

*Only the german version of the module description as part of the study regulations is legally binding.*

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| Module name                     | <b>Internet Measurements</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Module number                   | INF-25-Ma-FSA-IM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Responsible lecturer            | Prof. Dr. Matthias Wählich<br>matthias.waehlich@tu-dresden.de                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Qualification objectives        | Students know practical methods for measuring and evaluating globally distributed communication infrastructures, services and applications that are offered and used by different parties. They know the technologies, concepts and protocols required for operation, can design measurements and experiments and analyze networks. They are able to identify the associated challenges, have basic knowledge in the field of network and internet security and are able to analyze large data sets efficiently.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Content                         | The module covers the internal structure of the internet and the distribution of the services and applications based on it. The focus is on measurement methods based on current research results in order to better understand the typical implementation of current communication standards and their further development on the global Internet. Furthermore, concrete examples of the dissemination of traditional and new network protocols, for example BGP, IPv6, DNSSEC and QUIC, their quantification and limits are included.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Teaching and learning methods   | The module comprises lectures of 2 SWS, exercises of 2 SWS and the self-study. The teaching language of the lectures and exercises may be German or English and will be determined by the lecturer at the beginning of the semester and announced in the usual manner.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Prerequisites for participation | In the Diploma degree program in Computer Science and in the Bachelor's degree program in Computer Science, the competencies to be acquired in the modules INF-25-Ba-Prg Programming and RoboLab, INF-25-Ba-RN Computer Networks, INF-25-Ba-Si Security, INF-25-Ba-SWT Software Technology, INF-25-Ba-DMF Data Management Foundations and INF-25-Ba-KI Artificial Intelligence are required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Applicability                   | The module is a compulsory elective module in the field of Systems Architecture in the Diploma degree course in Computer Science in the main study program, which is to be selected in accordance with Appendix 2 to the examination regulations. It is to be selected in accordance with Appendix 2 to the examination regulations. In the Bachelor's degree program in Computer Science, the module is a compulsory elective module in the subject area specialization, which must be selected in accordance with the appendix to the examination regulations. In the Master's degree program in Computer Science, the module is a compulsory elective module in the Open Track in the subject area of Systems Architecture and the supplement, which must be selected in accordance with Annex 2 to the examination regulations, and in the Distributed Systems Engineering Track, which must be selected in accordance with Annex 3 to the examination regulations. The module can only be selected once in the |

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|                                        | <p>Master's degree program in Computer Science. The module cannot be selected in the Master's degree course in Computer Science if this module or a module with essentially the same content from a degree course with which the admission requirements according to Section 3 of the study regulations have already been fulfilled situations have already been completed. The module fulfills the prerequisites for the modules listed at under prerequisites for participation.</p>                                   |
| Requirements for earning credit points | <p>Credit points are earned if the module examination is passed. The module examination consists of an ungraded complex assignment of 45 hours and a written examination of 90 minutes duration. A bonus achievement for the written examination is the completion of 15 hours of practical work. The examination language of the complex assignment and the written examination may be German or English and will be specified by the lecturer at the beginning of each semester and announced in the usual manner.</p> |
| Credit points and grades               | <p>6 credit points can be earned through the module. The module grade is calculated from the unweighted average of the grades of the individual examinations, taking into account Section 15 (1) sentence 6 of the examination regulations.</p>                                                                                                                                                                                                                                                                          |
| Module frequency                       | <p>The module is offered every winter semester.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Workload                               | <p>The total workload is 180 hours.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Module duration                        | <p>The module comprises one semester.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |