Portfolio of Teaching Experience: 
Lars Michael Kristensen

September 21, 2007

Courses Taught

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

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. 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 (2007, in Danish): www.daimi.au.dk/dOpSys/.

Coloured Petri Nets – Modelling and Validation of Distributed Systems. 2005 (9), 2006 (33), 2007 (27) 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 (2007): 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 network programming and one on configuration of an IP network. Participants following the last seven weeks conduct a larger project on the design and implementation of communication infrastructures and protocols. Course web page (2006): www.daimi.au.dk/NPaI/.

Machine Architecture. 2004 (137), 2005 (129), 2006 (121), 2007(96). 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. A set of smaller mandatory projects are used for the latter part. Course web page (in Danish): www.daimi.au.dk/dMasArk/.
Computers and Networks. 2007 (110). 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, and basic concepts of computer networks. 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. A set of smaller mandatory projects are used for the latter part. Course web page (in Danish): www.daimi.au.dk/dMasArk/.

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

The number in parentheses following each year gives the number of examinees.

Undergraduate Courses


Machine Architecture. March 2004 (120), March 2005 (105), August 2005 (6), March 2006 (96), August 2006 (7), March 2007 (90), August 2007. 20-minute oral exam with no advance preparation. Grading according to the 13-scale. The exam had 6 exam questions corresponding to the six mandatory practical projects carried out in the course.


Graduate Courses

no advance preparation for participants following the 7 weeks version, and a 25-minute oral exam based on the project report for participants following the 14 weeks version.

**Network Protocols and Internetworking.** October 2004 (13), October 2005 (11), January 2006 (28), August 2006 (2), October 2006 (11), January 2007 (46) 20-minute oral exam with no advance preparation for participants following the 7 weeks version, and a 25-minute oral exam based on the project report for participants following the 14 weeks version.

**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. In progress.


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.


**Honour’s Theses**


**Course Development**

The following courses have been developed jointly with co-lecturers. A brief description of each course is provided above under COURSES TAUGHT.

Machine Architecture.

Operating Systems.

Network Protocols and Internetworking.

Coloured Petri Nets – Modelling and Validation of Distributed Systems.

Advanced Data Network Protocols.
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 has 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: *VNE: A Virtual TCP/IP Networking Environment*. This guide describes a virtual networking environment which forms the basis for the practical projects and workshops in the Network Protocols and Internetworking course.


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 4-day in course on university-level teaching for assistant professors organised by the University of Aarhus at Sandbjerg. August, 2004.

OTHER TEACHING ACTIVITIES


Teaching assistant in the course on Coloured Petri Nets, 1996. Department of Computer Science, University of Aarhus.

STUDENT EVALUATIONS

Available upon request.