# RTU Course "Service Science, Management, and Engineering"

## 33000 Faculty of Computer Science, Information Technology and Energy

*General data*

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|---|---|
| Code | DE0754 |
| Course title | Service Science, Management, and Engineering |
| Course status in the programme | Compulsory/Courses of Limited Choice |
| Responsible instructor | Mārīte Kirikova |
| Academic staff | Gundars Alksnis<br>Pēteris Rudzājs |
| Volume of the course: parts and credits points | 1 part, 6.0 credits |
| Language of instruction | LV, EN |
| Annotation | The study course covers the service-oriented approaches in business and information systems and software engineering. It concerns vertical (inside the enterprise) and horizontal (inter-organisational) service provision situations. The emphasis is put on new innovative service development. The course comprises service design methods, basics of building service-oriented architectures, and other topics of service engineering. Students will experiment with various service development and running technologies. They will learn approaches to service governance according to the most popular service management methods and standards. Students are expected to have basic knowledge in business process modelling, systems theory, and portfolio management. The course concerns also scientific research advances in service-orientation. |
| Goals and objectives of the course in terms of competences and skills | The aim of the study course is to provide theoretical knowledge and practical skills in the systematic design, development and management of business and software services.<br>Tasks of the study course:<br>- to introduce the new service science, management and engineering discipline;<br>- to outline the basic principles of service-oriented architecture;<br>- to give an insight into cloud computing services;<br>- to strengthen the skills of compiling scientific literature on the study course topics. |
| Structure and tasks of independent studies | Individual and group assignments that are relevant to the study course topics. As part of it, students have to familiarize themselves with issues discussed in scientific articles, prepare presentations, perform practical tasks, and also prepare for the exam. |
| Recommended literature | Obligātā / Obligatory:<br>1. Robin G. Qiu. Service Science: The Foundations of Service Engineering and Management. Wiley, 2014.<br>2. Paul P. Maglio, et al. Handbook of service science. New York: Springer, 2010.<br>3. Bill Hefley, Wendy Murphy (eds.). Service science, management and engineering: Education for the 21st century. New York: Springer, 2008.<br>Papildu / Additional:<br>1. Thomas Erl, Robert Cope, Amin Naserpour. Cloud computing design patterns. New York: Prentice-Hall, 2015.<br>2. Thomas Erl. Service-Oriented Architecture: Analysis and Design for Services and Microservices. 2nd Ed. New York: Prentice-Hall, 2016.<br>3. IBM Academic Initiative Courseware. |
| Course prerequisites | Suggested: Business process modelling, systems theory, portfolio management |

*Course contents*

| Content | Full- and part-time intramural studies | | Part time extramural studies | |
|---|---|---|---|---|
| | Contact Hours | Indep. work | Contact Hours | Indep. work |
| Introduction to Service Science, Management, and Engineering (SSME). | 4 | 6 | 0 | 0 |
| Service innovation management and productivity. | 4 | 6 | 0 | 0 |
| Service research. | 4 | 6 | 0 | 0 |
| Introduction to global service company management. | 4 | 6 | 0 | 0 |
| Software architecture and service orientation. | 4 | 6 | 0 | 0 |
| Service-oriented architecture (SOA) overview and entry points. | 4 | 6 | 0 | 0 |
| SOA design principles. Services modelling. | 4 | 6 | 0 | 0 |
| Services identification. | 4 | 6 | 0 | 0 |
| Services specification and design. | 4 | 6 | 0 | 0 |
| Services realization and implementation. | 4 | 6 | 0 | 0 |
| SOA and standards. Designing Web services. | 4 | 6 | 0 | 0 |
| Outsourcing and services. | 4 | 6 | 0 | 0 |
| Service governance. The ITIL overview. | 4 | 6 | 0 | 0 |
| Student presentation on selected topics. | 8 | 12 | 0 | 0 |
| Examination. | 4 | 6 | 0 | 0 |

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|---|---|---|---|---|
| Total: | 64 | 96 | 0 | 0 |

*Learning outcomes and assessment*

| Learning outcomes | Assessment methods |
|---|---|
| Is able to explain basic principles, pros, and cons of the SSME and SOA; recognizes elements of SOA infrastructure and SOA life cycle. | A written examination that includes theoretical questions as well as situation description for which the student should suggest service-based improvement for the business process.<br>Criteria: according to the answers provided. |
| Can assess and explain the necessity (or the opposite) of service introduction according to organisational goals and enterprise/business architecture. | A written examination.<br>Criteria: according to the answers provided. |
| Using service development tools is able to integrate services into the business process by choosing the services which are most suitable to the business goals of the enterprise. | Independently completed assignments.<br>Criteria: according to the implemented tasks. |
| Is able to monitor service performance of business processes, identify the need for performance improvement, and suggest a service improvement plan. | Independently completed assignments.<br>Criteria: according to the implemented tasks. |

*Evaluation criteria of study results*

| Criterion | % |
|---|---|
| Hands-on labs and assignments | 30 |
| Selected topic presentation | 20 |
| Examination | 40 |
| Bonus (for submitting all assignments) | 10 |
| Total: | 100 |

*Study subject structure*

| Part | CP | Hours | | | Tests | | |
|---|---|---|---|---|---|---|---|
| | | Lectures | Practical | Lab. | Test | Exam | Work |
| 1. | 6.0 | 32.0 | 32.0 | 0.0 | | * | |