

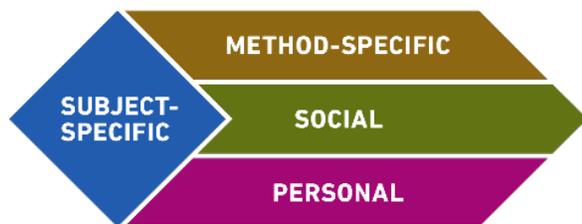
COMPETENCE FRAMEWORK

Overview

The ETH Competence Framework is a compilation of the competencies that ETH Zurich aims to foster.

This compilation was derived from a review of literature and competence frameworks and from interviews with Swiss employers from different economic sectors as well as with educational and career experts.

The framework consists of twenty competencies, which were grouped into four domains, representing distinct areas of application.



These domains include

- **Subject-specific Competencies** (knowledge of theories, concepts, and techniques and its application to specific fields).
- **Method-specific Competencies** (knowledge and application of methods to make sense of, and operate in, any context).
- **Social Competencies** (competencies applied in the interaction with others).
- **Personal Competencies** (competencies concerning self-management in the context of own work).

The framework describes the knowledge, skills, and attitudes associated with each competency.

The goal is to promote a common language about competencies among instructors, students, and future employers. The Competence Framework is for guiding and inspiring the personal and professional development of students and the work of teaching staff members at ETH Zurich.

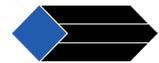
Explore the Competence Framework on our websites!

As a student, visit the [Competencies at ETH Zurich](#) website.

As a Teaching Staff member, visit the [ETH Competence Framework](#) website.

SUBJECT-SPECIFIC COMPETENCIES (to be specified by individual degree programmes)

Knowledge of theories, concepts, and techniques and its application to specific fields



Competencies	General definition	Knowledge	Skills	Attitudes
Subject-specific Competency 1 Concepts and Theories	Definition Ability to understand and apply the basic concepts and definitions that are relevant for a scientific subject or a field	Knowledge description <ul style="list-style-type: none"> • Theoretical knowledge of relevant phenomena and problems in own field • Understanding of linkages between own field and other fields, and society 	Skills description <ul style="list-style-type: none"> • Theoretical knowledge of relevant phenomena and problems in own field • Understanding of linkages between own field and other fields, and society • Ability to seek and manage information 	Attitudes description <ul style="list-style-type: none"> • Believe in the worth of own work or field and stay informed of new developments • Be open to other fields as an opportunity to gain a global outlook
Subject-specific Competency 2 Techniques and Technologies	Definition Ability to understand and apply techniques and technologies in use within a specific scientific subject or field	Knowledge description <ul style="list-style-type: none"> • Knowledge of terminologies, techniques, and technologies in own field • Knowledge of research methods in use in own field 	Skills description <ul style="list-style-type: none"> • Ability to apply techniques, technologies, and research methods effectively and efficiently • Ability to use terminologies properly 	Attitudes description <ul style="list-style-type: none"> • Value and strive for excellence and rigor in own field

METHOD-SPECIFIC COMPETENCIES

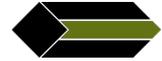
Knowledge and application of methods to make sense of, and operate in, any context



Competencies	General definition	Knowledge	Skills	Attitudes
Method-specific Competency 1 Analytical Competencies	Definition Ability to break down processes and systems into parts while understanding their interaction	Knowledge description <ul style="list-style-type: none"> • Knowledge of processes of data collection as well as of data analysis • Information literacy and numeracy 	Skills description <ul style="list-style-type: none"> • Ability to gather information or data to understand a problem • Ability to distinguish relevant from irrelevant information • Ability to break down a problem into basic elements • Ability to identify critical connections and patterns in verbal and numerical data • Ability to make inferences to fill gaps in information in order to continue analysis • Ability to draw sound conclusions based on analysis and experience 	Attitudes description <ul style="list-style-type: none"> • Be aware of limitations of own arguments and analyses and apply critical judgment in evaluating them
Method-specific Competency 2 Decision-making	Definition Ability to define a decision and a set of alternative actions from which to choose	Knowledge description <ul style="list-style-type: none"> • Knowledge about decision-making processes and tools • Knowledge of bias, risks, and evaluation techniques in decision-making 	Skills description <ul style="list-style-type: none"> • Ability to recognise a decision-making problem as such • Ability to phrase alternatives • Ability to evaluate alternatives and choose among them • Ability to make a decision also in case of incomplete information 	Attitudes description <ul style="list-style-type: none"> • Minimise bias, risks and uncertainties when making decisions • Be aware of the way emotions can affect the evaluation of alternatives
Method-specific Competency 3 Media and Digital Technologies	Definition Ability to access, evaluate, and use media and digital technology	Knowledge description <ul style="list-style-type: none"> • Media and digital technology literacy • Understanding how media and digital technologies can influence beliefs and behaviours • Knowledge of ethical and legal aspects surrounding the access and use of media and digital technology 	Skills description <ul style="list-style-type: none"> • Ability to apply digital technologies to research and work safely and appropriately • Ability to evaluate risks associated with media and digital technologies 	Attitudes description <ul style="list-style-type: none"> • Be aware of how media and digital technologies can influence beliefs and behaviours • Minimise risks associate with the use of media and digital technologies
Method-specific Competency 4 Problem-solving	Definition Ability to define a problem and find solutions for it	Knowledge description <ul style="list-style-type: none"> • Knowledge of techniques and processes to tackle problems • Knowledge of elements of both ill- and well-defined problems • Understanding of how diverse views can affect the problem-solving process 	Skills description <ul style="list-style-type: none"> • Ability to define a problem • Ability to use resources and techniques to solve a problem • Ability to delineate possible solutions to a problem • Ability to evaluate solutions and choose from among them • Ability to implement solutions to resolve problems 	Attitudes description <ul style="list-style-type: none"> • Recognise the critical role of persistence and be comfortable with adopting a 'can do' approach when tackling problems • Be comfortable with solving non-familiar problems
Method-specific Competency 5 Project Management	Definition Ability to manage projects and produce results	Knowledge description <ul style="list-style-type: none"> • Knowledge of processes, techniques and tools for effective and efficient project management 	Skills description <ul style="list-style-type: none"> • Ability to plan milestones and activities • Ability to prioritise among goals and activities • Ability to align a project with the requirements and values of own institution • Ability to produce results • Ability to choose between traditional and agile project management models and apply them appropriately 	Attitudes description <ul style="list-style-type: none"> • Be forward thinking when planning projects, milestones, and tasks • Be accountable for the use of resources, actions, and results • Think economically when developing projects

SOCIAL COMPETENCIES

Competencies applied in the interaction with others



Competencies	General definition	Knowledge	Skills	Attitudes
Social Competency 1 Communication	Definition Ability to communicate with others in different contexts and forms	Knowledge description <ul style="list-style-type: none"> • Knowledge of terminology, language register, and foreign language/s to communicate with different target audiences • Knowledge of various visual aids and multi-media tools • Knowledge of non-verbal communication for effective communication 	Skills description <ul style="list-style-type: none"> • Ability to articulate thoughts and ideas in own and foreign language/s • Ability to use oral, written, and non-verbal communication effectively and efficiently • Ability to adjust communication to different contexts • Ability to identify and use visual aids and multimedia tools for effective communication 	Attitudes description <ul style="list-style-type: none"> • Listen actively to others, requesting repetition or further explanations as needed • Be concise and structured when communicating
Social Competency 2 Cooperation and Teamwork	Definition Ability to build relationships with others to pursue common goals and achieve results in a constructive atmosphere	Knowledge description <ul style="list-style-type: none"> • Knowledge of group dynamics and processes for empowering effective collaboration and positive team atmosphere 	Skills description <ul style="list-style-type: none"> • Ability to build networks and collaborative relationships with others • Ability to coordinate and coproduce outputs • Ability to exchange feedback with others constructively • Ability to empower positive team environment and effective collaboration 	Attitudes description <ul style="list-style-type: none"> • See potential in working with others • Be flexible in taking on different roles within a team • Value honesty and give credit to others for their achievements • Share responsibility for team results
Social Competency 3 Customer Orientation	Definition Ability to approach relationships with others and society in terms of what you have to offer rather than what you need or want	Knowledge description <ul style="list-style-type: none"> • Knowledge of approaches and techniques for identifying the needs of others and society 	Skills description <ul style="list-style-type: none"> • Ability to build and maintain positive relationships with others and society • Ability to empathise with others to understand others' needs 	Attitudes description <ul style="list-style-type: none"> • Believe in the value of helping others by adopting a customer-orientation attitude at work and in society • Show compassion for others and society and strive to address societal and environmental challenges
Social Competency 4 Leadership and Responsibility	Definition Ability to motivate and inspire others and support others' achievements	Knowledge description <ul style="list-style-type: none"> • Knowledge of different leadership styles and when to apply them 	Skills description <ul style="list-style-type: none"> • Ability to guide others in achieving their own or common goals • Ability to adopt different leadership styles as needed and wisely • Ability to delegate responsibilities to others 	Attitudes description <ul style="list-style-type: none"> • Motivate and inspire others • Strive for the well-being of others • Give credit to others for their achievements • Recognise the importance of leadership and be comfortable with taking the lead • Act decisively on behalf of others and lead responsibly
Social Competency 5 Self-presentation and Social Influence	Definition Ability to present an authentic and professional image of self to others and motivate others to the adoption of a specific behaviour	Knowledge description <ul style="list-style-type: none"> • Knowledge of professional behaviour • Knowledge of rules, policies, and etiquette of own institution 	Skills description <ul style="list-style-type: none"> • Ability to express and promote a genuine and professional image of oneself by sharing own vision, values and interests • Ability to interpret others' perceptions of one's behaviour • Ability to express own emotions and feelings clearly to generate enthusiasm and motivation in others 	Attitudes description <ul style="list-style-type: none"> • Accept vulnerability by being willing to express also own feelings and interests to others • Have and display a positive attitude through positive language, enthusiasm, and expressions of gratitude
Social Competency 6 Sensitivity to Diversity	Definition Ability to recognise differences among people and work with them	Knowledge description <ul style="list-style-type: none"> • Awareness of diversity • Knowledge of the impact and potential of diversity • Understanding of biases due to diversity and their effects on interpersonal interactions 	Skills description <ul style="list-style-type: none"> • Ability to recognise biases • Ability to work effectively with diverse people and teams 	Attitudes description <ul style="list-style-type: none"> • Be open to and respect diversity in all its forms • Be open and motivated to embrace international or inter-disciplinary experience
Social Competency 7 Negotiation	Definition Ability to advocate positions with an open mind and try to synthesise ideas from all viewpoints best	Knowledge description <ul style="list-style-type: none"> • Knowledge of negotiation strategies including mediation, compromising, and bargaining 	Skills description <ul style="list-style-type: none"> • Ability to compromise, mediate and bargain • Ability to prevent, manage, and eventually solve conflicts 	Attitudes description <ul style="list-style-type: none"> • Keep an open mind when advocating positions, not taking differences of opinions personally • Be able to put oneself in others' shoes • Be rational when evaluating others' positions and avoid premature evaluations • Represent and synthesise the best ideas from all viewpoints

PERSONAL COMPETENCIES

Competencies concerning self-management in the context of own work



Competencies	General definition	Knowledge	Skills	Attitudes
Personal Competency1 Adaptability and Flexibility	Definition Ability to adjust effectively to a changing environment and deal well with changes	Knowledge description <ul style="list-style-type: none"> • Knowledge of sources of ambiguity and change and their impact on different environments and contexts 	Skills description <ul style="list-style-type: none"> • Ability to adapt to different roles, responsibilities, and contexts • Ability to change priorities and direction if necessary 	Attitudes description <ul style="list-style-type: none"> • Be open to criticism and setbacks • See ambiguity and change as an opportunity to learn • Be willing to move forward despite ambiguity
Personal Competency2 Creative Thinking	Definition Ability to produce and implement novel and useful ideas	Knowledge description <ul style="list-style-type: none"> • Knowledge of idea creation techniques and processes 	Skills description <ul style="list-style-type: none"> • Ability to apply idea-creation techniques to generate new and potentially useful ideas • Ability to elaborate, refine, analyse, and test own ideas in order to improve and maximise creative efforts • Ability to convert ideas into action plans and projects at work or in own field • Ability to act on new ideas to make useful contributions to economy, research, and society 	Attitudes description <ul style="list-style-type: none"> • Be open to new and diverse perspectives • Be creative and inventive when developing potentially new and useful ideas • See change as an opportunity to experiment and explore • Think outside the box and adopt a fail-forward attitude
Personal Competency3 Critical Thinking	Definition Ability to analyse and evaluate situations and recommend courses of action	Knowledge description <ul style="list-style-type: none"> • Knowledge of techniques to describe the structure of an argument • Knowledge of how to formulate an argument 	Skills description <ul style="list-style-type: none"> • Ability to identify key problems • Ability to adopt systems thinking • Ability to synthesise information from a variety of resources • Ability to evaluate sources by drawing inferences and questioning assumptions • Ability to formulate own arguments and question assumptions • Ability to analyse alternatives and anticipate outcomes • Ability to provide sound recommendations 	Attitudes description <ul style="list-style-type: none"> • Aspire to be an informed citizen • Acknowledge limitations of own knowledge with modesty while staying motivated to learn more
Personal Competency4 Integrity and Work Ethics	Definition Adherence to moral and ethical principles in the conduct of own work and in the relationship with others	Knowledge description <ul style="list-style-type: none"> • Knowledge of standards of good practice in the institution and discipline • Understanding of the effects of volatility, ambiguity, and complexity on practices in the institution and discipline 	Skills description <ul style="list-style-type: none"> • Ability to remain honest and respectful in volatile, uncertain, ambiguous, and complex situations • Ability to take responsibility and act decisively both in normal and volatile, uncertain, ambiguous, and complex situations 	Attitudes description <ul style="list-style-type: none"> • Value transparency, honesty and work ethics and apply them in relationships and own work • Admit faults and seek guidance as necessary • Be open-minded, objective, and accountable for own actions • Be reliable and trustworthy
Personal Competency5 Self-awareness and Self-reflection	Definition Ability to understand own strengths and weaknesses and enhance self-development	Knowledge description <ul style="list-style-type: none"> • Awareness of oneself, own interests, and needs • Knowledge of techniques to assess own strengths and weaknesses 	Skills description <ul style="list-style-type: none"> • Ability to identify own development needs • Ability to recognise and implement opportunities for lifelong learning • Ability to learn both from others and autonomously 	Attitudes description <ul style="list-style-type: none"> • Have confidence in oneself • Feel ownership of, and be committed to, own professional development and lifelong learning • Reflect on own achievements and experience
Personal Competency6 Self-direction and Self-management	Definition Ability to motivate oneself and organise own work in order to achieve results	Knowledge description <ul style="list-style-type: none"> • Knowledge of techniques to set personal goals with success criteria • Awareness of the effects of pressures and distractions on own work and work-life balance 	Skills description <ul style="list-style-type: none"> • Ability to work independently • Ability to manage time effectively and independently • Ability to prioritise among multiple projects, tasks, and duties • Ability to manage pressures, distractions and stress • Ability to maintain a good work-life balance 	Attitudes description <ul style="list-style-type: none"> • Be passionate about and proud of own work • Maintain motivation to work • Avoid undue pressures and enhance personal well-being • Have confidence in own expertise and feel comfortable working independently