

COMPETENCE FRAMEWORK

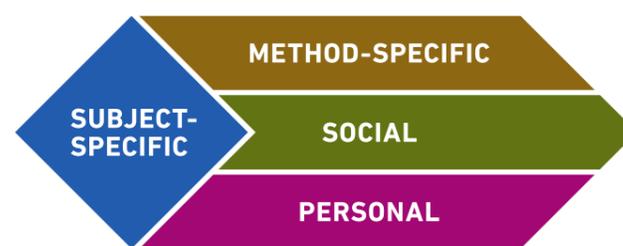
The ETH Competence Framework is a compilation of the competencies that ETH Zurich aims to foster.

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 → ETH Competencies for Students:
www.ethz.ch/competencies-for-students



As a Teaching Staff member → ETH Competencies for Teaching Staff: www.ethz.ch/comp-teachingstaff



SUBJECT-SPECIFIC COMPETENCIES [to be specified by individual degree programmes] Knowledge of theories, concepts, and techniques and its application to specific fields	
Concepts and Theories Ability to understand and apply the basic concepts and definitions that are relevant for a scientific subject or a field	Techniques and Technologies Ability to understand and apply techniques and technologies in use within a specific scientific subject or field
Knowledge: <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 	Knowledge: <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: <ul style="list-style-type: none"> ▪ Ability to apply theories properly to understand phenomena and problems ▪ Ability to make linkages between own field and other fields, and society ▪ Ability to seek and manage information 	Skills: <ul style="list-style-type: none"> ▪ Ability to apply techniques, technologies, and research methods effectively and efficiently ▪ Ability to use terminologies properly
Attitudes: <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 	Attitudes: <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				
Analytical Competencies Ability to break down processes and systems into parts while understanding their interaction	Decision-making Ability to define a decision and a set of alternative actions from which to choose	Media and Digital Technologies Ability to access, evaluate, and use media and digital technology	Problem-solving Ability to define a problem and find solutions for it	Project Management Ability to manage projects and produce results
Knowledge: <ul style="list-style-type: none"> Knowledge of processes of data collection as well as of data analysis Information literacy and numeracy 	Knowledge: <ul style="list-style-type: none"> Knowledge about decision-making processes and tools Knowledge of bias, risks, and evaluation techniques in decision-making 	Knowledge: <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 	Knowledge: <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 	Knowledge: <ul style="list-style-type: none"> Knowledge of processes, techniques and tools for effective and efficient project management
Skills: <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 	Skills: <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 	Skills: <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 	Skills: <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 	Skills: <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: <ul style="list-style-type: none"> Be aware of limitations of own arguments and analyses and apply critical judgment in evaluating them 	Attitudes: <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 	Attitudes: <ul style="list-style-type: none"> Be aware of how media and digital technologies can influence beliefs and behaviours Minimise risks associated with the use of media and digital technologies 	Attitudes: <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 	Attitudes: <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						
Communication Ability to communicate with others in different contexts and forms	Cooperation and Teamwork Ability to build relationships with others to pursue common goals and achieve results in a constructive atmosphere	Customer Orientation Ability to approach relationships with others and society in terms of what you have to offer rather than what you need or want	Leadership and Responsibility Ability to motivate and inspire others and support others' achievements	Self-presentation and Social Influence Ability to present an authentic and professional image of self to others and motivate others to the adoption of a specific behaviour	Sensitivity to Diversity Ability to recognise differences among people and work with them	Negotiation Ability to advocate positions with an open mind and try to synthesise ideas from all viewpoints best
Knowledge: <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 	Knowledge: <ul style="list-style-type: none"> Knowledge of group dynamics and processes for empowering effective collaboration and positive team atmosphere 	Knowledge: <ul style="list-style-type: none"> Knowledge of approaches and techniques for identifying the needs of others and society 	Knowledge: <ul style="list-style-type: none"> Knowledge of different leadership styles and when to apply them 	Knowledge: <ul style="list-style-type: none"> Knowledge of professional behaviour Knowledge of rules, policies and etiquette of own institution 	Knowledge: <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 	Knowledge: <ul style="list-style-type: none"> Knowledge of negotiation strategies including mediation, compromising, and bargaining
Skills: <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 	Skills: <ul style="list-style-type: none"> Ability to build networks and collaborative relationships with others Ability to coordinate and co-produce outputs Ability to exchange feedback with others constructively Ability to empower positive team environment and effective collaboration 	Skills: <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 	Skills: <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 	Skills: <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 	Skills: <ul style="list-style-type: none"> Ability to recognise biases Ability to work effectively with diverse people and teams 	Skills: <ul style="list-style-type: none"> Ability to compromise, mediate and bargain Ability to prevent, manage, and eventually solve conflicts
Attitudes: <ul style="list-style-type: none"> Listen actively to others, requesting repetition or further explanations as needed Be concise and structured when communicating 	Attitudes: <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 	Attitudes: <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 	Attitudes: <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 	Attitudes: <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 	Attitudes: <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 	Attitudes: <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					
Adaptability and Flexibility Ability to adjust effectively to a changing environment and deal well with changes	Creative Thinking Ability to produce and implement novel and useful ideas	Critical Thinking Ability to analyse and evaluate situations and recommend courses of action	Integrity and Work Ethics Adherence to moral and ethical principles in the conduct of own work and in the relationship with others	Self-awareness and Self-reflection Ability to understand own strengths and weaknesses and enhance self-development	Self-direction and Self-management Ability to motivate oneself and organise own work in order to achieve results
Knowledge: <ul style="list-style-type: none"> Knowledge of sources of ambiguity and change and their impact on different environments and contexts 	Knowledge: <ul style="list-style-type: none"> Knowledge of idea-creation techniques and processes 	Knowledge: <ul style="list-style-type: none"> Knowledge of techniques to describe the structure of an argument Knowledge of how to formulate an argument 	Knowledge: <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 	Knowledge: <ul style="list-style-type: none"> Awareness of oneself, own interests, and needs Knowledge of techniques to assess own strengths and weaknesses 	Knowledge: <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: <ul style="list-style-type: none"> Ability to adapt to different roles, responsibilities, and contexts Ability to change priorities and direction if necessary 	Skills: <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 	Skills: <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 	Skills: <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 	Skills: <ul style="list-style-type: none"> Ability to identify own development needs Ability to recognize and implement opportunities for lifelong learning Ability to learn both from others and autonomously 	Skills: <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: <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 	Attitudes: <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 	Attitudes: <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 	Attitudes: <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 	Attitudes: <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 	Attitudes: <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