Courses Taught

The number in parentheses following each year gives the number of course participants.

Operating Systems and Networks. 2009 (60). 2nd year undergraduate course, Department of Computer Engineering, Bergen University College. Course duration: 15 weeks. The course covers the fundamental principles of operating systems and TCP/IP networking. The course consists of 4-6 hours of lectures and 2 hours of exercises per week. The exercises are divided in two parts: one that emphasizes operating system concepts and one that provides hands-on experience with operating systems and networks, including JAVA network programming.

Operating Systems. 2005 (67), 2006 (49), 2007 (60). 2nd year undergraduate course, Department of Computer Science, University of Aarhus. Course duration: 7 weeks. The course covers the fundamental principles of operating systems. The course consists of 4 hours of lectures and 4 hours of exercises per week. The weekly exercises are divided in two parts: one that emphasizes operating system concepts and one that provides hands-on experience with operating systems, including C programming. A set of small mandatory projects has been developed for the latter part where the participants make modifications and extensions to the Linux kernel. Course web page (in Danish): www.daimi.au.dk/~kris/dOpSys/.

Coloured Petri Nets – Modelling and Validation of Distributed Systems. 2005 (9), 2006 (33), 2007 (27), 2008 (22). Graduate course, Department of Computer Science, University of Aarhus. Duration of the course is 7 or 14 weeks. The course introduces the Coloured Petri Nets (CPN) language and associated analysis methods for modelling, verification, and performance analysis of distributed systems. The first seven weeks is a combination of conventional lectures covering the CPN modelling language and workshops where the participants use the CPN Tools computer tool for practical modelling and validation of relatively simple examples of distributed systems. Participants following the last seven weeks conduct a project applying the modelling language and analysis methods to real-life distributed systems. Course web page: www.daimi.au.dk/~kris/CPN/.

Network Protocols and Internetworking. 2004 (23), 2005 (50), 2006 (73), 2007 (30). Graduate course, Department of Computer Science, University of Aarhus. Duration of the course is 7 or 14 weeks. The first seven weeks of the course covers the principles of Internetworking and the Internet Protocol including, addressing, forwarding, routing protocols, and mobile networks. Course participants conduct two smaller projects: one on JAVA network programming and a series of laboratory exercises using the Virtual Internetworking Environment (VINE) that was developed as part of the course. VINE provides a virtual IP laboratory allowing students to get hands-on experience with IPv4 and IPv6 protocol analysis and network configuration. Participants following the last seven weeks conduct a larger project on the design and implementation of communication infrastructure, software, and protocols. Course web page: www.daimi.au.dk/ＮPaI/.
Machine Architecture / Computers and Networks. 2004 (137), 2005 (129), 2006 (121), spring 2007 (96), fall 2007 (110), fall 2008 (130). 1st year undergraduate course, Department of Computer Science, University of Aarhus. Course duration: 7 weeks. The course cover computer organization and architecture including, gates and circuits, micro-architecture, machine code, assembly languages, virtual machines, and integer representation and arithmetic. The course consists of 4 hours of lectures and 4 hours of exercises per week. The weekly exercises are divided into two parts: one that emphasizes computer organisation concepts and one that provides hands-on experience involving assembly language programming, C programming, and JAVA network programming. A set of smaller mandatory projects are used for the latter part. Course web page (in Danish): www.daimi.au.dk/~kris/dMasArk/.

Computer Science in Perspective. 2007 (76), 2008 (85). 1st year undergraduate course, Department of Computer Science, University of Aarhus. Course duration: 7 weeks. This course gives a broad introduction to the many aspects of computer science and is given jointly by researchers at the department of computer science and the University of Aarhus. One week was focussed on modelling and validation of concurrent systems and consisted of two lectures and a one-day open learning center.

Advanced Data Network Protocols. 2004 (14). Graduate course, Department of Computer Science, University of Aarhus. Duration of the course was 14 weeks. This is an earlier version of the course Network Protocols and Internetworking described above.

Computer Architecture and Operating Systems. 2002 (80), 2003 (66). 2nd year undergraduate course, Department of Computer Science, University of Aarhus. Duration of the course was 14 weeks. This course is a predecessor of the courses on Machine Architecture and Operating Systems described above.

System Design Techniques. 2001 (app. 40), 2002 (app. 40). Final year course, School of Electrical and Information Engineering, University of South Australia. This course introduced the Petri net formalism for modelling and analysing discrete event systems. The course also covered high-level Petri nets in the form of Coloured Petri Nets. The content of the course is very similar to the course on Coloured Petri Nets described above.

Modelling and Validation of Network Protocols. 1998 (8), 1999 (11). Graduate course, Department of Computer Science, University of Aarhus. This is an earlier version of the course on Coloured Petri Nets – Modelling and Validation of Distributed System described above.

EXAMINATIONS

UNDERGRADUATE COURSES


**Computer Architecture and Operating Systems.** January 2003, January 2004. 30-minutes oral exam with 30 minute advance preparation time. The exam had 14 exam questions corresponding to the main topics covered in the course.

**Graduate Courses**


**System Design Techniques.** 2001, 2002. 4-hour written exam.

In addition to the above exams: 2 Honour’s Thesis exams, 20 Master’s Thesis exams, and 1 Ph.D. Qualification exam have been completed. See the list of theses supervised below for details.

**Theses Supervised**

**Ph.D. Theses**


Associate supervisor for Ph.D. students: S. Gordon, L. Liu, B. Han, and A. Singh, University of South Australia, 2000-2002. Main supervisor was Prof. Jonathan Billington.

**Master’s Theses**


S. Markert. *Internet Connectivity for Mobile Ad-hoc Networks.* Department of Computer Science, University of Aarhus. March 2008.


M. Skafte: *Geographically-based Services in Cellular Networks.* Department of Computer Science, University of Aarhus, January 2006.


C. Holst and J. Klitgaard: *Ethernet Audio-Video Streaming with Quality of Service.* Department of Computer Science, University of Aarhus, January 2006.


S. Bardin. *PARADOX: Computer-Aided Operational Level Planning.* School of Electrical and Information Engineering, University of South Australia, July 2002.

**Honour’s Theses**


**Course Development**

- Operating Systems.
- Network Protocols and Internetworking.
- Coloured Petri Nets – Modelling and Validation of Distributed Systems.
- Advanced Data Network Protocols.

A brief description of each course is provided above under Courses Taught.

**Textbooks and Teaching Material**

K. Jensen and L.M. Kristensen: *Coloured Petri Nets – Modelling and Validation of Concurrent Systems*. In preparation. To be published by Springer-Verlag. Drafts of this book have been used as teaching material in courses on Coloured Petri Nets at University of Aarhus, George Mason University (USA), and Technical University of Eindhoven (The Netherlands).

L.M. Kristensen and C. Storm: *VMware and dOpSys-Linux Guide*. This guide describes the VMware-based environment developed in the Operating Systems course that forms the basis for the practical projects involving modification and extensions to the Linux kernel.

L.M. Kristensen and P. Fleischer: *VINE: A Virtual TCP/IP Internetworking Environment*. This guide describes a virtual networking environment that we developed to be used as a basis for the practical projects and workshops in the Network Protocols and Internetworking course. Available via: [www.daimi.au.dk/~vine/](http://www.daimi.au.dk/~vine/)


In addition to the above, slide sets have been developed for use in the courses taught. These slide sets are available from the course web pages (see links given above).

**Pedagogical Activities**

Completed course on university-level teaching for assistant professors organised by the University of Aarhus. August, 2004.

Completed course on university-level supervision organised by the University of Aarhus. January, 2008.

**Other Teaching Activities**


Teaching assistant in the course on Coloured Petri Nets, 1996. Department of Computer Science, University of Aarhus.
The teaching portfolio is a document demonstrating the teaching skills, experience, merits and professional development of a university teacher. It is an official document in which educational experience and achievements are cited. Applicants for open positions are required to submit, in connection with the application, a teaching portfolio demonstrating their teaching skills. Applicants for professorships must submit the portfolio in English. The portfolio is one component of the application for the LUT researcher and tenure track career system, and it is utilized during the progression of on