

1. Ability to analyze and synthesize
2. Ability to use logical and critical thinking for solving problems
3. Ability to model, design and forecast
4. Ability to carry out research applying appropriate methods
5. Ability to take initiatives and entrepreneurship
6. Ability to innovate
7. Ability to learn including autonomous learning
8. Ability to develop general knowledge
9. Ability to communicate interactively and receive feedback
10. Knowledge of the professional field
11. Ability to communicate in multicultural context
12. Ability to communicate in official state, Russian and foreign languages
13. Ability to lead people and work in a team
14. Ability to manage information

The following are the 30 general competences chosen as most important for all Central Asian degree programmes:

15. Ability to use information and communication technologies
16. Social responsibility
17. Ability to follow a healthy lifestyle
18. Ecological and environmental responsibility
19. Knowledge of the laws
20. Ability to prevent and resolve conflicts
21. Patriotism and preservation of own cultural values
22. Tolerance and respect for others
23. Commitment to quality results
24. Flexibility
25. Ability to apply knowledge in practice
26. Orientation toward the needs of the user
27. Ability to work autonomously
28. Ability to adapt to change
29. Ability to make decisions
30. Time management

Full information is available on the www.tucahea.org website



This 'Pocket Guide' gives a short summary of the competences required for one Subject Area.

The goal of the TuCAHEA Consortium is to create the premises for a Central Asian Higher Education Area: visible, respected, and compatible with higher education areas in other parts of the world. TuCAHEA uses Tuning methodology to provide tools to ensure that graduates have the necessary competences for future employment, personal culture, and citizenship.

Working together, 34 Central Asian Universities, 8 European Universities and the five Ministries responsible for Higher Education in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan have consulted more than 20,000 academics, graduates, students and employers, and have formulated Guidelines and Reference Points for 8 important Subject Areas: Business and Management, Economics, Education, Engineering, Environmental Protection, History, Language, and Law.

Ten steps for designing new degree programmes or improving existing ones

1. Is there a need? Determine, consulting stakeholders, whether there is really a need for the proposed course of study.
2. Define the profile and the key competences. Find out what competences are actually useful for employment, personal culture and citizenship (see inside this guide for a list).
3. Define the learning outcomes indicating the most important competences (choose around 10 key competences with reference to the cycle level indicators; see inside this guide).
4. Decide whether to 'modularise' (course units can be of a random number of ECTS credits, or else of a set number, e.g. 5, hence "modularised").
5. Define the learning outcomes and the key competences in each module or course unit (the lists of competences inside this guide will help).
6. See how those competences can best be formed and assessed, using a variety of approaches to learning, teaching and assessment.
7. Check that all the key generic and subject specific competences have been taken into account.
8. Describe the programme and the course units, indicating the learning outcomes in terms of competences.
9. Check for balance.
10. Implement, monitor and improve.



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Tuning
cahea

Towards a Central Asian Higher Education Area

ENVIRONMENTAL PROTECTION

Pocket Guide

www.tucahea.org

Subject Specific Competences for Environmental Protection

- S1. Knowledge of the international, regional and national legal provisions for ecology, environmental protection and biosafety.
- S2. Knowledge of the basic principles and laws of how ecosystems function.
- S3. Knowledge of the main principles of general ecology and rational environmental management.
- S4. Knowledge of the basic elements of social ecology and demography.
- S5. Knowledge of the basic techniques of environmental and food quality monitoring.
- S6. Knowledge of the basic techniques and methods of engineering protection of environment, and ability to process statistical data.
- S7. Knowledge of the location of natural resources and of the basic manufacturing and non-manufacturing assets of the state.
- S8. Knowledge of safety technologies and the latest nanotechnologies of food production and storage.
- S9. Knowledge of the basics of environmental-economic regulation and payment systems for natural resources (and environmental pollution).
- S10. Knowledge of the global environmental and food safety challenges.
- S11. Knowledge of the basic principles of waste placement, treatment and disposal, including the means and methods of monitoring and control of environmental impact.
- S12. Knowledge of the legal acts (documents) regulating the protection of human, animal and plant life.
- S13. Ability to apply basic tools of rational environmental management; using statistical analysis in the field of ecology.
- S14. Ability to process and analyze data using information and communication technologies.
- S15. Ability to draw up normative and legal documents on environmental issues.
- S16. Ability to apply regulations and laws for environmental management.
- S17. Ability to elaborate and apply modern methods and means to protect the environment.
- S18. Ability to solve engineering problems and problematic situations in the field of environmental protection.
- S19. Ability to apply methods of investigation and analysis of the chemical, biological, radiological properties and safety of natural resources.
- S20. Ability to analyze climatic conditions and develop appropriate and effective measures to deal with them.
- S21. Be able to use innovative methods of research in the environmental evaluation of natural and anthropogenic ecosystems.
- S22. Ability to analyze the properties and environmental impact of hazardous chemical, biological or radioactive substances.
- S23. Ability to make prognoses and work out recommendations for the prevention and/or liquidation of anthropogenic emergencies.
- S24. Ability to work out recommendations for the management and conservation of natural resources.
- S25. Ability to analyze and identify environmental problems, suggest solutions and predict the results.
- S26. Ability to conduct independent research, environmental and economic examination of environmental projects and apply knowledge in scientific and educational activities.

Most important General Competences for Environmental Protection

- G1 Ability to analyse and synthesize
- G2 Ability to model, design and forecast
- G3 Ability to carry out research applying appropriate methods
- G8 Ability to learn including autonomous learning
- G10 Knowledge of the professional field
- G12 Ability to communicate in the official state, Russian and foreign languages
- G13 Ability to lead people and work in a team
- G18 Ecological and environmental responsibility

Most important Subject Specific Competences for Environmental Protection

- S1 Knowledge of the international, regional and national legal provisions for ecology, environmental protection and biosafety
- S2 Knowledge of the basic principles and laws of how ecosystems function
- S3 Knowledge of the main principles of general ecology and rational environmental management
- S4 Knowledge of the basic elements of social ecology and demography
- S5 Knowledge of the basic techniques of environmental and food quality monitoring
- S7 Knowledge of the location of natural resources and the assets of the state (manufacturing or other).
- S8 Knowledge of safety technologies and the latest technologies of food production and storage
- S10 Knowledge of the global environmental and food safety challenges
- S19 Ability to apply methods of investigation and analysis of the chemical, biological, radiological properties and safety of natural resources
- S23 Ability to make prognoses and work out recommendations for the prevention and/or liquidation of anthropogenic (or natural) emergencies

An example of overall outcomes for Environmental Protection by Level

Cycle	Knowledge	Ability	Level of autonomy and responsibility
Bachelor Level 1: Knowledge of the global challenges in the field of environmental protection and food safety.	Basic theoretical knowledge of the problems in the field of environmental protection and food safety.	Ability to solve the problems in the field of environmental protection and food security through research and analysis.	Be responsible for implementing the decisions regarding typical problems in the field of environmental protection and food safety.
Master Level 2: Ability to explore and analyze the global challenges in the field of environmental protection and food safety.	Advanced knowledge and understanding of critical global problems in the field of environmental protection and food safety.	Ability to apply innovative methods in solving common problems in the field of environmental protection and food safety.	Be responsible for the execution and management of research and analysis of problems in the field of environmental protection and food safety.
Doctoral Level 3: Ability to develop, promote and provide recommendations to address global challenges in the field of environmental protection and food safety.	Innovative knowledge and critical understanding of global issues in the field of environmental protection and food safety.	Ability to develop, promote and provide recommendations to address global challenges in the field of environmental protection and food safety.	Supervise the creation of innovative technologies in the development of recommendations to address global challenges in the field of environmental protection and food safety.