaches try to make best practical use of the Internet. Wide range of business activities (such as processing, packaging, etc.) and whole businesses (in-time delivery business) rely heavily on the Internet with regards to knowledge, skills, and learning solutions. The Distance-learning and Blended e-learning approaches' content platform has been steadily growing in response to customers' growing awareness of Internet functionalities and learning benefits.

The *definition of e-Learning* can be presented with followed specification:

- Instruction/teaching/training delivered over the Internet (or through a company's Intranet);
- Accessible using a web browser (such as Internet Explorer or Netscape Navigator) Typically includes training from a remote source, even "e-mail-terms" courses, and download of files of course material;
- Steadily increasing usage of interactive multimedia, web browsers and associated plug-ins.

Two *e-Learning approaches* can be distinguished: e-Learning consulting approach and e-Learning solution approach.

**e-Learning consulting approach** was initially "born" for the purposes of training and academic institutions and Business Support Organizations (BSO). It has been transitioning to various more practically oriented functionalities like commercial executive training and Web-Based Training (WBT) ever since. At the same time new developments took place to better accommodate the tools, platforms and applications for training, practical counseling and coaching through enrichment of the e-learning essentials, methods, platform architecture, project planning and management. An example of application of e-learning tools at corporate level: "the businesses start-up decision making process based on ROI analysis".

*e-Learning Hosting* is a key feature/prerequisite of all distance-learning and training approaches. Large commercial vendors possess their own developed e-learning platform with most of the essential features of the Learning Content Management Systems (LCMS). This may not always be practical for any university or non-governmental institution, thus raising the issue of suitable alternatives. Here may be considered the usage of electronic libraries (created and hosted by an Internet services provider or IT company) designed and maintained as to secure the necessary communication and collaboration functionalities. As next most important *key feature/prerequisite* comes the availability of a solid team of systematically trained and qualified e-learning specialists and/or actively practicing local e-structors, content experts, e-learning advisors, facilitators, and Internet coaches.

*Enhancement of the e-Learning to Blended approach has its natural advantages". It allows transfer of consulting & training skills to junior experts designed to upgrade their skills for*

quality content development in their field of expertise. Wide range of examples can be quoted - from "mere on-line training" (an efficient partial substitution to the "casual on-the-job training") to the transfer of specific e-(in)structor skills, which in turn constitutes a prerequisite to the full-scale course authoring and eventual conversion to a distance learning web-based environment.

**e-Learning Solutions Approach** is the next step ahead typically made available by the large distance-learning vendors. It would offer custom-tailor training in response to specific company, institutional or expert level needs. The process of addressing those needs may include some, all, or combinations of the following phases:

- Follow Up Call – the receipt of potential client initial call (e-mail) triggers the procedure of identifying and discussing his/her specific requirements:

- For e-learning, one of the e-learning consultants establishes the contact.

- For already open courses registration from provider's website is typically available.

- For in-house /on-the-job/ training procedures run as follows:

- Start-up Meeting - an in-house training specialist arranges a meeting with the client in order to perform specification of the company and its experts training needs.

- Needs Assessment - The conduct of a rapid training needs analysis is undertaken with the active customer participation (e.g.: that of the respective department within the client's company). Then a closer look at company's products and business processes is necessary to decide what training will best work for that particular client. A results-oriented training should always be the targeted outcome. Next, the recommended training and counselling is aimed at improved efficiency and/or introduction of new custom-tailored management practices within the client's company.

- Approval - On the basis of the needs assessment, a detailed training schedule and implementation plan is drafted and presented for client's comments and approval.

- Training - Tailored for the client's company business, key experts and level of expertise the training is aimed at directly addressing the issues identified during the needs assessment phase.

- Evaluation – Next comes the conduct of exit evaluation and delivery of a final report. The report can include experts' learning progress, goal achievement analysis and typically would contain recommendations for ongoing development,

- Coaching – Performed by consultants are qualified coaches for the purposes of offering in-depth advisory services for the clients. It involves observation of the company/department staff in the workplace with comprehensive feedback (on-going over the whole coaching process). Potential performance issues are thus identified and solutions fitted for improved performance, and increased job/task specific efficiency.

Having collaborated to providers with recognized field excellence within the Blended (*in-class* and *online* "expert-rich" training content) approach, it may be performed various training & education services for business and finance professionals. Participation in Executive Training for results-oriented firms with identified specific needs to make better investment, finance, and marketing decisions, improve

organizational development, find capital, reduce costs, increase profits, and build a qualified team of professionals, and ultimately improve their competitiveness. Specific expertise and focus: intermediate and advanced finance, cost & managerial accounting, business planning & budgeting and loan application training and MP optimization consulting.

### 3. Formation of e-Community

There are two ways for formation of e-community called respectively Trainer to trainer; and Peer to peer.

- Trainer to Trainer

"Open-for-learning" source companies interacting as to achieve a mutually enhancing cross-fertilization in terms of result-oriented "endeavor-knowledge" transfer. The resulting know-how, tools, and platforms will be made widely accessible to other consultants, trainers and institutions committed to leadership and innovation.

The value networking, sharing and exchange of ideas become a priority. Friendly and collaborative partnerships becomes a must for the purposes of creating optimal environment for work of the out-source talent. Co-sourcing becomes a primary mode to work to the best advantage of all participants. Ultimately, a win-win situation should result when the two-fold leverage could boost each other's strengths.

- Peer to Peer

A community of practice among all participants should be strongly encouraged in the belief that people power knowledge. The interactive training shows that peer-to-peer learning can make a powerful tool to enhance trainer to trainee communication for the benefits to accrue to students, experts and all end-users. Extension of the time for further substantive professional exchange and cross-fertilization will be accomplishable through creation of an online community of professionals. Any ideas expressed and shared with us on the issue will highly be appreciated and considered with the necessary attention. That's the way to become part of the newly generated culture and get inspiration for change.

### 4. Advantages of the e-Learning & Blended Approaches

Advantages of the e-Learning & blended approaches will be generalized as advantages for the learner and advantages for developer.

- Advantages of e-Learning for the Learner: Increased retention as a result of student-centred teaching techniques; Time and space independent; On-demand availability; Round the clock access to materials; Self-pacing for slow or quick learners; Consideration to individual learning styles; Interactivity engaging users to be proactive; "fastened and faster" instructor-student and student-student communication; Perception of equal treatment opportunity; Instructor is more accessible; Additional practice time - learning by doing; "Just-in-time" online evaluation of student progress; Immediate feedback; Better time utilization in a virtual classroom.

- Advantages of e-Learning for the Developer: Cross platform technology (Windows, MAC, UNIX-Linux); No extra software required (except for algorithm-enhanced platforms for MP optimization); Authored only once; Widely available and cheap Internet connections; Flexibility, accessibility, convenience; Cost saving and time saving; Ease of module update & system upgrade.

## 5. e-Learning Glossary

Coach, Tutor - Person who guides, assists and motivates according to help the learner with the learning process by interviewing the learner, tracking study results and reporting study results. Not necessary to be a content expert.

Content Management System (CMS) - A content management system (CMS) is a system used to manage the learning content. The CMS allows the content manager or author to manage the creation, modification, and removal of content from a Web site.

Discussion board - A discussion board is a general term for any online "bulletin board" where you can leave and expect to see responses to messages you have left. On the Internet, Usenet provides thousands of discussion boards.

E-learning - USA: The process of formal and informal learning and training activities, processes, communities and events via the use of all electronic media like Internet, intranet, extranet, CD-ROM, video tape, TV, cell phones, personal organizers et cetera. EUROPE: The use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration.

Learning Content Management System (LCMS) - This is a system that is used to create, store, assemble, and deliver personalized e-learning content in the form of learning objects. It is a combination of functionalities of a CMS and an LMS.

Learning Management System (LMS) - Internet based software that deploys, manages, tracks and reports on interaction between the learner and the content & the learner and the instructor. In particular, learning management systems perform student registration, track learner progress, record test scores, and indicate course completion, and finally allow instructor trainers to assess the performance of their students.

Lifelong learning - An expression used to indicate that acquiring new knowledge is now considered a continuous process which does not end when one leaves school or university, but continues uninterrupted throughout one's professional life and even after retirement, spreading to embrace all stages of life and all social groups thanks, to a great extent, to the possibilities offered by e-learning.

Management of change - An expression defining methods deployed by organizations to adapt to the new challenges posed by the Information Society, as new organizational models emerge as a result of new learning systems and the central place allotted to information.

Network learning - Learning in which information and communication technologies (ICTs) are used to promote connections: between one learner and other learners and tutors; between a learning community and its learning resources (Jones and Steeples 2001, in 'Networked Learning: Perspectives and issues').

## III. Energy conditions in Bulgaria and the region

The content of the M.S. in Energy Economics program is synchronized with the main characteristics of the energy sector in Bulgaria and the region. The key aspects of energy development of this sector can be summarized as follows: 1. Optimization of energy flows; 2. Modernizing of fiscal policy in energy sector; 3. Utilizing of environmental perspectives; 4. Stimulating of cogeneration; 5. Successful application of the national energy strategy.

### 1. Optimization of energy flows.

Introduction of energy efficiency and conservation measures, reduction of energy intensity, especially in the end use consumption, became urgent social tasks in the region. In addition, energy market liberalization, security of energy supply, diversification of energy consumption, increasing use of indigenous and renewable energy sources, increasing of productive efficiency take priority places in energy policy. All these measures should be undertaken on an acceptable social and ecological price.

It must be stressed, that the liberalization in energy sector is just beginning and the country is in the process of harmonization of energy policy with that of EU. Updating of energy systems is necessary, because they are the main sources of energy wastages. By the way, all the energy strategies in Europe focus on the reduction of the energy losses and increasing of the efficiency of energy generators.

### 2. Modernizing of fiscal policy in energy sector

Acceleration of the modernizing of fiscal instruments, that concern the exploration and extraction of energy resources, production, distribution and consumption of energy is needed. The changes of tax policy, encouraging energy savings and environmental protection, are in the beginning stage. Energy resources and products are levied mainly with value added tax (VAT). The role of the fuel taxes and environmental taxes, like emission tax, is still not enough important.

### 3. Utilizing of environmental perspectives.

EU Emission Allowance Trading Scheme combined with implementation of mechanism of the Kyoto protocol are good perspectives for the country, because they are less expensive way for achieving of emission targets and are opportunities for selling of emission allowances. Reduction of green house gases is not in the agenda, because of significant stagnation of the national economy since 1990. Significant potential for reducing of emission exist, with the expectations for increasing participation of the natural gas in the national energy balance.

### 4. Stimulating of cogeneration

Although the regulator authority undertakes special measures for stimulating of cogeneration, the methods for cost allocation between electricity and heat at present contradict with these measures. So, for the both products it is very difficult to remain competitive on their markets. It should be developed and incorporated economic reasonable cost allocation methods, in that a path for gradual changes in dependence of specific conditions is envisioned.

## 5. Successful application of the national energy strategy

National energy strategy of the country is focused on liberalization, restructuring and commercialization of energy sector. Indicators for its successful application are: opening of the markets to the competitors; security of the energy supply; acceptable prices and reasonable price policy, including gradually stopping of the subsidies.

## IV. Content of the program

On briefly presented analysis is the base for the choice of the disciplines and the topics in the program. Completion of 8 core plus 4 selective credit courses is required for conferral of the MSc Degree.

Below the outline of the MSc program is depicted.

### Outline of MSc. in Energy Economics

#### Core Graduate Courses

1. Microeconomics
2. Macroeconomics
3. Natural resource economics
4. Economics of petroleum industry
5. Electricity economics & planning
6. Econometrics & forecasting
7. Business law & technology
8. Renewable energy resources

#### Selective Graduate Courses

1. Energy Balance
2. Energy Economics & Policy
3. Energy Technology (series of workshops incl.)
4. Management of Energy Systems
5. Environmental Policy
6. Energy Supply Planning & Environment Impacts
7. Energy Demand Analysis & Forecasting
8. International Trade of Energy Resources & Products
9. Energy Industrial Accounting

10. Investments & Risk Management
11. Decision Analysis & Operations Research Methods for Energy Systems' Control
12. Procession, Distribution & Utilization of Oil & Gas

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