



Project funded by the EU Lifelong Learning Programme
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Workpackage Specification: WP3 Global Challenges

The objective of this work package is to enhance the competitiveness of EIE education within Europe, especially in relation to modern global technical challenges. The outcomes will provide European HEI's with model curricula optimised to the technical needs of the challenges whilst retaining the valued characteristics of Education within European Institutions.

Building on our understanding of EIE programmes across Europe gained through the Surveyor and ELLEIEC monographs and the Tuning survey, this work package will look at the needs of Electrical and Information Engineering graduates in the key Global Challenges of Green Energy, the Environment and Sustainability, Communications and IT, Health (eg. medical application of knowledge of information engineering), and Modern Manufacturing Systems (including Robotics). Prior studies have developed our understanding of the need and importance of generic competences, including entrepreneurial skills, the importance of designing learning as a socialisation process, and the use of project orientated learning methods where learning is based on a concrete problem that target groups know from everyday life. This work package will explore these issues in relation to conventional students and those with special needs.

The methodology to be used will start with a review of past monographs and a survey to identify existing programmes orientated to the key global challenges. The survey and follow-up more detailed discussions with the programme providers will form the basis of example curricula with module content, learning outcomes, level of achievement and assessment methods. The module specification will include the scope and depth of generic competence development. Partners willing to pilot these trial modules will be identified and supported through their first delivery and outcome assessment and documentation of their experience.

Activity in this work package will include:

- A survey of existing programmes in the key challenge subjects including content details
- The design and specification of example curricula in the key challenge subjects including learning outcomes and module content.
- The design of modules appropriate to the key challenge areas and the assessment of them through pilot delivery to learners in partner institutions
- A review of existing and designed modules for the integration of generic, transferable competences appropriate to employment in businesses focussed in key challenge areas.
- The creation of a web-based centre for excellence for the development of key challenges curricula in EIE across Europe. This resource will be accessible and add value to programme designers, teaching staff, academic administrators and learners.



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All the outcomes will be made public through publication on the project website and/or through publications in relevant journals and/or conferences..

In order to have a clear understanding and a comprehensive offer and demand balance as well as a Roadmap towards the strategic objectives set forth, the following activities are to be performed in this WP.

WP3.1 Methodological Strategy and Work Plan Development.

To assure effectiveness and efficiency of work to be done and activities related to global technical challenges to be undertaken by partners in all different countries and regions, TUIASI (P12) with the assistance of University of York (P1-UoY, project coordinator), P7-UCV, P8-CVUT, P29-FBORDEAU01, P34-UM-FERI (Management Group) will establish and define, up-front the methodological strategy. The methodology that this WP will follow is to audit current practice, design new models, integrate the models into trial institutions, monitor and evaluate the trials and analyse, report and disseminate the findings. Once the above has been established and agreed upon, a detailed Work Plan will be jointly developed with all Partners to assure on-time WP completeness and results availability within the pre-set time and budget frameworks. Correlations with the other work packages timetables will be taken into account.

WP3.2 Data Gathering at Regional / Area/ Country of Expertise Level.

Prior to workshops, roundtables and seminars, all partners will conduct local/regional/national surveys on the said topic as to gather regional data on the topic to be later presented and discussed at the event.

T3.3 Initial Analysis on Global Technical Challenges.

P12-TUIASI, will conduct a full initial research and documentation exercise in order to perform an Initial Analysis to define and refine the modern global technical challenges in relation with the Electrical & Information Engineering (EIE) education. A number of technical area leaders, one per technical challenge area, have to be appointed. They should be experts in that area providing a real technical input and lead from the front. A Draft Initial Analysis Report will be issued and distributed to all Consortium Partners for consideration and review. Comments, suggestions for improvement and feedback on draft report will be gathered and jointly considered by the whole Consortium.

T3.4 Feedback Gathering from Industry.

TUIASI-P12 and P1-UoY will lead this activity which intends gathering information on the generic competences, including entrepreneurial skills, which EIE learners may possess in order to meet the employers expectations in businesses focussed in key challenge areas. Activities have to be assigned to partners based upon their adherence to a subgroup related to a technical area of expertise.



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Some common and standardized activities shall be performed in every place. These activities include: Face-to-face in-depth interviews, roundtables, questionnaires to scientific and business actors. Additionally, and to adapt project's approach to social and/or cultural differences among regions or even stakeholders, each partner will undertake any other relevant activity it might consider appropriate for the achievement of goals and objectives.

T3.5 Mapping and Identification of Existing Programmes Oriented to Key Challenge Areas.

TUIASI (P12), P3-TU-Sofia, P5-RU, P19-UCBL1, P24-IHK, P27-STPKC, P36-UoM, P41-TUC will coordinate the mapping and identification of existing programmes oriented to key challenge areas aiming at boosting research and to increase regional socio-economic impact and competitiveness of EIE education within Europe. This activity will address these issues in relation to conventional students and those with special needs. A project questionnaire surveys will be used for an audit of the current situation and current practices in interest areas of this project. In order to compare different existing curricula or curricula with module content oriented to the key global technical challenges best practice criteria will be defined. A Draft Best Practice Criteria Report will be issued and distributed to all Consortium Partners for consideration and review. Comments, suggestions for improvement and feedback on draft report will be gathered and jointly considered by the whole Consortium.

T3.6 Design and Specification of Example Curricula in the Key Challenge Subjects

Based on the survey and follow-up the WP3 leader P12-TUIASI and the technical area leaders (P3-TU-Sofia, P5-RU, P19-UCBL1, P24-IHK, P27-STPKC, P36-UoM, P41-TUC) will provide partners with a form of the basis of example curricula with module content, learning outcomes, level of achievement and assessment methods. The module specification will include the scope and depth of generic competence development. It will be issued and distributed to all Consortium Partners for consideration and review. An indication of which generic competences will be developed and how socialization and project orientated learning methods using concrete examples that targets groups know from everyday life might be used in the implementation of the curricula. Partners willing to pilot these trial modules will be identified and supported through their first delivery and outcome assessment and documentation of their experience.

T3.7 On-going Work Plan Monitoring.

The WP leader P12-TUIASI will have, at least, every two months monitoring and follow-up reviews with the technical area leaders and all Partners responsible for running the analysis in different regions/countries as to closely track quality and performance as well as to solve issues and/or problems that may arise. As part of monitoring strategy, due to the amount of the work required within the WP3, besides the management team meetings, a number of one or two face-to-face meetings per year with the technical area leaders will be planned in order to discuss



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WP3 progress, alignment with plan and the contribution of individual partners. Between these meetings the email and Skype communication has to be taken into account.

T3.8 DataWarehousing.

The WP3 leader P12-TUIASI and the technical area leaders (P3-TU-Sofia, P5-RU, P19-UCBL1, P24-IHK, P27-STPKC, P36-UoM, P41-TUC) will collect the relevant data and will help the project coordinator and the WP6 leader to create, develop and implement integrated databases as required to be able to compile and concentrate in just one single place all the information available for further usage of curricula related to the key challenge subjects. This activity will be performed in close co-operation with project coordinator and WP4 and WP6 leaders.

T3.9 Dissemination.

The dissemination of the WP3 SALEIE project results and events will be highly served by web-based means and mechanisms. The SALEIE project web site will contain general project information as well as the WP3 results: survey of existing programmes in the key challenge subjects, report of the survey results based on a questionnaire for all project partners and their local networks to identify and characterise modules and programmes aligned to the key global technical challenges, set of model curricula for programmes and modules orientated to the key challenge subjects *etc.* The Web-based dissemination will be performed in close co-operation with the project coordinator and the WP6 leader. In the mean time all WP3 subgroups partners will contribute throughout Europe to disseminating information about the project and its results at conferences, workshops and seminars.

Deliverables:

D3.1 Methodology and Work Plan Document.

Document defining the methodology and the Work Plan to be followed by all partners during the development of WP3's activities. It is part of the entire project methodology and work plan. To include:

- Method of mapping and identifying existing programmes oriented to key challenge areas which require increased competitiveness of EIE education within Europe.
- Types, modalities and characteristics of programmes to be considered for the analyses.
- Work Plan to be followed [month 4].



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D3.2 Report on the modern global technical challenges

In relation with the EIE education within Europe. Best practice criteria aiming to provide a comparison basis for different curricula will be defined and integrated within this report [Delivery date: month 9].

D3.3 Report on existing programmes orientated to key challenge areas.

This deliverable will be a report summarizing the findings of a desk research exercise reviewing past monographs and a survey of existing programmes orientated to key challenge areas. Of interest will be full programmes and specific modules where the creators are prepared to discuss content details, level of achievement and assessment methods [Delivery date: month 9].

D3.4 Questionnaire on existing technical challenge focussed modules and programmes.

The questionnaire helps all project partners and their local networks to identify and characterise modules and programmes aligned to the key global technical challenges. The survey results will be collated into a report to be delivered in month 21st [Questionnaire delivery date: month 9].

D3.5 Model curricula for key challenge subjects.

This deliverable will be a set of model curricula for programmes and modules orientated to the key challenge subjects. The models will be derived from the findings of the desk research activity related to the WP4. Each model will comprise a full specification with indicative content, learning outcomes, level of achievement and assessment methods [Delivery date: month 18].

D3.6 Experimental modules.

This deliverable will be a small number of full modules that partners can deliver on a pilot basis to evaluate their effectiveness. The modules will have teaching and learning materials and all resources needed for an academic to base a module they can deliver methods [Delivery date: month 24].

D3.7 Report on results of trials of experimental modules.

The report summarizes the findings of the trials of experimental modules [Delivery date: month 33].

D3.8 Dissemination materials.

The project results will be presented at conferences, workshops and seminars. Project workshop meetings minutes have to be provided too.
