Master's Programme in Service Design and Engineering 2010-12

Degree Programme of Computer Science and Engineering
Degree: Master of Science in Technology – M.Sc. (Tech) 120 ECTS
Major: Service Design and Engineering (IL3005)

Directors of the programme:	**Professor Heikki Saikkonen**
	Professor (pro tem) Matti Hämäläinen
Professors of the major:	**T-86 Matti Hämäläinen**
	T-106 Heikki Saikkonen
Chief Program Officer:	**M.Sc. Mika Helenius**

http://serveng.tkk.fi/

The SDE Master's Program is research focused program on the development of digital and software services from user centric perspectives to large consumer or enterprise service, system and platforms. The intensive two years full-time "service innovation" program has a strong emphasis on service concept research, strategic foresight, service development, service design, open innovation, business venturing, entrepreneurship, technology implementation and service operation. All students will be engaged in a real-life research "case" or "new start-up" project. Programme objectives have been aligned with the future engineering capabilities in the context of conceiving, designing, implementing and operating (DCIO) of digital services. The scope covers both high level information management topics as well as deep down technical topics. Some of the courses require the students to implement and manage such new systems in authentic situations. This real-world research and learning laboratory is combined with management school type interactive classes, close collaborative research community, and business relevance.

The SDE programme provides also foundation for scientific research. The research methodology module M and the thesis module D provide a solid track to highly valued service development, consulting or research position in industry and academic institutions. The fulltime and majoring SDE student shall have an opportunity to take the advanced module C (20 ECTS) which is a dive into the practical research challenges of service design and engineering. A DCIO framework is applied to integrate both theoretical back ground of the basic module A2 (20 ECTS) and specialization A3 (20 ECTS) learning outcomes.

The program aims at providing the multidisciplinary students from computer science, information systems, industrial engineering, economics, social, science and design studies a solid basis in Service Design and Engineering (SDE). The scientific knowledge foundation building starts from the strategic open innovation and technical viewpoints, and proceeds all the way to relevant business, behavioral, legal and societal aspects in complex systems project reality. It synthesizes both consumer and enterprise aspects of service creation and operation and promotes the key enabling approaches for future services, including open standards and service-oriented computing both via lectures and design and implementation activities.

	20 ETCS	10 ETCS	30 ETCS

A2 - Intermediate

A3 - Advance

W - Electives

C – Special

M - Methods

D - Thesis

	W	M	D
	A2	A3	C

	20 ETCS	20 ETCS	20 ETCS
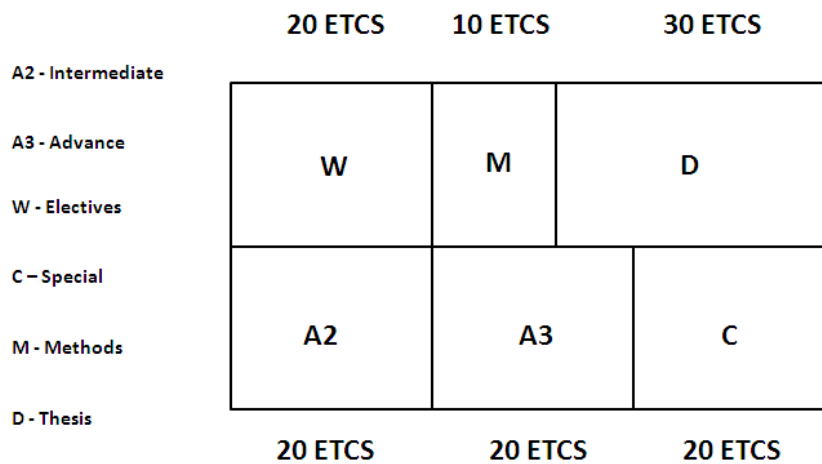
Picture 1: Module structure of SDE programme

The Master's Programme in Service Design and Engineering consists of six study modules A2, A3, C, W, M and D total of 120 ECTS (European Credit Transfer and Accumulation System):

T233-2 Service Design and Engineering A2   **20 cr**
           - Service and information science foundations

T234-3 Service Design and Engineering A3 track   **20 cr**
           - Service technology and engineering
           - Service innovation and entrepreneurship
           - User driven design and usability
           - Enterprise information systems management

T235-C Special Module in Service Design and Engineering C   **20 cr**

Methodological Principles   **10 cr**

Elective Studies   **20 cr**
           - language courses
           - courses from SDE tracks or study guide

Master's Thesis   **30 cr**

T233-2 Service Design and Engineering A2 (20 cr)

Professors in charge of the module: Prof. Saikkonen, Prof. Hämäläinen

Description of the module: The A2 "*introduction to services from software and digital service perspective*" module provides the foundation for innovative service design and engineering.

Code	Course	Cr
T-86.5310	ICT Enabled Service Business and Innovation P	4-6
T-86.5141	Enterprise Systems Architecture	4
T-86.5180	IT Governance P	4
T-106.4300	Web Software Development	3-6
T-106.5750	Aalto Service Camp P	3-8
	Total	**20**

T234-3 Service Design and Engineering A3 (20 cr)

Professors in charge of the module: Prof. Saikkonen, Prof. Hämäläinen, Prof. Kauppinen, Prof. Nieminen, Prof. Männistö

Description of the module: The SDE programme provides deep theoretical insights in the following specialization A3- tracks: technology, innovation, design, and enterprise information systems management.

Code	Course	Cr
Service Design and Engineering "Technology track" (21 cr) from prof. Saikkonen		
T-86.5170	Service-Oriented Architecture and Software Engineering P	4
T-76.5150	Software Architectures P	5
T-106.5250	Distributed Systems	5
T-76.5650	Seminar in Software Engineering P	3-5
T-86.5175	Business Process Design and Implementation P	4
Service Design and Engineering "Innovation track" (20 cr) from prof. Kauppinen		
T-121.5151	Methods for User-centred Product Development	3
T-76.5615	Requirements Engineering P	3
T-128.5300	Advanced Software Business P	4
T-128.5400	Software Entrepreneurship Seminar P	4
T-86.5751	Strategic Digital Service Innovations P	3 – 7
Service Design and Engineering "Design track" (21 cr) from prof. Nieminen		
T-121.5151	Methods for User-centred Product Development	3
TAIK 25402	Storytelling 1	3
T-121.5350	Strategic User-centred Design P	9
TAIK 25117	Interface Prototyping	3
TAIK 25105	Systems of Representation	3-6

Service Design and Engineering _"Enterprise IS track "_ (20 cr) from prof. Hämäläinen		
T-76.5650	Seminar in Software Engineering P	3-5
T-86.5161	Special Course in Information Systems Integration P	6-8
T-86.5165	Seminar on Enterprise Information Systems (A) P	4
T-86.5165	Seminar on Enterprise Information Systems (B) P	4
	Total	20

T235-C Special Module in Service Design and Engineering C (20 cr)

Professors in charge of the module: Prof. Hämäläinen, Prof. Saikkonen
Description of the module: Special module in Service Design and Engineering consists of three compulsory courses for full time SDE majoring students.

Code	Course	Cr
T-106.5260	Master's Studio in Service Design and Engineering	10
T-86.5415	Digital Service Insight and Innovation I	2-8
T-86.5416	Digital Service Insight and Innovation II	2-8
	Total	**20**

Methodological Principles (10 cr)

Code	Course	Cr
T-76.5050	Methods for Software Engineering and Business Research P	3-5
T-86.5200	Service Research Seminar P	4-10
Kie-98.1500	Thesis Writing P	2
	Total	**10**

Elective Module in Service Design and Engineering W (20 cr)

Code	Course	Cr
Kie-98.xxxx	Finnish language course 1A (during I period)*	2
Kie-98.xxxx	Foreign language course(s)**	1-3
	Selection of courses from SDE tracks or study programme	
	Total	**20**

*) Not required for students with Finnish as their mother tongue.
**) Any Kie-98.xx course(s) that fulfill the requirements for obligatory foreign language courses: a total of 3 ECTS credits including both oral and written skills. If the student has taken course Kie-98.1500 Thesis Writing as part of the Methodological principles module, only oral skills course (1 cr) in English is required.

All SDE students shall prepare a personal study plan (PSP) which will be approved by the SDE faculty during first weeks of the programme. The PSP shall be revised regularly during the studies. SDE students are recommended to take elective courses from the other specialization tracks in the SDE curriculum since there will be some extra activities or seminars that can deliver additional credits.

Master's Thesis D (30 cr)

Code	Course	Cr
T-xx	Thesis	30