

DESCRIPTION OF STUDY MODULE*

Study programme Applied Informatics and Programming

Study module INTERNET OF THINGS **Credits in total** 5

Learning outcomes
<ul style="list-style-type: none"> - Understands devices, data exchange protocols and standards used in internet of things. - Is able to choose and customize appropriate algorithms for special internet of things products. - Lists main application domains of internet of things products. - Is able to explain main disadvantages of internet of things technologies. - Lists standards, protocols and frameworks used for internet of things products development. - Designs special internet of things based software and hardware products according to specified requirements and limitations. - Using the acquired knowledge develops not complex but standard software components. - Developing non complex JSON, XML, HTTPlib, URLLib, Xively Cloud, Python Django, RESTful Web API software components. - Install and administrates developed products in special servers.
Aims of study module
To teach students to develop products based on internet of things technologies according to customer and platform technical requirements.
Annotation of a study module
This course provides students with basics of internet of things. It analyzes characteristics and definitions, hardware for implementation of internet of things. Students acquires knowledge and practical skills designing, programming, installing and maintaining specific internet of things domains including home automation, smart city, business and industry systems. It is analyzed wearable devices and its programming platforms. During the course students develops their practical skills by performing practical tasks and developing their internet of things technologies and frameworks (JSON, XML, HTTPlib, URLLib, Xively Cloud, Python Django, RESTful Web API) based project. It is addressed data safety and privacy problems, best and worst practices.
Topics of the subject
<ol style="list-style-type: none"> 1. Conception of internet of things 2. Internet of things for specific domains 3. Internet of things and M2M (machine to machine) communication 4. Software development methodology for Internet of things 5. Internet of things systems development using Python 6. Hardware devices for Internet of things 7. Servers for Internet of things platforms 8. Programming frameworks for Internet of things 9. Data safety and privacy in Internet of things 10. Wearable devices and technologies 11. Use cases of Internet of things
Procedure for assessment of knowledge and competences
Ten grade and gathered evaluation system is applied: practical works (folder method) – 10%, control works – each 10%, project (Internet of things system development) – 20%, exam – 50% of final grade which is calculated by weighed averge method. Final grade is evaluated only of all tasks and control works is cleared and evaluated possitive. $G = K1*0.1+K2*0.1+P*0.1+S*0.2+E*0.5$
Main literature
<ol style="list-style-type: none"> 1. A Bahga, V Madiseti (2014) <i>Internet of Things: A Hands-On Approach</i>. Vijay Madiseti, 446 p. 2. R. Buyya, A. Dastjerdi (2016) <i>Internet of Things: Principles and Paradigms</i>. Morgan Kaufmann, 378 p. 3. A. McEwen, H. Cassimally (2013) <i>Designing the Internet of Things</i>. Wiley, 336 p. 4. R. Pleštys, D. Rimkus, I. Lagzdinytė, N. Sarafinienė (2008) <i>Tinkly sauga</i>. Vitae Litera, 162 p. <p><i>Prieiga per https://www.ebooks.ktu.lt/info/432/tinklu-sauga/</i></p>

* Short form