

24.07.2017

## VC Course “Software Technologies Research Group, Current Information

In order to support those students completing one or more modules offered by the Software Technologies Research Group (SWT), we have set up this VC course to compile important information pertaining to SWT’s structure and teaching programmes. We are particularly interested in presenting you with the criteria and expectations to which students are held, and, conversely, to make clear what you can and should expect from our staff. In this way, potential misunderstandings can be avoided before a module begins. Additionally, this VC course provides a summary of possible topics for projects and theses, and also includes information on employment opportunities in our research group.

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### Announcements

With the help of this VC course’s the students will be informed about recent news of the Software Technologies Research Group. Additional information can be found on the [SWT website](#).

## Module Announcements and Materials

As is customary, all modules offered by SWT are announced in the [WIAI faculty's module handbooks](#) for each offered degree (these are published each summer) – and also on the [group's website](#) prior to the start of each semester. Please read the descriptions of individual modules carefully, as these contain important information including prerequisites, type of examination, module curriculum and required reading.

All study materials and announcements pertaining to a particular module are distributed via the [Virtual Campus \(VC\)](#). Please register for the VC course corresponding to your module at the start of the semester. A rough schedule of the module can be found in the [UnivIS](#) system, but you should always refer to the VC course for more detailed schedules and current information.

## Examination Registration and Cancellation

Please register for module examinations using the [FlexNow system](#). For central examinations organised by the university's Office of Examinations (e.g. for the modules *Software Engineering for Information Systems* and *Foundations of Software Engineering*), please follow the instructions provided on the [Examinations Office's website](#). For all other examinations (particularly those pertaining to oral exams (colloquia), you can also register via FlexNow until four weeks before the exam, and if necessary, you may cancel your registration until one week before the exam. In case you experience any problems with examination registration or cancellation, please contact the Examinations Office directly.

If you are not able to attend an examination for which you are registered or for which you have arranged an individual appointment, please inform the [group's secretary](#). If you cannot attend for medical reasons, please submit the appropriate medical certification (to the Examinations Office for centrally organised exams, and to the group's secretary for all other exams) at the earliest opportunity. For further information, please visit the [Examinations Office's website](#).

## Module Preparation

You should always arrive to your courses well prepared: this is true of all course formats, regardless of whether you are attending a practical session, a seminar or a project meeting. As a rule, a maximum of one third of a module's intended working time (30 hours per ECTS point, as per national guidelines) is scheduled as time in class (e.g. 60 hours = 4 lesson hours per week per semester in a module comprising 6 ECTS), and two thirds are intended for independent study (meaning 120 hours for the previously-mentioned example).

Experience has shown that most students do in fact need the full amount of intended independent study time in order to optimally prepare for and pass examinations. Among other things, independent study includes:

- Revision of lectures/practical sessions, including review of presentation slides, module literature and relevant materials;

- Preparing exercises, including the creation of task cards and the revision of terminology and techniques introduced in the module;
- Examination preparation, including revising module content and practising the types of tasks relevant to the exam.

You may expect from your instructors that they are always well prepared, familiar with the subject matter, happy to answer any relevant questions you might have, and that they provide constructive feedback on your participation and submitted course work.

## Course Etiquette

Generally speaking, SWT course attendance is not compulsory. Exceptions include seminars and – when specified in the corresponding VC course – team project meetings.

We expect you to be an active participant in order to learn and understand the subject matter at the highest level possible. An academic course meeting is not the place to check your email, surf the web, text with friends or update your Facebook account. This will not only distract you and subsequently detract from your own academic achievement, but it is also inconsiderate to your instructor and fellow students.

The use of a laptop computer during a course should be limited to the annotation of digital materials and note taking. It is however always necessary to come prepared with a notebook and something with which to write. Furthermore, making audio or video recordings of course sessions is not permitted.

In class, you should feel free to ask any questions that you might have. If there is insufficient time to discuss your questions during the seminar session, it is also possible to meet with your instructor during his or her weekly office hour. These office hours can be found on the [instructors' individual web pages](#).

## Term Papers

Term papers are written academic work and are therefore subject to the rules of good academic practice – especially with regard to the fair and correct citation of others' work. Furthermore, instructors expect term papers to be written in an academic style befitting the subject matter. For detailed information, we encourage you to review our documents concerning academic writing provided in the VC bachelor's module [Wissenschaftliches Arbeiten in der Informatik \("Scientific Methods", IAI-WAI-B\)](#) and to research the guidelines presented in various textbooks dealing with the subject.

Term papers may be written in either German or English and should adhere to any guidelines and format preferences provided by course instructors. If no model documents are provided, you may use the department's generic templates: *LaTeX-template*, or *Word-template*. In either case, your finished term paper must include a dated, signed statement asserting that all work therein was completed independently using only the documented source literature and aids. Term papers are to be submitted to either the [group's secretary](#) or deposited in the group's mailbox by the specified deadline; term papers received after the deadline will be awarded *no credit* if you do not submit a medical certificate to the secretary or make other specific ar-

rangements with the course instructor. Please make sure to include your name and student registration number on the cover of your term paper and to staple all pages together. Please address any queries concerning term papers to your instructor via email: answers, insofar as they are of relevance for other students, will be posted in the module's VC course.

In most cases, the examination type pertaining to term papers falls under the "term paper and colloquium" or "term paper with colloquium" classification. This means that these two elements are treated as a single unit, with only one mark awarded (rather than two marks for two examination segments). The colloquium is a discussion of the term paper that is specifically meant to determine how fully and independently you have researched and presented your chosen topic. The formalities of colloquia (e.g. duration, etc.) are specified in the degree programmes' [module handbooks](#). Advance notice of colloquium schedules will be made in each module's [VC course](#).

## Seminars

In a seminar module, you will delve into a specific academic topic on the basis of the pertinent expert literature chosen and provided by your instructor. You will be expected to research additional literature yourself – independently at master's level, and with instructor's guidance at the undergraduate level.

All available presentation and term paper topics in a given seminar are subordinate to an overarching main topic and will be introduced in the first week of the semester. Seminar session schedules will be announced in the corresponding [VC course](#) as early as possible to allow you time to plan your timetable. Taking your personal interests and preferences into account, your instructor will assign topics in the second week of the semester. If you should decide that you want to change your topic, please do this no later than the end of the second week of the module; this will allow your instructor to assign your topic to another interested student.

Once you have been assigned a topic for the seminar, it is required that you first prepare and make a presentation (approx. 5-10 minutes) to your instructor and fellow students on that topic, and that you subsequently expand your topic into a 12 to 15-page term paper. SWT seminar instructors may schedule presentations for a block of time in the last third of the semester. Term papers are generally due one month after you hold your presentation. You will have the opportunity to discuss specific details with your instructor at the start of the semester, and further information will be announced in the VC. To successfully pass your seminar, you are required to attend all presentations, including those held by your fellow students. Your final mark will be a combined assessment of both your presentation and your term paper.

In order to discuss the topic and structure of your presentation and to receive feedback on your progress, it is extremely important that you maintain regular contact with your instructor throughout the preparation phase. We recommend five meetings: one each at the start and end of your literature research, again after you have created an outline of your presentation, and also once each after you have outlined and before you handed in your term paper. You can find all important information concerning presentations and term paper writing - including things to bear in mind when meeting with your instructor and the obligatory rules of good academic practice - in the bachelor's module materials on the VC at [Wissenschaftliches Arbeiten in der Informatik](#) ("Scientific Methods", IAI-WAI-B).

When creating digital presentation slides, please use either SWT's *LaTeX-beamer-package* or *Powerpoint-template* templates. All slides should be in English, and you may also give your presentation in English if you choose. Please send your instructor an email with a pdf copy of your presentation slides one day before your scheduled presentation, even if you will be using your own computer to present. Please be aware of SWT's rules and recommendations regarding term paper writing (*Hausarbeiten*), and be sure to use the provided document format.

## Projects

The SWT research group offers one-semester projects for bachelor's and master's students in *Applied Computer Science* (module SWT-PR1-B/M add MSc SoSySc project) and a two-semester project in the *Software Systems Science* bachelor's programme (module SWT-PR2-B); the latter can also be completed in one semester plus preceding and the following semester break. The available topics are based on the SWT group's current research interests in the fields of software modelling and analysis, and program verification; please contact a staff member for more information.

The rules of good academic practice also apply to all project work. You may write your project reports in either German or English. For further information on individual projects, please visit the corresponding course in the [VC](#).

## Final Thesis

The SWT research group supports bachelor's and master's theses on topics dealing with the fields of software engineering, programming languages, concurrency theory, as well as automatic verification and analysis. The following topics are currently available for master's and bachelor's students (with the topic scope adapted appropriately):

List of possible topics for Bachelor and Master theses offered by the SWT research group.

- [Obfuscation for dynamic data structures](#)
- [Verification of communicating systems by learning and abstraction refinement](#)
- [New back-ends for the C- \("C minus"\) compiler](#)
- [Implementing Modal Interface Automata](#)
- [Using hard disk storage in automated verification](#)
- [Evaluating caching strategies for symbolic model checking](#)
- [Graph-transformation system based models for asynchronous concurrent programming](#)
- [Verification of dynamic communicating systems](#)
- [Analysing and optimizing standard algorithms in state-of-the-art concurrent/parallel programming languages](#)

Please feel free to contact us if you have any topic proposal yourself that would render into our research group's teaching and/or research fields.

If you are interested in one are of these topics, please make an appointment with the indicated topic advisor in order to receive more information and to discuss how and to what extent your project can be adapted to your personal interests and prior knowledge.

What is generally involved in preparing and writing a final thesis, what you should bear in mind when communicating with your advisor and what exactly is meant by the rules of good academic practice is all information that can be provided by your advisor or that you can find on the VC in the *Wissenschaftliches Arbeiten in der Informatik* ("Scientific Methods" IAI-WAI-B) bachelor's module. Please note you may choose to write your thesis in either German or English and that you should use the appropriate format template (*LaTeX-template*) provided by the group.

All formalities concerning registering your thesis, permitted length of the writing period and the submission of completed work are defined in the appropriate examination regulations and by the Office of Examinations.

## Using SWT's Computer Labs

The SWT research group is equipped with both a small and a large computer lab (WE5/03.97 and WE5/03.98, respectively). The smaller lab, which is generally only available to students working on their final theses, is also our student assistants' workplace and houses our group's library. The larger of the two is a state-of-the-art computer lab with 12 workstations whose use is reserved for students in SWT module Linux that require computer work (e.g., the *Software Engineering Lab* and *Imperative Programming Using C* modules).

To work on the Linux computers, you will need a special SWT password. Please request your password by downloading and printing the [application form](#) from any computer connected with the university network and by signing and returning it to the appropriate instructor. Our group's technician will then set up your account.

The guidelines for use of the University of Bamberg's data processing systems and the university's general site rules and regulations apply to the use of the Software Technology Research Group's computer labs. Notices posted in our labs will inform you of important, sometimes supplementary, regulations set by SWT.

## Employment Opportunities for Students and Research Assistants

Our research group relies on the outstanding staff members who provide teaching and research support in the areas of software engineering, programming languages, software verification and program analysis. If you are a student in Bamberg and would like to get to know the inner workings of our group as a student assistant, or if you have completed a master's degree and are interested in pursuing a doctorate as a research assistant, please arrange to meet with [Prof. Gerald Lüttgen](#).

Current job openings for student assistants can be found at the [Hiwi-Börse on Feki.de](#), and openings for



research assistants can be found at [Jobbörse WIAI](#).

## Templates

Here you can find the latest templates for presentations and written reports (written assignments, project reports, theses, etc.)

- [Written reports \(LaTeX template\)](#)
- [Written reports \(Word\)](#)
- [Presentation slides \(LaTeX Beamer\)](#)
- [Presentation slides \(PPT\)](#)
- [Poster template](#)

Our research group is always happy to receive your feedback and suggestions concerning the information presented here. Feel free to send an email to our [group's secretary](#) or speak directly with a [member of my staff](#).

[Prof. Dr. Gerald Lüttgen](#)