Learning how to design high-level software that guarantees safety and correctness while still being in control of its complexity

Software plays a role in almost every aspect of our daily lives and in every organisation anywhere in the world. Producing software is not merely a technological enterprise but a deeply scientific and creative one as well. This specialisation goes far beyond basic code writing. It’s about analysing and testing code in order to improve it as well as simplify it.

Why study this specialisation at Radboud University?

- Although not the only focus, our programme puts a lot of emphasis on embedded software and functional programming.
- We don’t just expect you to understand and make use of the appropriate tools, but also to program and develop your own.
- Students can branch out to other Computing Science domains such as security, machine learning or more in-depth mathematical foundations of computer science.
- The Institute for Computing and Information Sciences (iCIS) has a strong international reputation in areas such as model based and virtual product development and advanced programming.
- We collaborate closely with leading Dutch high-tech companies like Océ Technologies, Philips Healthcare, ASML, and Thales.

change perspective
Programme outline (2 years, 120 EC)
The programme of this specialisation consists of:
• Compulsory courses (18 EC)
• Specialisation electives (24 EC)
• Specialisation-external electives (12 EC)
• Free electives (12 EC)
• Philosophy and Ethics for Computing and Information Science (3 EC)
• Research seminar (6 EC)
• Research internship (15 EC)
• Master’s thesis (30 EC)

Courses
Below you can find an overview of the compulsory courses and some examples of electives. Please have a look at the online prospectus (see ‘More information’) for more detailed information.

Compulsory courses
• Advanced Programming (6 EC)
• Model Checking (6 EC)
• Testing Techniques (6 EC)

Examples of specialisation electives
• Automated Reasoning (6 EC)
• Compiler Construction (6 EC)
• Model Checking (6 EC)
• Software Analysis (6 EC)
• Type Theory and Coq (6 EC)

Research
This specialisation is focused on research. First you’ll study scientific literature in the Research seminar. Next, during your Research internship, you’ll participate in a research project in a scientific group. And in the Master’s thesis you’ll carry out your own research project, under the close supervision of our expert staff. At Radboud University, you can for example take part in the research of the Institute for Computing and Information Sciences (ru.nl/icis) on topics like:
• Domain specific language
• Automata learning
• Model-based testing
• Task oriented and functional programming
• Model checking

You can also choose to perform an internship at another university, a company or a research institute. There are for example close contacts with the Max Planck Institute in Germany. For other possibilities, you can always contact a lecturer or the student advisor (see ‘More information’).

Your advantages on the labour market
The job perspective for our graduates is excellent: industry desperately needs software science specialists at an academic level. Several of our graduates decide to go for a PhD and stay at a university, but most of our students go for a career in industry. They typically either find a job at a larger company as consultant or programmer, or they start up their own software company. Examples of companies where our graduates end up include the big Dutch high-tech companies such as Océ, ASML, Vanderlande and Philips, ICT service providers such as Topicus and Info Support, and companies started by Radboud graduates, like GX Software.

Admission requirements
You are required to have a Bachelor’s degree in Computing Science or a closely related discipline. You must also have a sufficient proficiency in English. Students from a University of Applied Sciences (HBO) need to follow a pre-Master’s in Computing Science. Other additional deficiency programmes are tailor-made. For details, please visit the website or contact the student advisor (see ‘More information’).

Application procedure
The programme starts in September. The application deadline is 1 April for students from non-EU/EEA countries and 1 May for students from within the EU/EEA.

You apply for the Master’s programme in Computing Science via www.studielink.nl. After admittance to the Master’s programme, you can enrol for the specialisation in Software Science.

>>> More information
Prospectus: www.ru.nl/prospectus/sciencefaculty
Student advisor Computing Science: Perry Groot
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www.ru.nl/masters/softwarescience