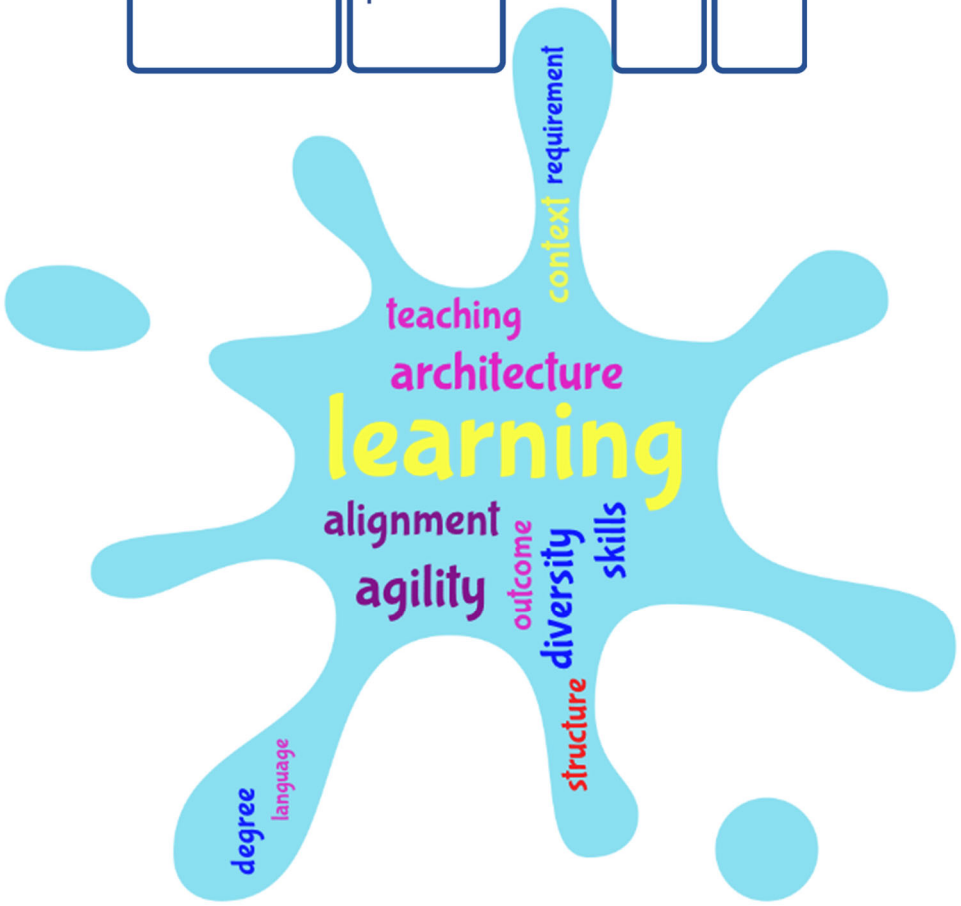

CURRICULUM DESIGN

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Curriculum Canvas
Nine components

1. Main Goals and Learning Outcomes
2. Teaching and Learning Methods
3. Assessment Methods
4. Entry Requirements
5. Structure of the Program
6. Transversal and Personal Attributes
7. Social and Ethnic Diversity
8. Languages
9. Location of Teaching and Learning

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Main Goals and **Learning** Outcomes

General goals in engineering.
The program produces the next generation of engineers by providing students with engineering fundamentals set in the context of conceiving, designing, implementing and operating (CDIO) real-world systems and products.

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Main Goals and **Learning** Outcomes

Learning outcomes in engineering.
The learning outcomes specify: 1) fundamental knowledge and reasoning, 2) personal and professional skills and attributes, 3) interpersonal skills, and 4) conceiving, designing, implementing and operating (CDIO) systems in the enterprise, societal and environmental context.

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Main Goals and **Learning** Outcomes

The goal in engineering. After completing the program the graduates will be able to plan, implement, and continuously improve resilient systems, ensuring long-term reliability and security in critical infrastructures and digital networks.

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Main Goals and **Learning** Outcomes

Learning outcomes in business management. By completing the program the student will be able to demonstrate: 1) critical analysis and problem-solving skills in business, 2) effective communication, 3) ethical decision-making and interpersonal skills and 4) global trends in business and cultural diversity.

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Main Goals and **Learning** Outcomes

Learning outcomes in management.
By completing the program the student will be able to demonstrate: 1) general understanding of management, 2) in-depth understanding in specific fields of management, 3) respect for ethics in decisions, and 4) some research skills.

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Main Goals and **Learning** Outcomes

General goal in leadership and business administration.
The goal is to develop responsible leaders and managers in the private and public sectors who are able to effectively lead and manage in complex environments to bring about change.

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Teaching and **Learnin**g Methods

Expedition learning is a learning process that takes place during an expedition, and the learning outcomes depend on the path or location of the expedition and may involve teamwork of students and people encountered.

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Teaching and **Learnin**g Methods

Experiential learning is where the learning involves hands-on approach to education where individuals gain knowledge and skills through direct experience and reflection.

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Teaching and **Learnin**g Methods

Traditional teaching and learning is where learning is based on teacher-led lectures in classroom set-up, often based on textbooks, and students may work on exercises under teacher's guidance and even some hands-on activities.

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Teaching and **Learnin**g Methods

Work based learning is learning through real world work experience and internship, and may include reflective analysis.

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Teaching and **Learnin**g Methods

Inquiry-based learning is student-centered, driven by student´s curiosity, exploration and critical thinking and analysis, often through research and projects.

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Teaching and **Learnin**g Methods

Flipped classroom learning is when students work with the learning material outside the classroom and thereafter engage in class activities that aim at deepening their understanding through working with peers and the teacher.

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Assessment Methods

Peer assessment. Peer assessment is used in some courses. Here the student´s peers may grade each other's assignment, performance or contribution using a benchmark or rubric provided by the teacher.

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Assessment Methods

Portfolio. Students must submit a reflective portfolio in some of the courses. The portfolio reflects the student's insight and experience, and is used to assess his or her engagement and ability to apply theory in an applied setting.

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Assessment Methods

Oral assessment. At the completion of every project an oral examination is the norm. This may include an interview, presentation or demonstration. It can be used to assess higher order thinking, depth of knowledge and involvement in the project.

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Assessment Methods

Diversity in assessments. Varied assessments are used throughout the program, depending on the objective of each course on knowledge, skills and competence, and may include quizzes, projects, midterms, contribution and final exams, oral or written.

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Assessment Methods

Project-Based Assessment. A student-centered approach assessing students' performance and engaging in projects, for example real-world and hands-on problems. Assessment can be by both industry partners and academic supervisor.

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Assessment Methods

Artificial Intelligence (AI). This can involve test analysis, automated scoring and feedback, and adaptive assessment based on students' performance, all aiming at facilitating personalized learning. AI assessment is used in at least some of the courses.

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Entry Requirements

Local or not. There is emphasis on students from the local area, and when admitting to the program, for example, at least a of the admitted students are from the local area.

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Entry Requirements

Strong in STEM. Due to the design of the program the students must have completed high school with very good preparation in STEM subjects, for example within the top 20% of the students.

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Entry Requirements

Minimum age and entry test. Students are admitted after completion of Senior High School, at least 16 years old at the time of registration and successful completion of an entry test.

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Entry Requirements

Internship. Due to the emphasis on hands-on or practical skills the entering students must have completed at least an eight-week internship in a specific field.

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Entry Requirements

Prior degree. To be admitted to the program the student must have successfully completed a lower degree in a specific discipline, for example completed the BS degree prior to being admitted to the MS program.

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Entry Requirements

Language proficiency. To be admitted to the program, all students must demonstrate proficiency in the language or languages used at the institution, demonstrating both written and verbal skills.

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Structure of the **Pr**ogram

Spiral. A program design having iterative revisiting of subjects throughout the curriculum with systematic deepening of the subjects with each repetition.

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Structure of the **Pr**ogram

Pipeline. The courses in the program follow a mostly predefined sequence, but the program may have a limited flexibility, for example 3 out of the 30 mandatory courses in the program are fully elective.

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Structure of the **Pr**ogram

Cross-disciplinary. A structure in which, for example, combining engineering with courses from arts and humanities, economics, and entrepreneurship is applied to foster a holistic understanding.

CURRICULUM DESIGN

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Structure of the **Pr**ogram

Liberal art. A program where there is little structure and great flexibility in selected courses and the order in which courses are taken.

CURRICULUM DESIGN

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Structure of the **Pr**ogram

Fork-based. A two part design, in the former half the student takes mandatory courses that cover the discipline in general, and in the second half the student selects one of several lines each with a specialization within the discipline.

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Structure of the **Pr**ogram

Modular. A program structure designed to have self-contained independent modules (each with several courses). Sometimes the final module is a project where the student must synthesize the skills from the previous modules.

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Transversal and **Personal** Attributes

Character. Personal character building is expected of all students in the program, which are valued and nurtured furthermore in the program, hence developing students as valued citizens and ethically sound.

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Transversal and **Personal** Attributes

Ethics. Ethical reasoning is expected of all students, both personally and professionally, and is nurtured as part of the general education of the program, like in projects, teamwork and in extracurricular activities.

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Transversal and **Personal** Attributes

Intercultural. Intercultural traits and abilities are valued and nurtured throughout the program and in extracurricular activities, hence providing the student with global competencies and abilities to work effectively in diverse groups.

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Transversal and **Personal** Attributes

Creativity. Creativity is expected of all students in the program, and this attribute is developed further throughout the program, so as to stimulate innovative thinking and problem solving abilities.

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Transversal and **Personal** Attributes

Analytic. Critical thinking and analytical abilities are expected of all students in the program, and these attributes are valued and nurtured furthermore in the program.

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Transversal and **Personal** Attributes

Awareness. Interdisciplinary awareness is valued and nurtured in the program and students' involvement outside the main program is expected, hence the students will be more innovative in finding solutions and able to lead interdisciplinary teams.

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Social and Ethnic **Di**versity

Adaptive teaching. Students with analytical dyslexia, ADHA, dyspraxia and similar are accommodated as much as practical with properly adapted teaching and learning material.

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Social and Ethnic **Di**versity

Gender balance. Effort is made such that each group of students entering the program is gender balanced and the program and facilities can easily accommodate both genders.

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Social and Ethnic **Di**versity

Caregivers. There is some flexibility allocated within the curriculum for students that are parents and caregivers, including online access and onsite accommodation.

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Social and Ethnic **Di**versity

Ethnic skills. In several courses of the program the content is based on or includes ethnic and native knowledge and skills.

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Social and Ethnic **Di**versity

Academic tradition. Within the program is support and workshops providing mentoring for students with atypical social background or support.

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Social and Ethnic **Di**versity

Local skills and collaboration. Within the program are courses that are based on local needs and traditional or ethnic skills, in part to stimulate interest in the courses or to initiate local collaboration.

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Languages

Sign language. The local sign language is used in half of the elective courses.

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Languages

Local language. Only the local language is used throughout the program and in all aspects of the program. This might in particular refer to programs that prepare students for local qualification.

CURRICULUM DESIGN

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Languages

Visual. Emphasis is placed on using visual communication to complement verbal presentation, for example by using diagrams, video and virtual reality in assignments and projects.

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Languages

Local and non-local. Language used depends on the course and context, but two will be considered equal throughout the program, the local one and one that is considered relevant for future employment.

CURRICULUM DESIGN

85

Languages

Local and non-local. The language of instruction can be local, but most of the teaching material is in a non-local language.

CURRICULUM DESIGN

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Languages

Multilingual and real-time translation. To allow international students to collaborate seamlessly, real-time translation tools are used to enable multilingual classroom participation.

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Location of **Teac**hing and Learning

Internship. To enhance connection to industry in the program and hands-on training, the students either do a 12 weeks internship in a company each year, or every week attend classes on campus for two days and three days at a company.

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Location of **Teac**hing and Learning

Semester abroad. The program is designed to accommodate the requirement that one semester abroad might be compulsory, say out of the four semesters of the program.

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Location of **Teac**hing and Learning

Distributed. The program is predominantly online, but students are required on campus for a few or several days each semester e.g. for consultation, discussion, assessment and lab training.

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Location of **Teac**hing and Learning

Hybrid. In a hybrid course some sessions are in person on site and some components are fully online. This form allows for some flexibility, including independent learning.

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Location of **Teac**hing and Learning

On campus. Teaching is all on campus and students are expected to attend classes and training in person. This is to enhance discipline dialogue, train interpersonal skills and enhance networking.

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Location of **Teac**hing and Learning

Virtual campus. Teaching is based on a virtual campus where students from different geographical locations attend class together using virtual reality, enabling both local and global peer-to-peer learning and collaboration.

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Curriculum

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