

Lectures on Wireless and Mobile Networks

January 31 - February 8, 2017

The lecture will cover the broad area of Wireless and Mobile Networks. It will start with some introductory topics of wireless/mobile networks with an emphasis on why and how the challenges of these networks are quite different from the traditional wired networks. Then a review of several wireless channel access schemes will be done, in order to understand the 'wireless' dimension. It will be followed by discussing the actual Medium Access Control (MAC) layer techniques of current popular standards. To understand the 'mobile' dimension of these networks, a detailed overview of routing in mobile networks will be presented through the study of mobile ad hoc networks and its off-shoots.

The course will conclude by discussing some recent network architectures. In addition, worksheets and exercises will also be a part.

The lecture will be relevant to students having a computer science/electrical engineering background. The course is offered by Prof. Dr. Amir Qayyum in cooperation with Prof. Dr. Jürgen Pannek.



Organiser

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for Dynamics in Logistics (IGS)
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Agenda

31st Jan, 09:00-12:00: Introduction to wireless and mobile networks and their channel access schemes

1st Feb, 09:00-12:00: MAC layer techniques of IEEE 802.11 (WiFi), 802.16 (WiMax), 802.15 (Bluetooth)

3th Feb, 09:00-12:00: Routing in mobile adhoc networks and its variants (Part 1)

6th Feb, 09:00-12:00: Routing in mobile adhoc networks and its variants (Part 2)

7th Feb, 09:00-13:00: Overview of recent network architectures DTNs, SDN, WBANs, IoT.

10th Feb, 09:00-12:00: Presentation/Examination

Prof. Dr. Amir Qayyum is a professor at the Capital University of Science and Technology, Pakistan. He has both management and technical expertise with leadership skills to effectively lead a team; creative and visionary thought leader, numerous publications and co-author of an RFC in IETF (Internet Engineering Task Force) about mobile ad hoc networks. Expertise in network routing protocols, IPv4 and IPv6, wireless and mobile networking, IEEE 802.11 and 802.16, QoS, VoIP, IPSec and network security; good understanding of project management, HR development with personal leadership, finance, industrial psychology, organisational leadership, professional ethics, etc.

Organisational Hints

The course is open for all students of the University of Bremen. Depending on your study program, 3 CP may be offered for participation in the course including an examination. The course is also open for IGS and Erasmus Mundus fellows as well as for any doctoral candidate of LogDynamics. Please, register for the course via Stud.IP (04-M10-1-MET23 Wireless and Mobile Networks) or by sending an email to courses@IGS.LogDynamics.de

The International Graduate School for Dynamics in Logistics (IGS) at the University of Bremen offers the opportunity to complete an efficient, structured doctoral training program. The IGS pursues an interdisciplinary and cross-cultural approach to higher education.

The IGS is part of LogDynamics which builds a co-operating network of research groups originated from four faculties of the University of Bremen: Production Engineering, Business Studies/Economics, Mathematics/Computer Science, Physics/Electrical engineering.

Founded on specifications by supervisors or requirements by doctoral candidates, innovative complementary qualification measures have been developed, tested, evaluated and optimised. These explicitly include internationality, interdisciplinarity and the demands of the research area logistics.

The IGS offers different individual, interdisciplinary courses. Every course has one of two formats: either an ongoing course where a course unit takes place once every two weeks in an organisational period of approximately six months, or a workshop running from half a day up to two days. A course is structured into classes of typically five students (ongoing course) or twelve students (workshop).

Key qualifications can only be trained by repeated practical experience; thus the IGS ensures continuity of several of these measures to improve transferable skills.



Terms and Conditions of IGS Courses

Any registration for a course offered by the IGS is binding after you receive a confirmation for your application. You are expected to attend class without exception. If you cannot attend a specific class, please inform your group, the lecturer and the organiser in time, i.e. at least two days before the appointed date. If the participants do not observe this rule and the lecturer does not have any participants for a class, the group has to pay for the wasted time and money.

If you generally cannot attend class anymore or if you want to entirely cancel your participation in a course, please inform the organiser in time. The IGS will offer your place to someone else. Please, be aware that the entries in the IGS calendar are always up-to-date and binding. You will receive access to the calendar after registration for a course.

After any course, we will ask you for an evaluation. Please, fill in the evaluation sheet in time and return it to our main communication channel.

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Ongoing Courses of the IGS:

'Academic Writing', course with classes once or twice a month. Training in small groups tailored to the individual papers of the participants.

'Voice Development', course with monthly training in very small groups on improving the pronunciation in English.

A half-day workshop 'Leadership: Care and Growth Model through Intent' offered by the same lecturer, Prof. Qayyum.

Comments from participants of previous courses

'The content of lectures was very practical and useful for me. I think everyone who wants to work or do research in the field of logistics needs to know about these current issues and challenges in global production and logistics, apart from his/her own field of study. I found the lecture series really beneficial.'

'This is a precious opportunity to show and share ideas with so many professors and other friends who have different background.'