|  |  |  |
| --- | --- | --- |
| **Course title: Networks and computer architectures** | **Credits\* 5** | **Course code**  **-** |
| **Type of the course**  **EQFS level: 5th**  Lecture 0/week  Practice 2/week | **Assessment:**  Examination 50%  Assignment 50%  Approval 65% | |
| **Semester** (according to the standard curriculum): 1 | | |
| **Course availability** (according to the standard curriculum): Autumn | | |
| **Language of instruction** (if not in Hungarian): **English** | | |
| **Prerequisites** (according to the standard curriculum): English B2 | | |
| **Type of the course** (compulsory, obligatory elective, free elective): **compulsory** | | |
| **Course schedule**: <http://www.kodolanyi.hu/neptun/> | | |
| **Course objectives:**  The aim of this course is to develop an understanding about computer network organization and implementation, and to obtain a theoretical knowledge of data communication and networking components. The course will help to understand fundamental technical terms relating to communication models, protocols, standards, etc. Students should be able to demonstrate the ability to identify different computing architectures like client-server, peer-to-peer, distributed, cloud, etc.  **Learning outcomes**:  ***Knowledge:***  Students will be able to describe the structure of various computer networks and to implement communication protocols based on demand. They will be able to define technical terms sufficiently, identify common challenges, present effective and efficient solutions, compare and contrast alternative approaches.  ***Skills***  Developing knowledge about the planning, implementation and quality assurance phases of a particular task. Analyzing and understanding documentations and other written materials at a granular level for generalization purposes. Giving short presentations on assigned topics and cases.  ***Attitudes***  Demonstrate a good ability to familiarize themselves with any new environment, programming language, toolkit, library, framework, etc. More professional approach to create software solutions at a desired efficiency and quality level.  ***Generic Attitudes***  Contribute to discussions and ask relevant questions concerning the current topics.  Formulating independent opinions in a critical manner.  Willingness to closely work together and to provide insight for each other in a small group.  Improvement in analysing potential operational and security concerns.  **Foreign language competences**  Students can function independently and with a great deal of precision on a wide variety of subjects and in almost any setting without any prior preparation.  1. Can understand a wide range of demanding, longer texts, and recognize implicit meaning.  2. Can express ideas fluently and spontaneously without much obvious searching for expressions.  3. Can use language flexibly and effectively for social, academic and professional purposes.  4. Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices.  **Course content:**  1, Introduction and overview  2, Network settings and traffic monitoring  3, LAN, WAN, the Internet  4, OSI communication model  5, Protocols and standards  6, HTTP(S)  7, TCP, UDP  8, Addressing  9, Routing  10, Data loss, recovery and security  11, Architecture basics  12, Common computer architectures  **Teaching methods:**  This course will combine offline and online collaborations, lectures, case studies, personalized assignments, oral presentations.  **Assessment & Grading:**  Pass  Pass grade is given to the student who knows the significant parts of the course on a satisfactory level and is able to demonstrate an acceptable level of familiarity in the application of the content.  Satisfactory  Satisfactory grade is assigned to the student who knows significant portions of the subject matter of the course and is able to apply them with suitable safety.  Good  Good grade is assigned to the student who thoroughly knows the entire subject matter of the course and can safely apply its content.  Excellent:  Excellent grade is assigned to the student who thoroughly knows the entire subject matter in all of its inherent relationships and is able to independently apply his/her knowledge with absolute certainty.  **Department/faculty responsible for the course: Department of Informatics** | | |
| **Required average students’ working hours** (number of credits multiplied by 30):  **150 hours**  **Individual assignments** (expected number of hours and list of activities):  20 contact hours  -preparation to presentation, once in a semester 4 hours  -processing of readings: 2 hours per week  -preparation for the revision: one hour per week | | |
| **Compulsory reading (1):**  - Computer Networks <https://faculty.ksu.edu.sa/sites/default/files/computer_networks_-_a_tanenbaum_-_5th_edition.pdf>  **Recommended reading (2):**  - Basic computer architectures <https://www.cse.iitd.ac.in/~srsarangi/archbook/archbook.pdf>  - Computer Networking <https://www.ucg.ac.me/skladiste/blog_44233/objava_64433/fajlovi/Computer%20Networking%20_%20A%20Top%20Down%20Approach,%207th,%20converted.pdf> | | |
| **Course leader:** dr. Pitlik László  **Lecturers:** Pitlik Mátyás | | |