# Advanced Design and Programming

| 1 | Modulbezeichnung | OSS-ADAP | 5 ECTS |
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| 2 | Lehrveranstaltungen | OSS-ADAP-VUE | 4 SWS |
| 3 | Dozenten | Prof. Dr. Dirk Riehle, M.B.A. | |

| 4 | Modulverantwortlicher | Prof. Dr. Dirk Riehle |
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| 5 | Inhalt | This course teaches principles and practices of advanced object-oriented design and programming. Dieser Kurs wird auf Deutsch gehalten. It consists of a weekly lecture with exercises, homework and self-study, totaling 4 SWS, 5 ECTS. This is a hands-on course and students should be familiar with their Java IDE. Students learn the following concepts: <ul><li>Class-Level<ul><li>Method design</li><li>Class design</li><li>Classes and interfaces</li><li>Subtyping and inheritance</li><li>Implementing inheritance</li><li>Design by contract</li></ul></li><li>Collaboration-Level<ul><li>Values vs. objects</li><li>Role objects</li><li>Type objects</li><li>Object creation</li><li>Collaboration-based design</li><li>Design patterns</li></ul></li><li>Component-Level<ul><li>Error handling</li><li>Meta-object protocols</li><li>Frameworks and components</li><li>Domain-driven design</li><li>API evolution</li></ul></li></ul> The running example is the photo sharing and rating software Wahlzeit, see https://github.com/dirkriehle/wahlzeit. |

| | | Class is held as a three hour session with a short break in between. The class iterates over short lectures, discussion, and exercise chunks of 10-30min each. Students should bring a laptop with a working Java programming setup. |
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| | | The overall schedule can be found at http://goo.gl/bePPn. Please sign up for the course on StudOn (link accessible through schedule spreadsheet) as soon as possible. |
| 6 | Lernziele und Kompetenzen | <ul><li>Learn to recognize, analyse, and apply advanced concepts of object-oriented design and programming</li><li>Learn to work effectively with a realistic tool setup, involving an IDE, configuration management, and a service hoster</li></ul> |
| 7 | Voraussetzungen für die Teilnahme | <ul><li>INF-AuD</li></ul> |
| 8 | Einpassung in Musterstudienplan | ADAP primarily targets Informatik Bachelor students in the final semesters. It can also be taken by Informatik Master and Wirtschaftsinformatik/Information System students. ADAP is also available to other degree programs, please see UnivIS for more details. |
| 9 | Verwendbarkeit des Moduls | Primarily as lecture + exercise, see UnivIS for details. |
| 10 | Studien- und Prüfungsleistungen | <ul><li>In-class participation</li><li>Homework assignments</li></ul> |
| 11 | Berechnung Modulnote | <ul><li>Classwork (40%) + homework (60%)</li></ul> |
| 12 | Turnus des Angebots | Every two semesters |
| 13 | Wiederholung der Prüfungen | - |
| 14 | Arbeitsaufwand | 5 ECTS |
| 15 | Dauer des Moduls | 1 semester |
| 16 | Unterrichtssprache | Deutsch |
| 17 | Vorbereitende Literatur | See http://goo.gl/BZpU8 |