

ANNEX 2

UNI-TEL e-course: Draft syllabus and questions on the material production process

**WHEN YOU UPLOAD THE FILE, PLEASE NAME FILE “MX-Y_Draft_syllabus_question”
(X = number of the module, Y = number of the topic)**

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|---|--|--|
| Code of the topic | Name of the topic | |
| M1 - 2 | UNITEL Project survey analysis using advanced statistical and data mining methods: current state, state-of-the-art, and future perspective | |
| Names of subject experts | | Email |
| First name | Surname | |
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| Learning objectives | | |
| <ul style="list-style-type: none"> - <i>Objective 1:</i> Learners are introduced to the pedagogical concepts used to design the UNITEL Project survey (WP1). - <i>Objective 2:</i> The methods used to assess the validity and reliability of questionnaires are discussed, and the WP1 questionnaire is validated. - <i>Objective 3:</i> Advanced statistical and data mining methods for questionnaire analysis are introduced to the learners, and such methods are applied to the WP1 questionnaire to extract higher-level information. - The limitations and future activity of current pedagogical concepts of the courses presented in Iranian universities are discussed compared to the state-of-the-art. | | |
| Content of the topic: | | |
| <ul style="list-style-type: none"> - the main content of the topic (4-6 themes) - The following pedagogical concepts used in the design of the WP1 questionnaire are discussed: Theory and practice, Self-regulation and motivation (ACRS model), Technology-enhanced learning, knowledge, skills, and attitudes: PBL: project-based Learning, soft and hard skills, working-life orientation, and pedagogy for technology-enhanced learning and culture of teaching. - <i>Two essential qualities of surveys, reliability, and validity,</i> must be assessed prior to any survey analysis. Different statical methods used in the literature, | | |





including test-retest reliability, Cronbach's alpha, and face and content validity, are discussed. Those applying to the WP1 questionnaire are implemented in SPSS or R. The limitations of the WP1 questionnaire are then provided to resolve for future activities.

- Since outliers could affect the statistical analysis of the questionnaire, they must be identified prior to any analysis. Such methods (e.g., Item-based and item-pair-based) are discussed and then applied to the WP1 questionnaire in SPSS or R.
- A qualitative comparison between the current pedagogical concepts of the courses presented in Iranian universities and the state-of-the-art (e.g., blended learning) is provided. The limitations and future activity are then discussed.
- Using only descriptive analysis for the questionnaire is not enough to extract information for policymakers. The concepts of confounders, the quantitative comparison between different universities (the agreement rate), Generalized Linear Models, and Factor Analysis are briefly introduced and then applied to the WP1 questionnaire in SPSS or R. The extract inferential statistics are then discussed.
- Simple prediction models (e.g., Logistic Regression and classification methods) in data mining are briefly introduced for the etiological study and then applied to the WP1 questionnaire in SPSS or R to extract higher-level information.

Evaluation methods and criteria

- *The learning experiences during topics and modules in UNI-TEL e-course are integrated in a project work elaborated by all participants of the course. The course leader P2 – UTU will cooperate with subject experts to split the project work in pieces by the modules/topics.*
- *In addition to that the institutional subject expert team can discuss are some other assessment methods used and what are criteria for successful finishing of the topic? [basic statistical knowledge is required for the participants. The learners need to use statistical software such as SPSS or R during the course]*

Questions at this point of the process?

Note: add the names of subject experts also in GoogleDrive:

<https://drive.google.com/drive/u/1/folders/1HgmeC15bL0vKGilI2y01SjioH0ysq77b>