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| <b>Module Name</b>                                  | <b>Security</b>                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Module Number</b>                                | INF-IST-E-Si                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Responsible Lecturer</b>                         | Prof. Dr. Florian Tschorsch<br>florian.tschorsch@tu-dresden.de                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Qualification Objectives</b>                     | Students acquire fundamental skills to identify security risks, analyze them, and design appropriate protective measures. In particular, they can define security objectives and conduct attacker modeling. They understand the basic principles and mechanisms of symmetric and asymmetric cryptographic methods. Additionally, they possess fundamental knowledge in the field of data protection and can name requirements and mechanisms. |
| <b>Contents</b>                                     | The module covers the fundamentals of IT security in general, as well as data security and data protection in particular. This includes typical vulnerabilities, attacker models, security objectives and their interdependencies, as well as various types of security mechanisms and protocols to enforce security objectives. Furthermore, the basic principles of cryptographic methods are part of the module.                           |
| <b>Teaching and Learning Forms</b>                  | 2 hours per week of lectures, 2 hours per week of exercises, and self-study.                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Prerequisites for Participation</b>              | The competencies to be acquired in the modules Introduction to Analysis and Algebra, Multidimensional Differential and Integral Calculus, Discrete Structures, as well as Algorithms and Data Structures are required.                                                                                                                                                                                                                        |
| <b>Usability</b>                                    | The module is an elective module from the elective area "Orientation" according to § 6 paragraph 3 of the study regulations and § 33 paragraph 3 of the examination regulations of the main study program in the diploma program Information Systems Engineering. It creates the prerequisites for the modules that list this module in the field "Prerequisites for Participation."                                                          |
| <b>Prerequisites for the Award of Credit Points</b> | Credit points are awarded when the module examination is passed. The module examination consists of a written exam lasting 90 minutes.                                                                                                                                                                                                                                                                                                        |
| <b>Credit Points and Grades</b>                     | 5 credit points can be earned through the module. The module grade corresponds to the grade of the examination performance.                                                                                                                                                                                                                                                                                                                   |
| <b>Frequency of the Module</b>                      | The module is offered every winter semester.                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Workload</b>                                     | The total workload is 150 hours.                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Duration of the Module</b>                       | The module lasts one semester.                                                                                                                                                                                                                                                                                                                                                                                                                |