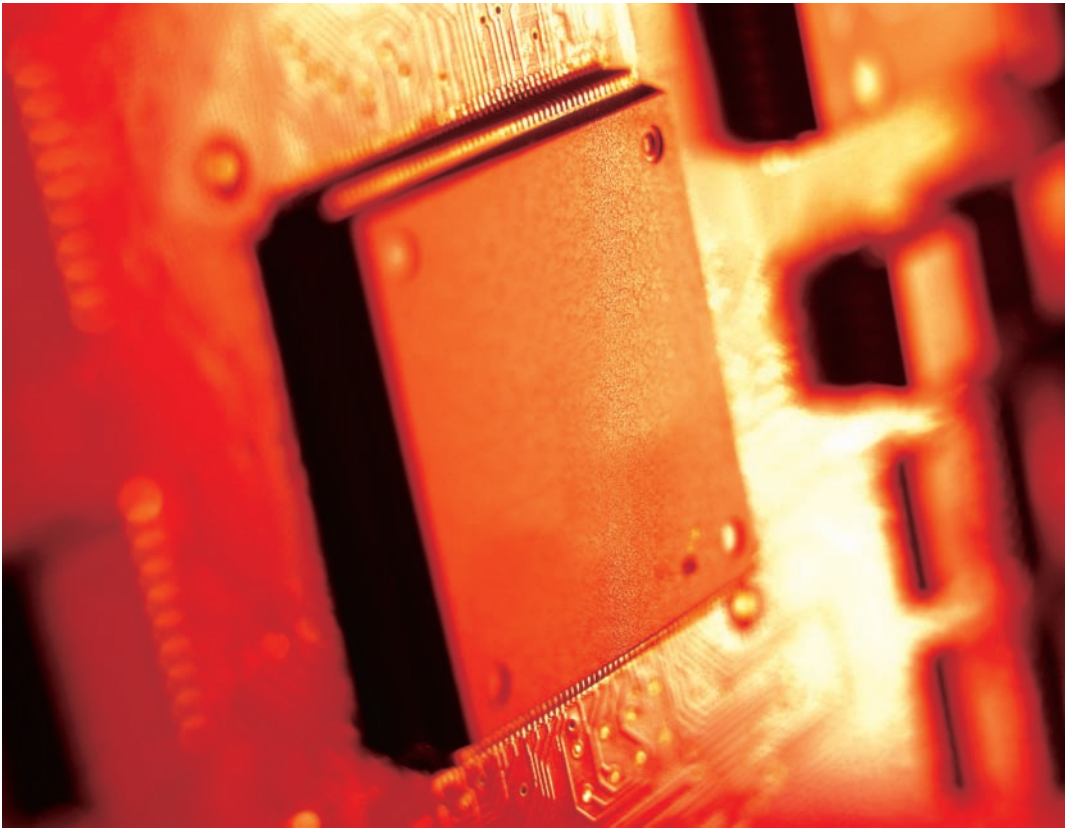
Department for
Continuing Education

UNIVERSITY OF
OXFORD

Technology Programme 2011

Short Courses for Professionals in:

High-Speed Digital Design	Electronics
Electronics	Management Skills for Engineers & Scientists
Telecoms & Mobile Technologies	Nanotechnology



www.conted.ox.ac.uk/technology Tel: +44 (0)1865 286 958 Email: technology@conted.ox.ac.uk

Technology Programme 2011

UNIVERSITY OF OXFORD

Our Programme

The University of Oxford offers one of the finest programmes of short courses for professionals in the global electronics and telecoms industries.

Our Presenters

Our course presenters are specialists in the areas they teach and are drawn from industry and academia around the world. Many of them are involved in cutting-edge research in the world of electronics and telecoms, and are internationally recognized.

Our Courses

The courses vary in length from one to five days. They are held at our main site at Rewley House and other venues around the historic University of Oxford. Thousands have attended our courses since the programme was established in 1989 and we continue to develop new courses as part of our ongoing commitment to education.

In-house Training

We are able to offer many of our courses as in-house company courses and can tailor a course specifically to your needs. This can be a particularly cost effective method if training a number of staff. Please contact us for details.

Sincerely,
Dr Will Moore, Academic Director
Lecturer, Department of Engineering Science

Course	2011 Dates
High-Speed Digital Engineering	
High-Speed Digital Design	21-22 June
Printed Circuit Board Design for Real-World EMI Control	21-22 June
Electronic Product Design and Retrofit for EMC	21-22 June
Advanced High-Speed Signal Propagation	23-24 June
Advanced EMC: Fullwave Modelling for EMC and Signal Integrity	23-24 June
High Frequency Measurements (probes & equipment used in Signal Integrity & EMC work)	28-29 June
Advanced Troubleshooting Techniques for Circuits and Systems	30 June
EMC Lab Techniques for Designers (troubleshooting before you go to an EMC test site)	1 July
Suspect Counterfeit Detection, Avoidance and Mitigation	30 June - 1 July
Power Distribution Design	30 June - 1 July
Electronics	
Online Course: Introduction to Electronics	9 May - 15 July
Practical Antenna Design	8-9 June
Successful RF PCB Design	7 July
Overview of Electronics	12-13 July
Overview of Digital Electronics	14-15 July
Practical RF/Microwave Design	18-22 July
Digital Signal Processing	19-21 July
Digital Signal Processing Implementation	22 July
Telecoms and Mobile Technologies	
LTE, LTE-Advanced and HSPA Evolution: System Design and Operation	27 June - 1 July
LTE and HSPA Evolution Standards and System Performance	28-29 June
LTE and HSPA Terminal RF Design Challenges	30 June
LTE and HSPA Protocols	1 July
Beyond 3G - Bringing Networks, Terminals and the Web Together	30 June - 1 July
IMS / SIP	20-22 September
Advanced IMS: CS to IMS Migration and Integration	23 September
Mobile as 7th of the Mass Media	26-27 October
Mobile Applications & Mobile Web - Strategies and business models	27 October
WCDMA and HSPA Networks and Terminals	5-7 October
ForumOxford: Mobile Apps & Technologies Conference 2011	28 October
Systems Engineering	
Systems Engineering Fast-Track	19-23 September
Management Skills for Engineers and Scientists	
Applying Knowledge Management: Principles & Practices	12 April / 5 July
Successful Change Management	13 April / 6 July
Essentials of Project Management	14 April / 7 July
Advanced Project Management	15 April / 8 July
Nanotechnology	
Online Course: Fundamental Characterisation for Nanotechnology	2 May - 8 July
Nanotechnology Summer School	4 - 8 July
Nanoscale Materials Characterisation	9 - 10 July
Online Course: The Wider Context of Nanotechnology	10 Oct - 2 Dec
Online Course: The Fundamental Science of Nanotechnology	9 Jan - 17 March
Online Course: Postgraduate Certificate in Nanotechnology	10 Oct - 8 July 2012

High-Speed Digital Design

Electronics | Telecoms & Mobile Technologies

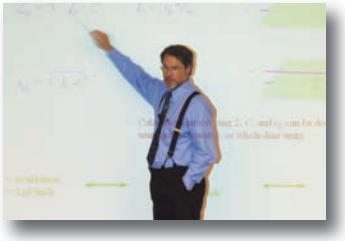
Systems Engineering | Management Skills for Engineers & Scientists | Nanotechnology

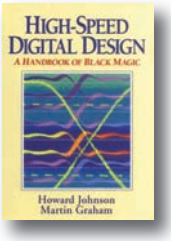
High-Speed Digital Engineering at the University of Oxford

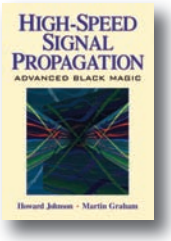
Six of the world's leading digital engineering specialists are coming to the University of Oxford....

Led by Dr Howard Johnson, author of *High-Speed Digital Design - a Handbook of Black Magic* and *High-Speed Signal Propagation - Advanced Black Magic*, the University of Oxford offers a unique range of some of the world's finest high-speed digital engineering and signal integrity courses.

"I can't think of any place else in the world an engineer could go to get direct access to this amount of high-speed digital engineering knowledge and experience. This event is unique in the world of electronics design" - Dr Howard Johnson.







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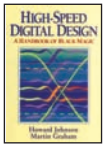
High-Speed Digital Design

Electronics | Telecoms & Mobile Technologies

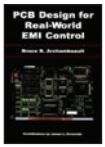
High-Speed Digital Design
(21-22 June 2011)



Developed specifically for engineers and designers who work with high-speed digital signals, this course will give participants the power to instantly recognize and solve many of today's high-speed design problems. Topics include: simple driver models, ringing, termination, bus performance, use of oscilloscope probes, bypass capacitors, crosstalk, ground bounce (SSN), layer stacking, and power system noise.

Presenter: Dr Howard Johnson, Signal Consulting Inc.

Printed Circuit Board Design for Real-World EMI Control
(21-22 June 2011)



This course focuses on the basic causes of EMC problems, and how to overcome these problems. It is not just a list of "rules of thumb" but rather it helps the student understand why EMC problems happen, and what can be done to eliminate them. These skills can be applied to real-world product design immediately. Formulas and equations are not required and are minimized throughout the seminar.

Presenter: Dr Bruce Archambeault, Archambeault EMI Enterprises, USA

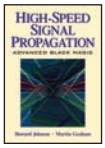
Electronic Product Design and Retrofit for EMC
(21-22 June 2011)

This course delivers a solid understanding of the problems encountered in designing and troubleshooting electronic hardware for electromagnetic compatibility (EMC). It provides a unique blend of applications, hardware demonstrations, and supporting theory for both beginner and advanced students. The instructor has graduate education in EMC and is employed full-time providing practical design reviews, as well as troubleshooting of elusive noise problems in current technlogies.

This course is for Digital Logic Designers, Analogue Designers, Technicians, EMC Specialists, Printed Circuit Board Designers, Applications Engineers and anyone working with electronic circuits who is concerned with the control of low and high frequency electrical noise in electronic systems.

Presenter: Mr Lee Hill, MSEE University of Missouri-Rolla, Founding Partner, Silent Solutions, USA

Advanced High-Speed Signal Propagation
(23-24 June 2011)



Focusing on lossy transmission environments like backplanes, cables and long on-chip interconnections, this advanced course teaches a unified theory of transmission impairments that apply to any transmission media. Topics include: skin effect and dielectric loss, on-chip vs. off-chip transmission-line behaviour, equalization, serial interconnections, lossy media, single-ended and differential signalling, interpretation of s-parameter models, signal distribution and clock jitter.

Presenter: Dr Howard Johnson, Signal Consulting Inc.

High-Speed Digital Design

Electronics | Telecoms & Mobile Technologies

Advanced EMC: Fullwave Modelling for EMC and Signal Integrity (23-24 June 2011)

This course examines the various full-wave simulation techniques, their strengths and their weaknesses, and when they should be used for various SI and EMC problems. It includes examples of applying full-wave techniques to real-world problems, such as decoupling power/ground planes, emissions from PC boards, connector effects (cross-talk, resonance, etc), effects of vias on high speed signals, and more.

This is an advanced course following on from Dr Bruce Archambeault's Printed Circuit Board Design for Real-World EMI Control course.

The course is for Digital Engineers, EMC Specialists, EMC Engineers, Digital Logic Designers, System Architects, Design Managers, Printed Circuit Layout professionals, Applications Engineers and anyone who works with digital logic at high speeds (20 MHz to 20 GHz and beyond).

Presenter: Dr Bruce Archambeault, Archambeault EMI Enterprises, USA

High Frequency Measurements (probes and equipment used in Signal Integrity and EMC work) (28-29 June 2011)

This practical and demo-based course describes in depth how to measure signal and noise in high-speed digital and analogue circuits. These measurements are then used to characterize high-speed effects in electronic circuits including design verification and troubleshooting. Sources of measurement error are discussed. The measurement techniques are related to design issues to improve signal integrity, equipment EMC performance, and improve the overall reliability of electronic systems.

Presenter: Douglas Smith, Author of *High Frequency Measurements and Noise in Electronic Circuits*

Advanced Troubleshooting Techniques for Circuits and Systems
(30 June 2011)

This practical and demo-based course covers advanced techniques for troubleshooting design problems both in the laboratory and in field installations. Doug Smith has developed these techniques over more than 30 years of working in this field. The techniques presented are very effective at reproducing problems that occur in the field infrequently. This seminar describes each technique in depth, how to apply it, and how to interpret results. A list of recommended equipment for troubleshooting difficult problems is presented. Emphasis is placed on delivering practical knowledge that can be used immediately on the job. Some class time is reserved to discuss problems and interests of those attending.

Presenter: Douglas Smith, Author of *High Frequency Measurements and Noise in Electronic Circuits*

EMC Lab Techniques for Designers (troubleshooting before you go to an EMC test site)
(1 July 2011)

This practical and demo-based course covers techniques for finding design issues that may cause EMC compliance problems early in the design cycle, long before an official EMC test. This can be accomplished in the development lab without the need for expensive EMC equipment. These techniques are easy to use and can find a wide range of potential EMC problems in a design on the lab workbench. This seminar describes each technique in depth, how to apply it, and how to interpret results. Emphasis is placed on delivering practical knowledge that can be used immediately on the job. Some class time is reserved to discuss problems and interests of those attending.

Presenter: Douglas Smith, Author of *High Frequency Measurements and Noise in Electronic Circuits*

High-Speed Digital Design

Systems Engineering | Telecoms & Mobile Technologies

Suspect Counterfeit Detection, Avoidance and Mitigation (with case histories for nonconforming ESD packaging materials used in the shipment of electronic parts)

(30 June - 1 July 2011)

This course will review not only non-conformance related issues, but also validation methods often overlooked in a Suspect Counterfeit Countermeasure Program. It will also review how semiconductor and medical device packaging countermeasures utilize advanced material solutions.

The course provides an in-depth technical review of validation issues including:

- Where do counterfeits come from?
- How can counterfeits be identified?
- How can counterfeiting be combated?
- Are proper ESD measures being employed?
- Does your inspection process compromise Class 0 ESD sensitive devices?
- How are parts coded, tracked and safeguarded by employing RFID?

Presenters:
Robert J. Vermillion, CPP/Fellow, RMV Technology Group, LLC, NASA-Ames Research Center, CA
Douglas Smith, Author of *High Frequency Measurements and Noise in Electronic Circuits*

Power Distribution Design
Decoupling and Bypassing Design / Simulation and Measurements of Power Distribution Networks

(30 June - 1 July 2011) **Day 1 and Day 2 of this course can be taken individually.**

This course provides an overview of proven power distribution design practices. Good and bad solutions are illustrated and put into context of layout constraints, cost and performance. The primary focus is to give the necessary information with minimal mathematics so that designers can apply the trade-offs and design solutions in their everyday work. The course is illustrated by live HW and SW demonstrations.

Presenter: Dr Istvan Novak, Distinguished Engineer, Signal and Power Integrity, at SUN Microsystems, Inc.

Electronics

Online Introduction to Electronics

10 weeks online: (9 May - 15 July 2011)

This online course introduces you to the basic ideas behind electronic circuits. The course consists of ten units, each of which will require around 5-10 hours of study depending on your level of knowledge. After taking the course you should have a good idea of how electronic systems work and how they are made.

The course is particularly suitable for individuals who have little prior knowledge of electronics but need to better understand the electronics they come into contact with at work.

Presenter: Dr Will Moore, Department of Engineering Science, University of Oxford

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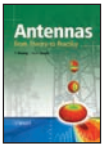
Practical Antenna Design

(8-9 June 2011)



Developed specifically for engineers and designers who work with radar, radio communications and RF/microwave engineering, this workshop will give participants an excellent understanding of antenna theory and techniques, and develop the skills to analyze, design and measure various antennas. The participants will have the opportunity to use industry standard software to design a practical antenna, and use equipment to conduct some antenna measurements during the course. A textbook written by the presenters will also be made available.

Presenters:
Dr Yi Huang, Head of High Frequency Engineering Group, University of Liverpool
Dr Kevin Boyle, EPCOS

Electronics

Successful RF PCB Design

(7 July 2011)

This intensive one-day course provides a thorough introduction to the principles of RF PCB design techniques in an intuitive and practical way including analogue RF systems, digital RF systems, how signals cross couple between circuits, minimizing impact of digital noise, performance and limitations of physical components, PCB Technology, PCB layout, implementation and examples of potential layout problems.

Presenters:
Tony Richards, Senior Technology Consultant, RF IC group, Plextek Ltd
Steve Williamson, Principal Engineer, Sensing Systems Group, Cambridge Consultants Ltd

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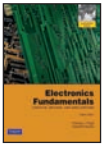
Overview of Electronics

(12-13 July 2011)



This hands-on course is intended for individuals with little prior knowledge of electrical/electronic engineering who want to get a feeling for the subject and for individuals whose knowledge is "rusty" or out of date. It gives a quick insight into modern electronics with an emphasis on practical devices and systems. A previous exposure to basic science and maths at school will be assumed.

Presenter: Dr Will Moore, Department of Engineering Science, University of Oxford

Overview of Digital Electronics
(14-15 July 2011)

This hands-on course is intended for individuals with little prior knowledge of electrical/electronic engineering who want to get a feeling for the subject and for individuals whose knowledge is "rusty" or out of date. It gives a quick insight into modern digital electronics with an emphasis on practical devices and systems. A previous exposure to basic science and maths at school will be assumed.

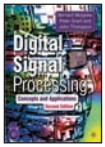
Presenter: Dr Will Moore, Department of Engineering Science, University of Oxford

Practical RF/Microwave Design
(18-22 July 2011)

This intensive, five-day practical course provides acceleration through the RF design learning curve by presenting a comprehensive introduction to RF and microwave design theory, techniques and measurements. It gives an overview of the fundamental concepts involved with RF/Microwave design and presents design methodologies for both passive and active RF and microwave circuits, common test and measurement issues and the subject of antenna design. "Hands-on" sessions of this course use the AWR Microwave Office design suite.

Presenters:
Dr Peter Gardner, Senior Lecturer, Dept of Electronic, Electrical and Computer Engineering, University of Birmingham
Andy Dearn, Senior Communications Technology Consultant, Plextek Ltd
Graham Payne, Microwave Applications Consultant, Graham Payne Consulting
Dr Yi Huang, Head of High Frequency Engineering Group, University of Liverpool

Digital Signal Processing
(19-21 July 2011)



This course gives a comprehensive grounding in DSP concepts and algorithms plus practical information on the design and implementation of DSP systems. It provides a good understanding of DSP principles and their implementation and equips the delegate to put the ideas into practice and/or to tackle more advanced aspects of DSP. The theoretical knowledge is illustrated by application examples, by demonstrations and by work in the laboratory.

The hands-on laboratory sessions use specially written software running on PCs. In the first session you will simulate signals and systems in both the time and frequency domains and work through illustrations of basic DSP functions. This will be followed by practical experiments with audio inputs and outputs and you will conduct experiments with external equipment to explore the real time capability of DSP.

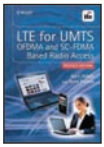
Presenters:
Dr Will Moore, Department of Engineering Science, University of Oxford
John Edwards, Senior Field Applications Engineer, picoChip Designs Ltd

Digital Signal Processing Implementation
(22 July 2011)

A one-day supplement to the Digital Signal Processing course that takes the theory and translates it into practice. It shows how to take common DSP algorithms and map them onto common processor architectures and gives a guide line for how to choose a DSP device. In addition to the algorithmic coding issues, the course covers the use of hardware specific functionality such as the use of internal or external memory and how to use DMA engines to optimize the use of both.

Presenter: John Edwards, Senior Field Applications Engineer, picoChip Designs Ltd

LTE, LTE-Advanced & HSPA Evolution: System Design & Operation
(27 June - 1 July 2011)



This five-day course provides a detailed end-to-end description and explanation of the global HSPA and LTE radio standards, with presentations from Harri Holma and Antti Toskala, authors of the current definitive works, *LTE for UMTS - OFDMA and SC-FDMA Based Radio Access*. The course summarizes the evolution of WCDMA to LTE and LTE-Advanced standards and explains how 3G standards have evolved into LTE. We then present the RF design challenges of multimode, multi-band handsets followed by the signalling procedures used between handset and network. Real-world implementation aspects of the new technology will be discussed, including system dimensioning and design and the performance of mobile data applications. Emphasis throughout the course will be placed on optimizing the data capability of these networks, including efficient packet data capacity, broadband wireless services, radio resource management as well as upgrade paths for operators.

Presenters:
Dr Harri Holma, NSN Fellow - Radio System Performance, Nokia Siemens Networks
Dr Antti Toskala, Head of 3GPP Radio Standardization, Nokia Siemens Networks, Finland
Dr Jonathan Moss, Telecoms Consultant
Laurent Noel, Telecoms Consultant
Neil Wiffen, Senior Technical Instructor, Red Banana Wireless Ltd

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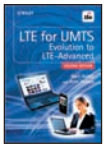
LTE and HSPA Evolution Standards and System Performance
(28-29 June 2011)



This course comprises Day 2 and 3 of the LTE and HSPA Evolution: System Design and Operation course, and can be taken on its own or as part of the five-day course. The course starts by describing the LTE network architecture and the 3GPP standardization process. We then move on to radio layer operation and performance, the different radio band options and radio resource management. We describe the data speeds possible and the solutions for carrying voice over LTE. Finally we compare LTE performance with that of HSPA+.

Presenters:
Dr Harri Holma, NSN Fellow - Radio System Performance, Nokia Siemens Networks
Dr Antti Toskala, Head of 3GPP Radio Standardization, Nokia Siemens Networks, Finland

* This is part of the five-day LTE and HSPA Evolution: System Design and Operation course and can be taken separately

LTE and HSPA Terminal RF Design Challenges
(30 June 2011)

This one-day course is Day 4 of the LTE and HSPA Evolution: System Design and Operation course and can be taken on its own or as part of the five-day course. Handset RF design involves the balancing of radio performance, hardware cost and total power consumption, operating within the real life environments experienced by a handset. This session presents an overview of the UMTS design challenges imposed by some 3GPP test cases, with a focus on the radio-frequency (RF) subsystem. We describe transmitter and receiver chain RF architectures in detail, presenting the power consumption improvements due to Continuous Packet Connectivity (CPC). We cover some examples of the toughest scenarios defined in 3GPP and what practical implementations have been put in mass production to tackle these test cases. Finally, we describe some of the co-existence challenges in the design of the next generation multi-band / multi-mode "world-wide" phone.

Presenter: Laurent Noel, Telecoms Consultant

* This is part of the five-day LTE and HSPA Evolution: System Design and Operation course and can be taken separately

LTE and HSPA Protocols
(1 July 2011)

This course is Day 5 of the LTE and HSPA Evolution: System Design and Operation course and can be taken on its own or as part of the five-day course. This course presents a technical description of UMTS, HSPA and LTE Protocols from Release 99 through to Release 9 of the 3GPP specifications including the protocol structures and mechanisms that support communications across the Air Interface, (Uu and LTE-Uu) UTRAN, E-UTRAN, Core Network and EPC systems. S1, X2 and EPS signalling concepts and principles, including peer location options and example signalling procedures are presented and RAB / E-RAB setup mechanisms discussed. The course also includes an overview of procedures relating to Registration; Security; Mobility Management; Voice call setup; PS data session establishment. Femtocell protocol connectivity options are also presented.

Presenter: Neil Wiffen, Senior Technical Instructor, Red Banana Wireless Ltd

* This is part of the five-day LTE and HSPA Evolution: System Design and Operation course and can be taken separately

Beyond 3G – Bringing Networks, Terminals and the Web Together
(30 June – 1 July 2011)

This two-day course gives a sound technical introduction to 3GPP LTE and SAE and explains the decisions taken during standardization while also examining the likely competition for LTE such as HSPA+ and WiMAX. It looks at next-generation network technologies, the latest mobile device developments, voice and multimedia services and the mobile web 2.0. We consider how the systems, devices and software work and the reasons behind why they are designed in this particular way. How these elements strongly influence each other is discussed as well as how network capabilities, available bandwidth, impact of femtocells, mobile device capabilities and new application concepts will shape the way we communicate in the future. The course is an ideal end-to-end introduction to wireless, from mobile software architecture to core networks, making it a valuable resource for anyone working in the industry.

Presenters:
John Edwards, Senior Field Applications Engineer, picoChip Designs Ltd
Martin Sauter, Wireless Consultant, Nortel
Ajit Jaokar, Mobile Telecoms Specialist and Author (inc Mobile Web 2.0)

IMS / SIP
(20–22 September 2011)

This course gives an overview of the 3GPP IP Multimedia Subsystem (IMS), which is based on the IETF Session Initiation Protocol (SIP) and other protocols. After introduction to the IMS Architecture, the course focuses on the technical details of the SIP protocol and how it is applied within the IMS. Basic IMS procedures (registration, session establishment) as well as services (Presence, Messaging, Push-to-Talk) are introduced and essential details are highlighted.

Presenters:
Georg Mayer, Consultant, Senior Standards Manager, Huawei
Hisham Khartabil, Senior Principal Consultant, Oracle

Telecoms & Mobile Technologies

Advanced IMS: CS to IMS Migration and Integration
(23 September 2011)

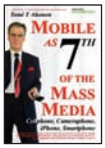
This one-day course gives an update on the very latest developments and features in IMS.

It is a one-day supplement to the IMS / SIP course and can be taken as an add-on to the three-day course or on its own as a separate course.

It will cover:
- Multimedia Telephony
- Session Continuity (SCC)
- Integration of IMS and CS (ICS)
- Collaborative Sessions / Inter-UE Transfer (IUT)

Presenter: Georg Mayer, Consultant, Senior Standards Manager, Huawei

Mobile as 7th of the Mass Media
(26-27 October 2011)



This course provides an overview of mobile as a new media channel, and places mobile as the 7th mass media channel into context of the legacy six mass media (print, recordings, cinema, radio, TV and internet) with lessons from previous transitions. The course covers the eight unique competitive advantages of mobile as a mass media channel and discusses the perceived shortcomings such as tiny screen size and small keypad.

The presenters give a broad range of examples of successful media concepts for mobile including music, gaming, news, video, social networking etc with emphasis on the consumer experience and the business models of innovative media concepts in mobile. Convergence with legacy media, in particular internet, television and print, are covered. The course is non-technical in nature but covers relevant tools such as the 6 M's mobile service creation tool and environment. All who attend the course will receive a copy of Tomi Ahonen's latest book *'Mobile as 7th of the Mass Media'.*

Presenters:
Tomi T. Ahonen MBA, Author of 10 books on mobile
Alan Moore, Author and CEO of SMLXL
David Cushman, Author and Director of Social Media, Brando Digital

Mobile Applications and Mobile Web - Strategies and business models
(27 October 2011)

The growth of mobile applications has created a new, viable 'ecosystem' which BusinessWeek calls 'The App Economy'. Apart from iPhone and Android apps, the Mobile Web is also being deployed in the form of web widgets. Irrespective of the technology (the Mobile Web or mobile apps), mobile applications are geared towards the Long Tail and they tend to convert a product or a service into a platform.

Mobile Applications and Mobile Web - Strategies and business models is a one-day course that will explore the commercial impact of the Web and apps strategy on the wider ecosystem.

The course is for those involved in the business strategy of mobile apps. This is not a developer oriented course.

Presenter: Ajit Jaokar, Mobile Telecoms Specialist and Author

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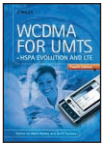
WCDMA and HSPA Networks and Terminals
(5-7 October 2011)



This three-day course is intended for those wanting a solid grounding on 3G WCDMA and HSPA networks. We also present an introduction to LTE operation and deployment. The course will appeal to those already in the telecoms industry by giving a wider view of the 3G ecosystem covering deployment and handset design issues. For those moving from 2G networks and handset design to 3G, it gives a thorough analysis of handset OS and RF/baseband design. We present two particularly interesting evolutions of 3G from a European perspective - the standardization and deployment of Femtocells and the refarming of GSM900 to 3G HSPA. Emphasis throughout the course will be placed on an understanding the radio layer and how the handset and base sites are optimized to give the best financial performance.

Presenters:
Dr Jonathan Moss, Telecoms Consultant
Laurent Noel, Telecoms Consultant
Neil Wiffen, Senior Technical Instructor, Red Banana Wireless Ltd

ForumOxford: Mobile Apps & Technologies Conference 2011
(28 October 2011)

ForumOxford Next Generation Mobile Applications Panel, the web-discussion forum of the Technology Programme, was established to bring together the best thinkers in the telecoms industry to enable the sharing of ideas on all aspects of mobile applications with other like-minded members of the community. ForumOxford has been a huge success and now has over 2000 members with participants from 87 countries and from six continents*.

The lively online debate within ForumOxford's online environment resulted in numerous approaches asking for a face-to-face event to capitalize on this success. Participation in ForumOxford and the ForumOxford: Mobile Apps & Technologies Conference will provide access to the leading bloggers in the emerging web and mobile technology fields and, as all those attending last year discovered, a great place to meet others who are leading the way in the world of mobile applications. In a poll by the leading New York publication Fierce Wireless, the top 20 mobile blogs worldwide included as many as six blogs belonging to ForumOxford members.

Who should attend?
Web and mobile technology experts and visionaries, telecoms leaders and anyone who has an interest in future mobile technologies with an emphasis on Mobile / Web 2.0 innovations.

The conference will be chaired by:
Ajit Jaokar, Mobile Telecoms Specialist and Author
Tomi T. Ahonen MBA, Author of 10 books on mobile

*Figures correct as of November 2010.

Systems Engineering Fast-Track (19-23 September 2011)

This course is based on 20 years of experience in systems engineering and provides not only insights to the overall systems-engineering process, but detailed methods and tools that support that process. The methods and tools presented are pragmatic and practical and have been used on real programmes and bids in the range of £10M to £2Bn.

This course is for you if:

- You have recognized that your organization needs to improve in areas including: requirements management, system modelling and the systems-engineering process
- Your organization has a target to reach higher CMMI® levels
- You are new to large-scale systems development or you want to refresh your existing knowledge and skills
- You are a team leader and want information that you can use to improve the performance of your team in an efficient manner

This course is for graduate-level engineers from companies that develop, or are part of a team that develops complex systems, which have one or more of the following characteristics:

- Range in value from £10M to £2.5Bn
- 500 to 2000 individually identified requirements
- Have safety or security critical elements
- Incorporate or interface with significant levels of legacy technology
- Involve teams of companies
- Involve more than one technology area, for example: software, electronics, electro-mechanics, hydraulics & human systems elements

Course content

The Systems-Engineering Process

- Modelling your own systems-engineering process
- Elements of a high-quality systems-engineering process
- Moving your process to where it needs to be

A Systems-Engineering Database

- Requirements management: methods, structures and traceability
- Configuration management
- Metrics for process and product

The Human Face of Systems-Engineering

Integrating with other key disciplines

Systems Modelling

- UML 2.0 for systems engineering and SysML
- Architectural frameworks - MODAF and DoDAF
- Architectural design and interface control
- Pattern languages

Systems Integrity

- Threads analysis
- Failure-domain analysis
- Quality Function Deployment

Presenter: Dr Rob Collins, Requirements and Test Manager, General Motors Acceptance Corporation (U.K.) plc

Management Skills for Engineers & Scientists

Applying Knowledge Management: Principles & Practices
(12 April 2011 or 5 July 2011)

This intensive course is for those who would like develop a comprehensive insight into the main aspects of knowledge management and equip themselves with the practical skills to build or begin the introduction of knowledge management interventions within their organization. It will focus on the operations of organizations as a whole to provide comprehensive integrated solutions and ideas to the challenges faced by course delegates.

Dr John Wilson teaching the Applying Knowledge Management Course

Presenter: Dr John Wilson, Independent Consultant and Researcher

Successful Change Management
(13 April 2011 or 6 July 2011)

This highly successful and practical course investigates the main theories and underpinning principles of change management and relates these to current changes in the commercial and public sectors. It shows how successful change can be achieved at individual, team and organizational levels through the use of a number of practical tools and skills. A wide range of tools are discussed and practiced in relation to individual, group and organizational change. This course is for those who are responsible for, or involved in, managing change from small scale interventions to large scale restructuring. In particular it will consider how the current economic circumstances can be used as a vehicle to drive forward necessary changes which might not be considered during more buoyant times.

Presenter: Dr John Wilson, Independent Consultant and Researcher

Essentials of Project Management for Engineers and Scientists
(14 April 2011 or 7 July 2011)

This intensive one-day course provides a comprehensive introduction to the essential aspects of project management for scientists and engineers. The course will draw on relevant case studies, demonstrate useful software packages and prepare participants to apply learning from the course in their organizations. Specifically, the course covers the following key areas:

1. Why we do projects
2. The Project Manager and Team
3. Planning the Project
4. Budgeting the Project
5. Scheduling the Project
6. Allocating Resources to the Project
7. Monitoring and Controlling the Project
8. Evaluating and Terminating the Project

The course is designed specifically to benefit Scientists and Engineers in large or small public and private sector organizations with responsibility for project delivery, and assumes no prior training in project management techniques.

Presenter: Dr Eamonn Molloy, University Lecturer in Operations Management and Project Portfolio Management, Saïd Business School, University of Oxford

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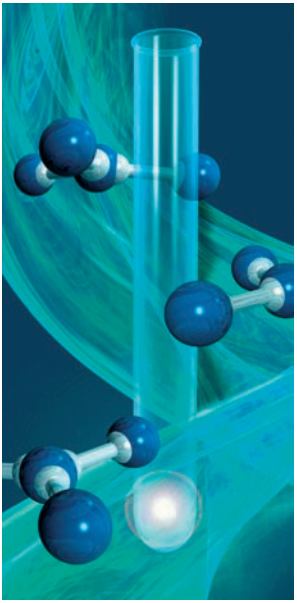
Advanced Project Management for Engineers and Scientists
(15 April 2011 or 8 July 2011)

This intensive one-day course will introduce Project Portfolio Management (PPM) as a framework for improving organizations' ability to effectively deliver multiple, interdependent, complex science and technology projects on time, on budget and to specification. This involves not only effective project management discipline, but also ensuring that the organization is selecting, prioritizing and investing in the right portfolio of projects in the first place, optimizing resource allocation between them, and monitoring them throughout the entire project life-cycle through to delivery. The objective is to offer a condensed, yet comprehensive overview of current and emerging best-practice methodologies and techniques for meeting the challenges of managing multiple, complex science and technology projects.

Presenter: Dr Eamonn Molloy, University Lecturer in Operations Management and Project Portfolio Management, Saïd Business School, University of Oxford

Nanotechnology

Online Course: Fundamental Characterisation for Nanotechnology
(2 May - 8 July 2011)



This part-time, online course surveys the range of techniques and methodologies available to determine the nature and composition of nanoparticles (both organic and inorganic), thin films and nano-structures. As well as giving a more detailed account of a selection of the most common techniques, the module takes a trouble-shooting approach: beginning with the material/object; identifying the information that is required; formulating an approach to obtaining that information; making a rational choice of technique(s) and methodology(ies); and giving due regard to efficiency and cost-effectiveness.

Nanotechnology Summer School
(4-8 July 2011)

This five-day intensive course provides a thorough overview of the exciting and emerging discipline of nanomedicine. Each day focuses on one aspect of nanomedicine, and topics include nano-diagnostics; nano-biosensors; nanotechnologies for drug delivery, therapeutics and regenerative medicine, as well as challenges, opportunities and safety issues of nanomedicine. Each day of the summer school can also be attended as a stand-alone short course.

Nanoscale Materials Characterisation
(9-10 July 2011)

This two-day course introduces a variety of techniques for the analysis of nanoparticles including particle size analysis, electron microscopy and scanning probe microscopy. The course draws upon experts from BegbrokeNANO, the Oxford Materials Characterisation Service. The course consists of lectures to explain key principles of nanoparticle characterisation techniques, together with practical demonstration sessions and discussions.

Online Course: The Wider Context of Nanotechnology
(10 October 2011 - 2 December 2011)

This online, introductory part-time course gives an overview of the current state of nanotechnology as well as outlining the implications of these new technologies for safety, regulation and innovation. It looks at ethical issues in the use of nanotechnologies and investigates their potential societal and environmental impact.

Online Course: The Fundamental Science of Nanotechnology
(9 January - 17 March 2012)

This part-time, online course introduces the fundamental science behind the phenomena that result from the nanometre scale. In particular, the course examines the theoretical foundations of these phenomena and their applications by exploring the mathematical description of these nanoscale phenomena, together with common nanoscale structures, their fabrication, properties and applications, including nanowires, quantum dots and nanoparticles, as well as carbon nanostructures.

Online Course: Postgraduate Certificate in Nanotechnology
(10 October 2011 - 8 July 2012)

The Postgraduate Certificate in Nanotechnology is a part-time, online course. It comprises the three online courses above, and the Nanoscale Materials Characterisation course as a residential weekend in Oxford, introducing the most commonly used and most important analytical, quantitative and experimental methods in nanotechnology. Participants have access to a rich bank of online resources, and engage in real-time online tutorials.

The course is designed for professionals wishing to study part-time. It will appeal to those working in the commercial or healthcare sectors, who use, or expect to use, nanotechnology in their work. Previous students include electrical engineers, materials scientists, project managers, patent agents, chemists, medical practitioners, plastic surgeons and food technologists as well as those involved in manufacturing, research and legislation.

This course leads to a qualification from the University of Oxford, and applicants must apply using the University's admission procedures, which can be viewed on the following web page:
http://www.ox.ac.uk/admissions/postgraduate_courses

Course Director: Dr Christiane Norenberg, Oxford University Begbroke Science Park

Technology Programme 2011

UNIVERSITY OF OXFORD

High-Speed Digital Design | Electronics | Telecoms & Mobile Technologies

Systems Engineering | Management Skills for Engineers & Scientists | Nanotechnology

HOW TO REGISTER:

For immediate **online registration** and payment see the relevant course webpage.

or

Download our pdf **application form** from our website and fax a completed form back to us on: +44 (0)1865 286934

or

Contact us by **email**: technology@conted.ox.ac.uk or **phone** +44 (0)1865 286958.

If you would like to make a provisional registration to allow time to obtain authorization etc, you can do so by contacting the Course Administrator (contact details above). We reserve the right to re-allocate provisional registrations.

If you are unsure as to the suitability of a course for your needs, please contact us and we will be happy to discuss the content and level in more detail.

PAYMENT

The course fee covers as a minimum: tuition, course notes, lunches and daytime refreshments for the duration of the course (regarding inclusions for online courses see website). See the relevant course page for further details. Accommodation is NOT included. Please see the "Accommodation" link on our website for details of how to book accommodation at our Residential Centre. Please note our courses are VAT exempt.

DISCOUNTS

Details of multiple registration discounts and any other discounts available for each course are shown on the website. Discounts may only be claimed at the time of registration.

PAYMENT METHODS

Payment can be accepted by one of the following methods:

- **Online Payment:** see course webpage for online payment and registration.
- **By Purchase Order & Invoice:** invoicing will be arranged according to the instructions on your purchase order. Please ensure that a copy of the purchase order is faxed to us along with the application form.
- **By Cheque:** payable to O.U.D.C.E in pounds sterling.
- **By Credit/Debit Card:** using Maestro, Mastercard, Solo, Visa, Electron, JCB/JCL

WHAT HAPPENS WHEN YOU HAVE REGISTERED

We will confirm your application by email. You will then receive joining instructions by email (unless you request otherwise) giving course times, maps and travel information approximately two weeks before the start of the course.

FURTHER INFORMATION

If you require any further information about our courses, registration or anything else in this brochure, please email or phone us.
Email: technology@conted.ox.ac.uk Tel: +44 (0) 1865 286958

TERMS & CONDITIONS

Please see the relevant course web page for our full terms and conditions. **www.conted.ox.ac.uk/technology**

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Further lifelong-learning opportunities: **www.conted.ox.ac.uk**