



Presents...

Distributing the Future

Magic Solutions For Small Businesses

“Any sufficiently advanced technology is
indistinguishable from magic”

Sir Arthur C. Clarke

“Any technology distinguishable from magic is
insufficiently advanced”

Barry Gehm

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The Cogent Computing Applied Research Centre aims to become the UK's leading centre for research in the field of pervasive sensing. The unique research approach of our multi-disciplinary team of experts blends forward-looking theory with practical experimentation. From this springs a vision of the future of distributed sensing and computing systems, which informs our provision of solutions to real-world problems today.

This leaflet profiles our range of dynamic, industry orientated short-courses, specifically designed to develop the practical skill-sets required to allow your organization to tap the vast and exciting potential of pervasive computing. **New** is a valuable resource. Allow us to help you make the most of it.

Enterprise IT

Corporate Blogging: Zero-Cost Advertising

No matter how large or small your organisation, and regardless of your sector, corporate blogging offers you the opportunity to build a successful online reputation, whether you have an in-house IT department or not. Bring along your company artwork, and by the time you complete this course you will have a fully functional blog, complete with advertising and affiliation schemes and marketing analytics, seamlessly integrated with your current branding strategy. As a follow-up, we can offer an on-site consultancy service which analyses the progress of your online advertising strategy.

Diversify Your Web Development

Web developers coming from a copy-writing or graphic design background stand to benefit greatly from training in programming and database technologies. This course seeks to develop the skill-sets required to employ a range of available languages and technologies, including AJAX, Ruby, MySQL, Perl and Python, and is designed to be flexible to the needs and expertise of the participants. Prior to undertaking the course, you will be asked to complete a questionnaire to determine your expertise and the particular technologies in which you are interested. The course will then be delivered at either beginner level, which introduces core programming concepts in a practical manner relating directly to web based technologies before exploring the languages selected by the participants, or at advanced level, which assumes participants already have a working knowledge of a web-ready language and focuses on skills-transfer.

Migrating To Linux: Cost Effective Computing For Small Businesses

Although Microsoft products are the *lingua franca* of PC-based commercial computing, they are far from perfect. In addition to the high cost of the products, they can be unstable and are frequently poorly designed. Linux-based systems offer a friendly, stable and cost-effective alternative, whilst retaining a user interface that will be familiar to Microsoft users. Whatever your current level of IT expertise, we can train you to install, configure and use Linux for both desktop PCs and servers. Prior to undertaking the course, you will be asked to complete a questionnaire which will allow us to tailor the course to your specific needs and expertise.

Programming With The GNU Toolchain: Cost-Effective Development with Open Source Software

The GNU Organisation offer a wide range of free, professional-quality development tools, including IDEs, Revision Control Systems, Compilation Managers, Compilers, Linkers and Loaders. Utilising them can massively reduce the expense of software development; however, given the scarcity of complete documentation, and a range of interconnected tools which may seem alien to those who work mainly with GUI based systems, learning to develop with these tools may be daunting. This course, for programmers with a working knowledge of the C programming language, will guide you through the process, and is tailored upon delivery to your specific needs and expertise.

The Fast Track To Programming With Python

System Administrators, Games Programmers, Scientists and Web Developers are just a few of the diverse range of clients who could benefit from our week long introduction to the increasingly popular Python programming language and its surrounding technologies. Your course fee includes a copy of our highly successful Python Programming course manual. Prior to undertaking the course, you will be asked to complete a questionnaire to determine your expertise and the particular technologies in which you are interested. The course will then be delivered at either beginner level, which introduces core programming concepts in practical manner before exploring the topics selected by the participants, or at advanced level, which assumes participants already have a working knowledge of programming concepts and focuses on skills-transfer to Python, introducing platforms and libraries of interest, including database programming, web development, XML processing and GUI design.

Serious Games & Simulations

Legendary video game developer Eugene Jarvis once opined “The only legitimate use of a computer is to play games”. When you consider that Serious Games not only serve to expand the entertainment gaming sector, but could be a useful tool in the medical, military and business sectors, you may think that he had a point. This course trains participants with a background in computer science and video games to expand their specialism to Serious Game and interactive technologies. You will be invited choose a Serious Game scenario applicable to your needs, and to develop a design specification document for it. From there you will be able to explore the implementation process of the state-of-the-art technologies emerging in this sector.

Web Development for Web 2.0

A collection of technologies have recently enabled a boom in social networking and interactive sites, including web applications such as Basecamp and Zoho Office and community sites such as Facebook and Digg. This is Web 2.0. This course, run at intermediate level for participants with some experience of web or DB development, or at advanced level for those whose experience is more extensive, will show you how to develop your own Web 2.0 site from scratch. Heavily focussed on 'learning by doing', much of your course time will be devoted to the development of your specific site. You will gain experience with a suite of technologies including Ruby On Rails, exporting and importing RSS feeds, XML and AJAX, including XMLHttpRequest and Thomas Fuchs' script.aculo.us libraries.

Web Services Development

Today's demands for integrated web solutions can be met in a modern manner with web services. Through case studies and practical programming examples, you will acquire the knowledge necessary to develop web service based applications on the development platform of the Microsoft .NET framework. You will explore the entire process of developing applications based on XML web services, from component security to delivering functionality through ASP.NET.

Ubiquitous & Mobile Computing

NB: The courses within this section have associated credits within our Msc by Research program. Please ask your instructor for further details.

Assessing RFID For Your Business

RFID (Radio Frequency Identification) is increasingly popular in the retail sector as a mechanism for warehouse management, inventory control, and theft identification. However, it has potential applications throughout the supply chain, to reduce waste, provide accurate information and 'close the loop', allowing better control of business processes. This course will teach you to understand the cost, benefits and the impact of various international standards of RFID, and allow you to evaluate its appropriateness for a given operation. It will also provide you with solutions for some of the problems that may arise when implementing RFID. (*See also: 'RFID For Implementers'*)

Augmented Reality Systems

From large scale environmental monitoring to indoor noise-level monitoring for health and safety, wireless sensor networks make the gathering of large amounts of data an attractive prospect. The challenge, of course, is to effectively make use of that data. In addition to the usual statistical and data-mining tools, it is useful to provide feedback to the analysts in a more intuitive and direct manner. Augmented Reality Systems offer a whole new vista for the understanding of real-world phenomena, by overlaying sensed modalities in the field of study with visual images. This course will familiarise you with Augmented Reality Systems, exploring the processes of registration, data compositing and display, and offering solutions to the problems which may arise.

Designing Modern 32-Bit Real-Time & Embedded Systems

Engineers used to 8- and 16-Bit systems may find designing hardware and software for the modern 32-Bit micro-controller a daunting task. Nonetheless, when the benefits of doing so include unprecedented computing power for real-time and embedded systems and component costs that are a fraction of those for traditional embedded platforms, it is a highly worthwhile one. The course offers you a gateway to these modern systems, covering hardware/software trade-offs, development and operating system environments and modern programming languages.

Developing Your First Wireless Sensor Network Application With Mica2 Motes

In industry, agriculture and environmental monitoring, for purposes from motion acceleration to sensing sound monitoring, wireless sensor networks have the potential to improve efficiency and reduce costs. Hardware designers, or those who simply wish to make an appropriate selection from commercial-of-the shelf (COTS) components, would benefit greatly from this introduction to the design of applications using sensor motes. Aimed at participants with experience of digital design, this course examines the ubiquitous MICA and TELOS motes, including making an appropriate selection of sensor device interface, processor architecture, memory system, power management and RF stack, before exploring the directions future design developments may take. Participants with EDA experience will even get the opportunity to design a mote to their requirements with our assistance and supervision.

Distributed Data Acquisition Systems

The combination of microprocessors, microcontrollers and miniature smart sensors with digital output has brought about a revolution in measurement, drastically reducing the cost and difficulty for technologists, scientists and engineers setting up their own test and measurement systems. This course offers both novice and experienced users of data acquisition systems a grounding in the theoretical and practical principals of distributed data acquisition systems, from design and specification to programming, installation and configuration. Issues of interfacing PCs and standalone instruments to multiple source real-world signals, and networking aspects of computationally able sensors are also addressed. Furthermore, the course includes an overview of current and emerging distributed measurement technologies, current data acquisition standards and of-the-shelf instruments, tailored to the specific interests of the participants.

Hand-Held Instruments & Devices

Thanks to advances in mobile phone and PDA technology, highly specialist graphical display hand-held instruments and devices can now be engineered to a compactness and capability inconceivable even a few years ago. Furthermore, by using economical off-the-shelf components and powerful open source software development tools, their production need not be expensive, even in low volume. For example, body fat monitors or soil condition testers could be produced to meet the specific needs of health or environmental professionals respectively. In fact, if your organisation makes any use of data gathered in the field, you may be surprised at the extent of the sensing capability, and the advanced graphical displays, that are available to you. This course, for design engineers, will guide you through the process of development and implementation.

Mobile Device Usability

Mobile devices present distinct usability challenges owing to their smallness of interface, their frequent dependence on the robustness of other services, and the need for one-handed or hands-free operation in fast-moving environments. This course assumes no previous experience of usability assessment techniques, and gives participants a range of tools and techniques for improving the usability of mobile devices in the face of these challenges. Through presentations, brainstorming, group-work and role-play, you will explore prototyping interaction in mobile contexts, ergonomic usability, form factors, stakeholder analysis and a range of cutting-edge approaches including rapid, low-cost video prototyping, tangible and audio interaction and 'interaction as package'. You will be given the opportunity to design and evaluate prototypes, as well as using existing products, and will leave the course with a range of practical mobile usability experience that you can implement immediately.

Pervasive Usability

By improving the usability of your products, you make your clients' use of them more effective and enjoyable, simultaneously reducing your development, maintenance, training and support costs. This course assumes no previous experience of usability assessment techniques, and gives participants a range of tools and techniques for improving the usability of products. Product designers, engineers and even management could benefit from familiarising themselves with these valuable concepts. Through presentations, brainstorming, group-work and role-play, you will explore a range of foundational usability issues, including the history of usability, its place in the design cycle and case-studies, before moving on to more advanced issues, including the usability challenges presented by pervasive computing, methods of adapting older usability techniques to the pervasive age. You will be given the opportunity to design and evaluate prototypes, as well as using existing products, and will leave the course with a range of practical usability experience that you can implement immediately.

RFID For Implementers

This course focuses on providing you with the skill-set required to successfully implement RFID (Radio Frequency Identification) systems. You will learn how RFID works, and how it can fail, what architectural components to use in given situations, and how

standards can help maximise the long-term potential of your implementation. In addition, you will get hands-on experience with RFID tags and readers. (*See also: 'Assessing RFID For Your Business'*)

Wireless Data Acquisition Systems

Wireless Data Acquisition Systems are a leading edge practice which this course seeks to introduce to technologists. You will begin by gaining hands-on experience of the design, implementation and effective use of Wireless Data Acquisition Systems, through a case study using a rapidly deployable system for process monitoring based on Crossbow Mica motes. This provides a foundation for the introduction of more powerful wireless sensing and data acquisition platforms. This exploratory, hands-on course will allow you to develop the critical skills necessary to assess available wireless sensing technologies that suit your needs.

Wireless Sensing and Process Improvement

Within manufacturing industries, it is clearly desirable for processes to be as efficient and as sustainable as possible. From applications ranging from monitoring grass conditions in indoor stadia (such as Cardiff's Millennium Stadium), to modelling temperature variations within a small closed system, it is now feasible to deploy wireless sensing of a range of key manufacturing parameters, offering significant benefits in terms of efficiency, cost and deployment. Since processes are often not fully automated and depend on human interpretation and intervention, work practices and cognition are as important as the technological side of process improvement. Thus a key-part of this course is considering and modelling the impact of sensor deployment on data representation and interpretation, and exploring how data can be effectively represented for usability, including learning and read-off bearing in time-pressured environments.

At-A-Glance Guide to Cogent's Short-Course Selection

Course Title	Duration	Instructor	Stand-By*	On Demand*
Corporate Blogging: Zero-Cost Advertising	5 days	James Shuttleworth	£1250	£2500
Diversify Your Web Development	5 days	James Shuttleworth	£1250	£2500
Migrating To Linux	3 days	James Shuttleworth & James Brusey	£750	£1500
Programming With The GNU Toolchain	3 days	James Shuttleworth & James Brusey	£750	£1500
The Fast Track To Programming With Python	5 days	James Shuttleworth	£1250	£2500
Serious Games & Simulations	5 days	Leon Smalov	£1250	£2500
Web Development for Web 2.0	5 days	Tessa Daniel	£1250	£2500
Web Services Development	5 days	Leon Smalov	£1250	£2500
Web Usability	1-5 days	John Halloran	n/a	contact us!
Assessing RFID For Your Business	3 days	James Brusey	£900	£1800
Augmented Reality Systems	5 days	James Shuttleworth	£1500	£3000
Designing Modern 32-Bit Real-Time & Embedded Systems	5 days	Elena Gaura	£1500	£3000
Developing Your First Wireless Sensor Network With Mica2 Motes	5 days	Elena Gaura	£1500	£3000
Distributed Data Acquisition Systems	1 day	Elena Gaura	£300	£600
Hand-Held Instruments & Devices	5 days	Fotis Liarokapis	£1500	£3000
Mobile Device Usability	1 day	John Halloran	£300	£600
Pervasive Usability	1 day	John Halloran	£300	£600
RFID For Implementers	3 days	James Brusey	£900	£1800
Wireless Data Acquisition Systems	5 days	Elena Gaura	£300	£600
Wireless Sensing & Process Improvement	3 days	John Halloran & James Brusey	£900	£1800

- Stand-By Rate ensures an individual's place on the next available delivery of the course in our state-of-the-art computer labs, subject to a minimum of 3 participants. Select On Demand Rate for immediate delivery (subject to instructor availability) at our place or yours!