**Plan of course description (annotation)**

**Name of the course**

Current Challenges and Research Methods in Information Systems

**Department responsible for the course or equivalent**

Institute of Computer Technologies and Information Security

**Lecturer (name, academic title, e-mail)**

Alexey Tselykh, Candidate of Technical Sciences, Associate Professor, tselykh@sfedu.ru

**Semester when the course unit is delivered**

1

**Teaching hours per week**

4

**Level of course unit (for ex., Second cycle – Master level)**

Master level

**ECTS credits**

5

**Admission requirements:**

Language test held by the Department of Foreign Languages

**Course objectives (aims)**

The course is aimed at:

– presenting a survey of emerging trends in computer science and IT;

– developing the skills of conscious choice of research area in the field of computer science;

– promoting interdisciplinary research and collaboration.

**Course contents**

Emerging trends in computer science.

Data mining and Big Data analytics.

Ontologies for knowledge management.

Natural language generation.

Artificial intelligence.

Virtual, augmented and mixed reality.

Blockchain technologies.

Digital twins and Internet of Things.

Cloud, fog and edge computing

Quantum computing.

**Learning outcomes**

 *Knowledge:* research methods in information systems; advanced technologies in information systems; software and hardware for information systems.

 *Skills*: take use of recent advances in research methodology and technologies in information systems for solving professional problems.

 *Abilities*: use scientometrics methods for evaluating state-of-the art in information systems.

**Planned learning activities and teaching methods**

Lectures with a variety of examples and practice, problem-based learning, laboratory assignments

**Assessment methods and criteria**

Exam as a final assessment (40%)

Activities during the lectures (10%)

Practice and seminar work (30%)

Test (20%)

Excellent 85-100, Good 71-85, Marginal 60-70, Fail <60

**Course literature (recommended or required)**

*Required*

1. Fedoseev, C. V. Modern problems of Applied Informatics: textbook / C. V. Fedoseev. - Moscow: Eurasian open Institute, 2011. – 272 p. ISBN 978-5-374-00524-0

http://www.iprbookshop.ru/10830.html

2. A. Gurchikova. Fields of application of new information technologies - Moscow: Laboratory of the Book, 2012. – 96 p. ISBN: 978-5-504-00071-8

http://biblioclub.ru/index.php?page=book&id=141456

*Recommended*

3. Gubina, G. G. Computer English=Computer English. Part II. English for Specialists : textbook / G. Gubin. - Moscow : Direct Media, 2013. - Part II. English for specialists. - 422 p. - ISBN 978-5-4458-3839-5.

http://biblioclub.ru/index.php?page=book&id=211413

4. Iksanov, M. G. English for students of programming : educational-methodical manual / M. G. Iksanova. - Moscow : Eurasian open Institute, 2011. - 103 p. - ISBN 978-5-374-00465-6.

http://biblioclub.ru/index.php?page=book&id=90376

5. Informatics : laboratory practice in English=Informatics. Laboratory workshop on English language : laboratory workshop / ed.-comp. V. I. Lebedev, I. V. Lebedeva ; Ministry of education and science of the Russian Federation, North-Caucasus Federal University. - Stavropol : North Caucasus Federal University. - Stavropol : North Caucasus Federal University, 2018. 153 p.

http://biblioclub.ru/index.php?page=book&id=494708

*Serial publications*

6. ComputingEdge Magazine, IEEE https://www.computer.org/publications/computing-edge/current-issue

7. Computer Magazine, IEEE https://www.computer.org/csdl/magazine/co

8. Advances in Computer Science Research, Conference Proceeding Series, https://www.atlantis-press.com/proceedings/series/acsr