1. **Course number and name**  
   CptS 422: Software Engineering Principles II

2. **Credits and contact hours**  
   3 credits, 3 lecture hours

3. **Instructor’s or course coordinator’s name**  
   Haipeng Cai

4. **Textbook, title, author, and year**  

5. **Specific course information**  
   a. **Catalog description:** Dependable software systems; software verification and validation, testing; CASE environments; software management and evolution.  
   b. **Prerequisites or corequisites:** Certified major in CptS, CE, EE, or SE, have finished CPT S 321 with a C or better or CPT S 323 with a C or better; CPT S 322 with a C or better;

6. **Specific goals for the course**  
   By the end of the course, students will be able to  
   - Describe different test levels and testing objectives (3a, 3e).  
   - Apply test methods for the different phases of development and life cycle of the software (1a, 1b, 2c, 2e, 5b, 5d, 5f, 5g, 6b).  
   - Identify coverage and acceptance criteria for the tests based on the programming activities and the phase of development (1b, 2c, 6c, 6d).  
   - Assess the quality and reliability of the software system (6a, 6b, 6c, 6d).  
   - Plan and appropriately document for software testing activities (3a, 3c, 7a, 7b, 7d, 7e).

7. **Brief list of topics to be covered**  
   - Fundamental software testing concepts  
   - Different test levels (e.g., unit testing, integration testing, system testing)  
   - Objectives of testing: acceptance testing, installation testing, alpha/beta testing, performance testing, etc.
● Testing techniques (e.g., black box, white box, mutation testing, etc.)
● Reliability evaluation
● Test-related measures (e.g., fault density, mutation score)
● Test planning and documentation