

USE – Internet of things

This learning line is being offered for the last time in academic year 2023-2024. In 2024-2025 an opportunity for re-examination and/or alternative courses/projects will be offered

Internet of things	
Offered by	Department of Electrical engineering (in collaboration with ID and IE&IS)
Language	English
Primarily interesting for	All students. Teams are multidisciplinary by design. We see positive reactions from ID, EE and IE&IS students but students from all faculties can join.
Prerequisites	Required courses: - Recommended courses: -
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Content and composition

Internet of things is a container term for many applications and systems which owe, at least for a part, their usability and functionality to connectivity (usually via wireless connections). Connectivity has become so intertwined in our society in the 21st century that it seems to many students an obvious resource. The engineering challenge of insuring connectivity is often overlooked (or considered trivial). However, in the context of a ULL there is room to investigate next to the technical challenge also the societal and economic aspects (impacts) with an aim to optimize next to the hardware and software also the USE aspects of any innovation relying on connectivity. The IoT ULL is aiming to take the students on a journey of innovation via connectivity. The ULL is constructed along the theme “from product ideation to product launching”. We believe that the impact of USE can best be appreciated by letting students explore and experiment with USE related aspects of innovation by applying them to their own engineering projects. Understanding concepts such as user experience and minimum value proposition (MVP) can only happen if the students are required to engage with actual users of their innovation.

Course code	Course name	Level classification	2023-2024	2024-2025
5UEUA0	From idea to a blueprint (1st course)	1.	Regular education	Re-exam
5USUA0	Concept vs reality (2nd course)	2.	Regular education	Re-exam
5UAUA0	Validation to sales (3rd course)	3.	Regular education	Re-exam

Course description

5UEUA0, From idea to a blueprint

The first course in the ULL aims to install/awake in students the entrepreneurial spirit. This will be done by allowing the students to spend considerable time on idea creation as well as idea analysis and peer review/feedback (like small “startup” companies). Through this group process, we expect student to become more engaged with the eventual technology challenge they will chose to tackle and put the required effort to push its development in an accelerated process to a blueprint by the end of the first course.

In this course the students will be first split into groups of 4. Lectures will be given on fundamental aspects of design and a general set of technical criteria for all projects will be laid down. Also lectures on ideation and constructive feedback will be given. To help with defining the viability also aspects of entrepreneurship and business will be touched upon.



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5USUA0, Concept vs reality

The core of the ULL will take the groups from the concept to a working prototype which has been carefully designed and is clearly supported by a market and a business case. Aspects of design and business will be intertwined with technical sessions which will require fast-paced development of the right features into a product ready for validation. A focus on MVP and critically separating the nice to haves from the essential will lead to an improved product offering/working prototype. At the end of Q2 the teams should have a fully working prototype(s) of their product ready for validation by potential users/customers in Q3.

5UAUA0, Validation to sales

In the 3rd and last course comprising the IoT learning line the focus would shift from idea creation and validation to the operational aspects of bringing innovation into the market. The groups will need to consider what the buying roles and process typically consist of and what the adoption factors are for those involved in the process. This marketing research is the start for defining the marketing strategy, that is to be complemented with market information and data gathering on the market segment, target groups and perceived positions of rivalling products/services in the target market. Analyses need to be based on basic concepts and models for marketing planning (as introduced and explained in common textbooks on strategic marketing (planning)). Their media campaign and is to be designed based on these analyses on industry (competition; supply side), market (demand side), distribution and customers (consumers and/or organizations in B2B segments). How to create a slogan/visual to promote your innovation? How to increase awareness of your products? What are the most relevant features for subsequent adopter categories? The main message about the product/service differs over the product life cycle and therefore, marketing communication needs to be adapted over time.

At the end of Q3 a large event will be organized where the different teams will be able to present their innovative solutions and pitch them to possible investors which will be invited to join the event.