



RTU Course "Computer Technologies in Telecommunications"

13104 Telekomunikāciju tīklu katedra

General data

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| Code | RAE473 |
| Course title | Computer Technologies in Telecommunications |
| Course status in the programme | Compulsory/Courses of Limited Choice |
| Course level | Post-graduate Studies |
| Course type | Academic |
| Field of study | Electronics and Telecommunications |
| Responsible instructor | Tālis Celmiņš |
| Volume of the course: parts and credits points | 1 part, 3.0 Credit Points, 4.5 ECTS credits |
| Language of instruction | LV, RU, DE |
| Possibility of distance learning | Not planned |
| Abstract | The objective of the course is to enable students to construct software by means of systematic object-oriented analysis and design. The course covers the methods for object-oriented analysis and modelling of application domains and software systems. The analysis includes description of objects and their structuring and functional specifications. The design will include the system modelling with layering and partitioning. |
| Goals and objectives of the course in terms of competences and skills | <p>To master the following knowledge:</p> <ul style="list-style-type: none"> •subject-related terminology •working algorithms of telecommunication systems •basics for building TMN •basics for building CORBA •modelling and usage of expert systems <p>To acquire the following skills:</p> <ul style="list-style-type: none"> •operation of real telecommunication systems and networks •compilation of operational algorithms in SDL and UML languages •simulation of operational algorithms with Petri and neuron network programs |
| Structure and tasks of independent studies | <p>Independent work has been intended for:</p> <ul style="list-style-type: none"> • studying lecture notes • carrying out tasks to develop certain skills • mastering Petri, neuron and CORBA software |
| Recommended literature | <p>1. ITT materiāli ORTUSā</p> <p>2. Telekomunikāciju tīklu vadība.</p> <p>T. Celmiņš. Latvija un perspektīvās telekomunikāciju tehnoloģijas: zinātniski- praktisko rakstu krājums. Rīga, RTU, Telekomunikāciju institūts, 1999.</p> <p>3. Telekomunikāciju tīklu teorija. J. Ločmelis R.: RTU, 1996.</p> <p>4. Handbuch für die Telekommunikation.</p> <p>Herausgegeben von Volker Jung . Hans- Jürgen Warneke. Springer, 1998.</p> <p>5. Telecommunications Transmission Handbook. Freeman, Roger L. Wiley & Sons. 1998.</p> <p>6. An introduction to Database system.</p> <p>(Русский перевод. Киев, 1998.) C. J. Date Addison-Wesley Lonman, Inc., 1995.</p> <p>WEB izmantojamie materiāli</p> <p>7. ftp://ftp.liis.lv/macmat/matemat/algebra/</p> <p>8. http://www.2cool4u.ch/network_management/tmn_uebersicht/tmn_uebersicht.htm</p> <p>9. http://www.tinac.com/about/principles_of_tinac.htm</p> <p>11. http://en.wikipedia.org/wiki/SQL</p> <p>12. http://www.cs.wustl.edu/~schmidt/corba-overview.html</p> <p>Programmatūras un apraksti</p> <p>13. http://www.informatik.uni-hamburg.de/TGI/PetriNets/tools/db.html</p> <p>14. http://www.informatik.uni-hamburg.de/TGI/PetriNets/tools/java/</p> <p>15. http://www.neurosolutions.com/products/ns/</p> <p>16. http://www.bestsoftware4download.com/s-axbrotrc-sql-software.html</p> <p>17. http://www3.acadlib.lv/greydoc/Lindes_disertacija/Linde_Sum_lat.doc</p> <p>18. http://209.85.129.104/search?q=cache:sVNg7Dz1dAgJ:www.ltn.lv/~strods/+SDL&hl=lv&ct=clnk&cd=18&lr=lang_lv</p> |
| Course prerequisites | Computer Studies. Digital electronics and computer architecture. |

Course outline

| Theme | Hours |
|--|-------|
| Formal languages and algorithms. Automata and SDL languages. | 12 |
| Network simulation. Petri and neuron network software. | 10 |
| Intellectual networks. Types of services. | 6 |
| Telecommunications network management. TMN and TINA. | 6 |
| Common Object Request Broker Architecture. CORBA software. | 10 |
| Expert systems. | 4 |

Learning outcomes and assessment

| Learning outcomes | Assessment methods |
|--|-------------------------------|
| Students are able to demonstrate their knowledge of algorithm improvements. | Practical classes. Test work. |
| Students are able to compile telecommunications network management algorithms. | Practical classes. Test work. |
| Students are able to modulate telecommunications network management algorithms. | Practical classes. Test work. |
| Students are able to simulate telecommunications network management algorithms by using Petri networks. | Test work. |
| Students are able to simulate telecommunications network management algorithms by using neuron networks. | Test work. |
| Students are able to perform telecommunications network management programming with UML. | Practical classes. Test work. |

Study subject structure

| Part | CP | ECTS | Hours per Week | | | Tests | | |
|------|-----|------|----------------|-----------|------|-------|------|------|
| | | | Lectures | Practical | Lab. | Test | Exam | Work |
| 1. | 3.0 | 4.5 | 2.0 | 0.0 | 1.0 | | * | |