Universitatea „Vasile Alecsandri" din Bacău

IN2RURAL
Innovative Practices in Renewable Energies to Improve Rural Employability

Co-funded by the Erasmus+ Programme of the European Union

INNOVATIVE PRACTICES IN RENEWABLE ENERGY TO INCREASE THE EMPLOYMENT IN RURAL AREAS

UNIVERSITAT JAUME·I

EGER 1774 ESZTERHÁZY KÁROLY EGYETEM

umans Urbanisme i Medi Ambient

GENERAL ELECTRIC
SOLUȚII DE CALITATE 0,4 - 400 KV

GEOLIN

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"IN2RURAL" - ERASMUS + KEY ACTION 2, COOPERATION FOR INNOVATION AND EXCHANGE OF GOOD PRACTICE.

ACTION: STRATEGIC PARTNERSHIP IN THE FIELD OF EDUCATION, TRAINING AND YOUTH.

DOMAIN: UNIVERSITY EDUCATION.

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ABOUT THE PROJECT

Origin - - Erasmus intensive "IT Forest - Innovative Training in Forest Biomass for Sustainable Rural Development" - http://www.itforest.uji.es

The general objective of IN2RURAL - - to promote innovative practices in the renewable energy sector to improve the employability of students in rural areas in Bacau (Romania), Castellón (Spain) and Gyöngyös (Hungary)

Specific objectives

- Increases the applicability of learning processes by strengthening the relationship between universities and SMEs,
- Identifying and improving key competences for professional insertion in this sector,
- Introducing new educational methods,
- Strengthening the degree of internationalization,
- Project management procedures and sustainability of organizations,
- Promoting the active participation of geographically disadvantaged groups,
- Improving student training for the professional world.

Project beneficiaries - students involved in renewable energy and rural development projects.

ACTIVITIES

- Applied research for the creation, promotion, development and / or transfer of good practice in the main areas of knowledge covered by the project,
- Specialized training with an innovative approach based on interdisciplinarity (employment, renewable energies and rural development).
- Dissemination and exploitation of project results to the specialized public.

INTELLECTUAL OUTPUTS

❖Study prospects and future training requirements in the field of renewable energies for local development

❖Developing a collaborative network to identify local socio-economic needs and renewable energy capacities of SMEs

❖Open Educational Resources for Effective Use of the Virtual Learning Platform and ICT Tools for Online Courses

❖Online English language technical courses for renewable energy and local development

❖Compilation of studies on renewable energies for local development

❖Active Job Search - Open course for Renewable energy in rural areas

PARTENERS

JAUME I UNIVERSITY OF SPAIN
https://ujiapps.uji.es/

He has extensive experience in managing the educational programs of the European Union (Jean Monet, Grundtvig, Master Programs, etc.). It also has experience in promoting student hiring and training for the use of European recognition tools (eg Europass) and personalized professional guidance. Other relevant areas where it has specific competencies include extending services to villages and generating Open Educational Resources (EER).

HELIOTEC (SPAIN)
http://www.heliotec.org/en/index.html

He has extensive experience and technical knowledge in systems based on the use of renewable energy sources, especially in photovoltaic production systems. It is considered to be a leading company in the photovoltaic sector in the Castellón province. Heliotec acts as a consultant on photovoltaic projects in countries where solar energy is not a mature industry such as El Salvador and Algeria. As part of its social responsibility, Heliotec collaborates with public universities and training centers.

„Vasile Alecsandri" University of Bacau
http://www.ub.ro/en/

With extensive experience in managing European projects, Ubc is part of the consultative group set up by the North East Regional Development Agency to establish and implement the sustainable development strategy in rural areas. At the same time, the activities of some of its projects required close cooperation with rural areas. University experience from European projects allows the capitalization of skills in dissemination.

GENERAL ELECTRIC
www.general-electric.ro

This private company was established in 1994 and has the main business of designing and executing electrical installations, automation and data transmission and telecommunication systems. General Electric has important clients such as Electrica SA, Transelectrica SA, Hidroelectrica SA, Orange SA, LukOil SA, Rompetrol SA, Dedeman SRL, Selgros Cash Carry and Siemens Romania. At the moment, the Vutcani Wind Farm Maintenance Project is completed, finished in 2012, with an installed capacity of 24 MW.

ESZTERHÁZY KÁROLY UNIVERSITY (UNGARY)
https://uni-eszterhazy.hu

This public higher education institution has extensive experience in different types of EU funded projects such as Jean Monnet, Erasmus Intensive Programs, Leonardo da Vinci Partnerships and CEEPUS. It has a broad network of cooperation (over 40 partner institutions) with a growing number of Erasmus + partnerships. In addition, this university has decades of experience in research and development activities in the field of renewable energies, focusing in particular on the possibilities of biomass production and use in rural areas.

GEOLIN (UNGARY)

Being a spin-off company, Geolin Bt members are active cadres in the higher education sector, regional and rural development, and have numerous biomass-related publications in recognized international journals. Geolin is familiar with both EU-funded projects and education-related activities. Geolin Bt is a member of the European Ecocycles Society, an international NGO dealing with sustainable development and the environmental sciences in terms of the production of special biomass for its use.

TYPES OF ACTIVITIES

A) intellectual

- Study prospects and future training requirements in the field of renewable energies for local development
- Developing a collaborative network to identify local socio-economic needs and renewable energy capacities of SMEs
- Open Educational Resources for Effective Use of the Virtual Learning Platform and ICT Tools for Online Courses
- Online English language technical courses for renewable energy and local development
- Compilation of studies on renewable energies for local development
- Active Job Search - Open course for Renewabl energy e in rural areas

B) Seminars in the first, second and third year with project results

C) learning activities through the mobility of students in higher education

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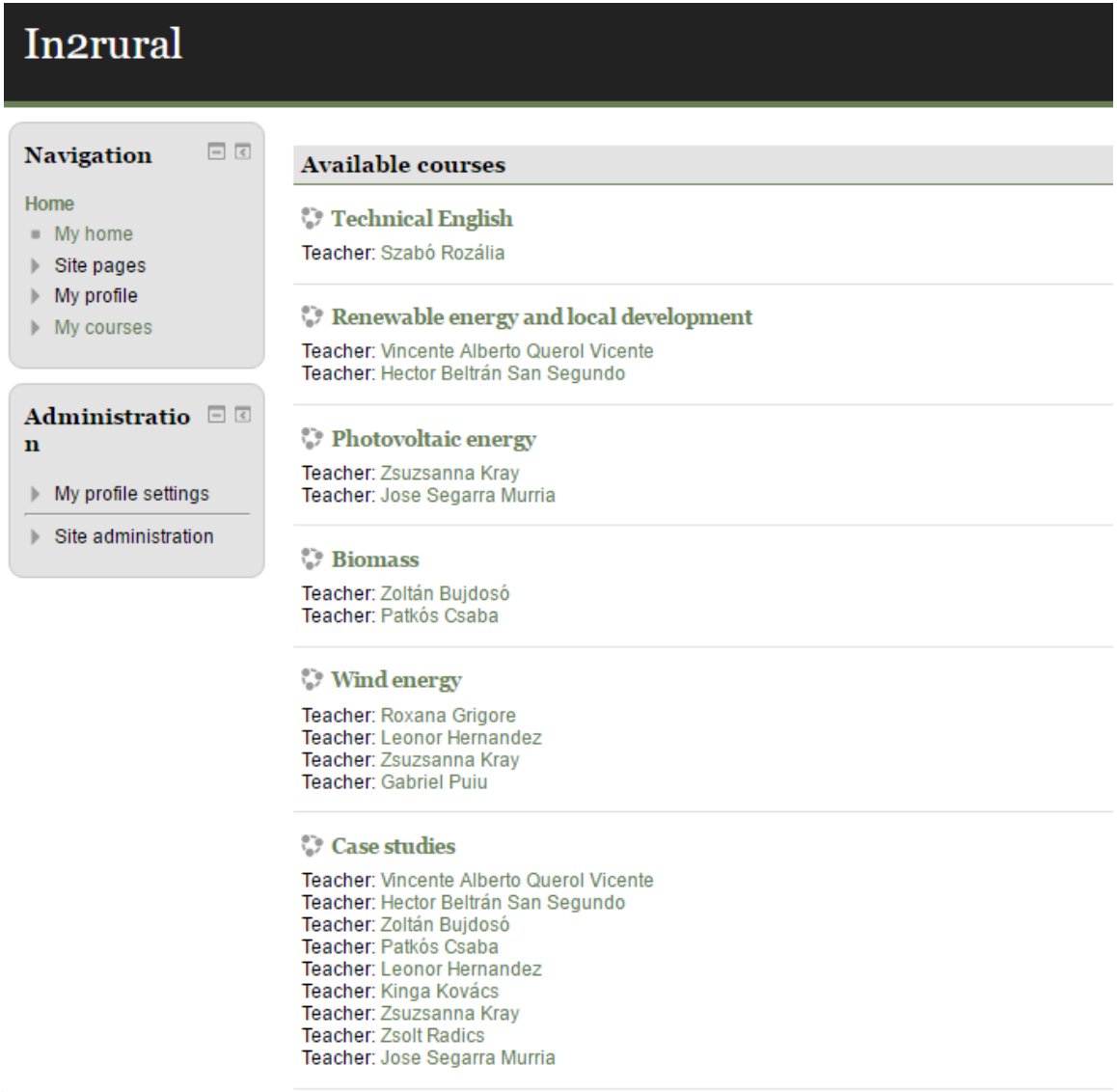
ON-LINE PLATFORM



ON-LINE TECHNICAL ENGLISH COURSE FOR RENEWABLE ENERGY

Learning materials for the on-line technical English language course on renewable energy have been integrated into the virtual learning platform hosted by KÁROLY RÓBERT University, along with the learning methodology, evaluation activities and the various ICT tools available to improve collaboration in The virtual environment.

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ON-LINE RENEWABLE ENERGY COURSE FOR LOCAL DEVELOPMENT

Available courses

Technical English
Teacher: Szabó Rozália

Renewable energy and local development
Teacher: Vincente Alberto Querol Vicente
Teacher: Hector Beltrán San Segundo

Photovoltaic energy
Teacher: Zsuzsanna Kray
Teacher: Jose Segarra Murria

Biomass
Teacher: Zoltán Bujdosó
Teacher: Patkós Csaba

Wind energy
Teacher: Roxana Grigore
Teacher: Leonor Hernandez
Teacher: Zsuzsanna Kray
Teacher: Gabriel Puiu

Case studies
Teacher: Vincente Alberto Querol Vicente
Teacher: Hector Beltrán San Segundo
Teacher: Zoltán Bujdosó
Teacher: Patkós Csaba
Teacher: Leonor Hernandez
Teacher: Kinga Kovács
Teacher: Zsuzsanna Kray
Teacher: Zsolt Radics
Teacher: Jose Segarra Murria

Learning activities have been distributed to ensure that learning objectives are attained in a flexible way: learning materials can be consulted in a non-linear way, providing participants with a high degree of flexibility.

The on-line platform offered students the opportunity to interact with other participants to share country-specific experiences and best practices.

An advantage of this on-line course was the personalized supervision and assessment of the students. The generated material is also free access to other interested persons.

Module 1 - Introduction to renewable energy for local development

CHAPTER 1: TECHNICAL ASPECTS

- Module 2 - Chapter 1, part 1-1
- Module 2 - Chapter 1, part 1-2
- Module 2 - Chapter 1, part 1-3
- Forum Chapter 1
- Quiz of Chapter 1

CHAPTER 2: ECONOMICAL ASPECTS

- Module 2 - Chapter 2, part 2-1
- Module 2 - Chapter 2, part 2-2
- Module 2 - Chapter 2, part 2-3
- Forum Chapter 2
- Quiz of Chapter 2

CHAPTER 3: SOCIAL AND ENVIROMENTAL ASPECTS FOR RURAL DEVELOPMENT

- Module 2 - Chapter 3, part 3-1
- Module 2 - Chapter 3, part 3-2
- Module 2 - Chapter 3, part 3-3
- Forum Chapter 3
- Quiz of Chapter 3

CHAPTER 4: FULLY DEVELOPED CASE STUDY OF APPLICATION OF photovoltaic/biomass/wind to RURAL DEVELOPMENT

- Module 2 - Chapter 4, part 4-1
- Module 2 - Chapter 4, part 4-2
- Module 2 - Chapter 4, part 4-3
- Quiz of Chapter 4
- Forum for Chapter 4

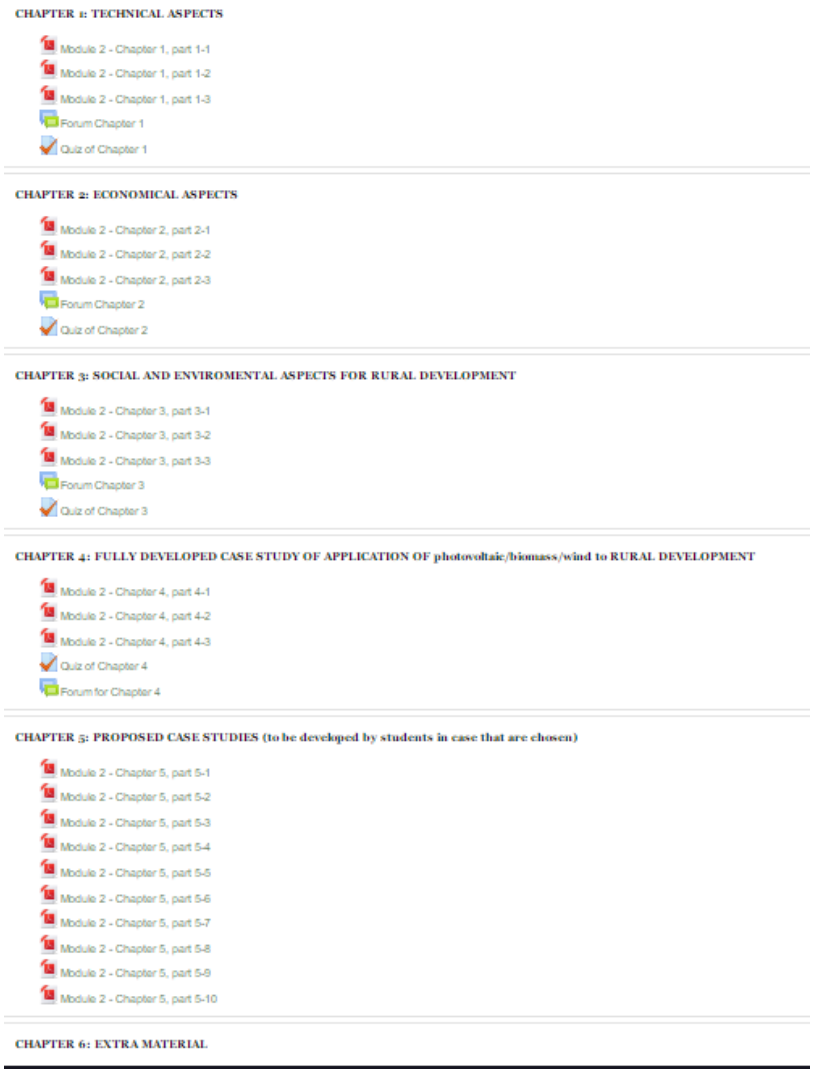
CHAPTER 5: PROPOSED CASE STUDIES (to be developed by students in case that are chosen)

- Module 2 - Chapter 5, part 5-1
- Module 2 - Chapter 5, part 5-2
- Module 2 - Chapter 5, part 5-3

It took place between 1-31 March 2016.

The first three chapters address the availability of renewable energy resources, present a panorama of them, and describe the underlying technologies for exploiting these energies in small plants. Finally, the different regulatory frameworks specific to the various European regions and in particular to the rural areas are briefly described.

The last two chapters provide an overview of rural areas. For the purpose of their development, students can also include the current social complexity for making suitable, sustainable and successful projects.



CHAPTER 1: TECHNICAL ASPECTS

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- Module 2 - Chapter 5, part 5-3
- Module 2 - Chapter 5, part 5-4
- Module 2 - Chapter 5, part 5-5
- Module 2 - Chapter 5, part 5-6
- Module 2 - Chapter 5, part 5-7
- Module 2 - Chapter 5, part 5-8
- Module 2 - Chapter 5, part 5-9
- Module 2 - Chapter 5, part 5-10

CHAPTER 6: EXTRA MATERIAL

Module 2 - Photovoltaic energy

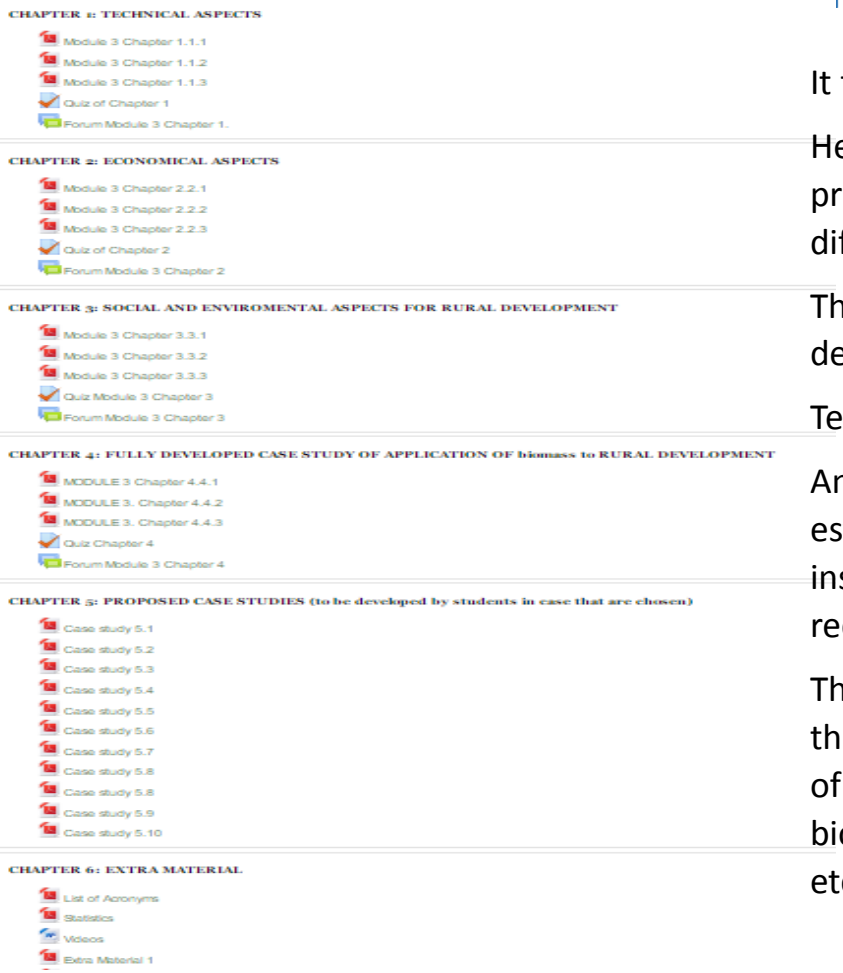
It took place between April 1-22.

This module provided students with technical knowledge related to solar photovoltaic technology applied in rural development.

The first three chapters study the technical, economic, social and environmental impacts to be considered when applying photovoltaic technology to rural development. The fourth chapter presents a case study (an implemented project) useful for students in developing their own case studies.

The fifth chapter is a collection of ten case studies proposed to be developed by students for regions in Spain or other areas in Europe, from which students can choose and develop their own project.

Finally, the sixth chapter contains a collection of links, studies, audio-visual materials and other materials useful to students.



Module 3 - Biomass energy

It took place between April 22nd and March 13th.

He provided students with basic information on operating principles, types of installations, energy characteristics of different forms of biomass (wood, herbs, biogas), etc.:

The principles on the use of biomass energy have been described

Technical alternatives and types of "biomass plant"

An economic perspective has been included in which the estimated costs of typical investments (materials, installations, land use, operation and maintenance) can be recovered,

The impact of social and rural development is assessed on the basis of the supply chain analysis of biomass. The future of these projects will depend on the investigation of biomass potential and innovative technologies (CHP, NOx, etc).

IO 10 - Compilation of case studies on the contribution of renewable energies to local development

To achieve this goal, students went on-line on renewable energy technologies in English (O8 and O9).

Of the participating students only one participated in a training training course in a national SME.

Within this training program, students assessed the possible technical alternatives that can be met on the local needs identified at a previous stage of the project (Output O3), on the territories considered in collaboration with the national higher education institution.

Each student involved in this phase of the project has conducted a case study with the aim of proposing a viable technical solution in the field of renewable energies to meet the specific local need.

A secondary goal of this action is to promote the active participation of young people in regional development.

The three areas covered were wind energy, photovoltaic energy and biomass energy.

Francisco Vidan, a student of Engineering, Industrial Technologies, has developed the case study in UMANS. The work aims at identifying the most suitable solution for the energy supply of an isolated home in Vistabella, a village of 500 inhabitants in the Castellón Mountains. To achieve this goal, it has a triple perspective: technical, economic and social. The solution integrates three systems: photovoltaic, small wind and biomass).

Ivan Segura, a student at the Master of Industrial Engineering, was also hosted by UMANS. During the needs analysis phase, he detected the interest of the municipality of Vistabella in promoting the use of biomass in municipal buildings. To this end, Ivan prepares a comparative study of the advantages and disadvantages of central and distributed biomass boilers for different municipal buildings.

Cosmin Bucur is a student in Economics in Mechanics. The purpose of the project was to build a renewable energy system consisting of a wind turbine to supply electricity to the rural area of Pincesti for the supply of a guest house and a water pump used for irrigation.

Mihai Comanescu is a student in Mechanical Engineering. The objective of the project was to design a photovoltaic system for powering a pig farm situated in the northeastern part of Romania. The project analyzes the least negative impact on the soil, air, and generally the rural area where the photovoltaic system will be installed.

Benjamin Korca designed a biomass boiler for the heat supply of the central building of Forest Budapest LTD. An important aspect is the economic analysis, which includes different environmental effects

The purpose of the Dórei Lénárt study is to investigate the possibilities of using biomass and other renewable energy resources at NÖDIK, an area that has 40-50 hectares of forest from which a considerable amount of chips could be produced. In addition, some agricultural by-products may also be usable.

O11 - Compilation of international case studies on the application of renewable energies to local development

The approach and development of this objective was similar to the one presented above with the only difference that the real study of the application of renewable energies for regional benefit was carried out within a transnational framework, supervised by a tutor from the higher education institution, an SME technician and a Consultant for English.

Thus, in addition to an international student experience, the aim was to improve interregional cooperation and the internationalization of SMEs.

Finally, a total of 6 case studies (12 combined with O10) will be obtained.

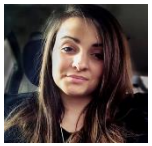
Compilation of case studies was done in English.

Javier Castelló, student at UJI, project in GAIA, Hungary - The role of biomass at GAIA Eco-village and its use in the creation of new green houses.

Mario Muñoz, studentUJI, project in GENERAL ELECTRIC, Romania - Photovoltaic - Wind hybrid system for an isolated consumer.

Corneliu Zediu, UVAB student, project in UMANS, Spain - Differences between two photovoltaic systems in irrigation.

Mouhana Athena Georgiana, student UVAB, project in GAIA, Hungary - Agricultural Biomass Production in Integrated RE Systems of Small Businesses



Vivien Balog, student Eszterhazy Karoly, project in UMANS, Spain - Development of renewable energy models for children's education.

Dora Okos, Eszterhazy Karoly student, project in GENERAL ELECTRIC, Romania - Study on the optimization of the photovoltaic lighting system in the village of Margineni.

O12 Open course of job search for renewable energy in rural areas

To provide added value to project participants (students and graduates) and to improve their skills to enter the labor market, the project includes the possibility for all participants to join on-line active search courses work. Two types of courses are planned, one specifically aimed at improving professional qualification and professional skills, and the other more related to entrepreneurship. Both courses are planned to have an important degree of practical training and also specifically geared to the labor market of renewable energy and local development.

The on-line course will be run alongside the project with personalized assessment and supervision to be enrolled in the courses. In addition, the generated material will also be open for other interested persons.

Teaching material as well as student supervision will be in English, and an English consultant for results is required to improve the quality of teaching and language skills of students.

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