

# Master of Science (MSc) Wireless Communications

**Southampton Wireless (SW)**  
**School of Electronics and Computer Science (ECS)**  
**University of Southampton**  
Southampton, SO17 1BJ, United Kingdom



Our MSc Wireless Communications (MSc WComms) systematically equips students with the knowledge required for a career in industry and with the skills indispensable for independent research in the field of wireless communications and wireless networks. Having successfully completed this programme, you will be able to

- demonstrate knowledge and understanding of the scientific and technological principles of wireless communications & networks;
- directly employ your skills to analyse wireless communications techniques & networks;
- exploit your knowledge in industrial design or to carry out in-depth research.

Under the auspices of our MSc WComms (previously MSc RF), we have successfully graduated over 600 students, who are now making their mark playing key roles in both industry and academia worldwide.

## Programme Structure

This is a full-time programme taught over one academic year, which consists of eight taught modules with four in Semester 1 and four in Semester 2, complemented by a three-month project in Semester 3.

## Taught Modules

The programme consists of some compulsory and some optional modules, allowing students to tailor the structure to suit their individual interests. These are some examples of the taught modules.

- Digital Coding and Transmission
- Radio Communications Engineering
- Research Skills and Practice
- Signal Processing
- Wireless and Mobile Networks
- Personal Multimedia Communications
- Advanced Wireless Communications Networks and Systems
- Future Wireless Techniques
- Advanced Systems and Signal Processing
- Cryptography
- Quantum Devices and Technology

## Career Opportunities

MSc WComms provides an excellent platform for further research in either industry or academia. Graduates of our MSc WComms are employed worldwide in leading companies at the forefront of technology. Furthermore, the School of ECS runs a dedicated careers hub which is affiliated with over 100 renowned companies like IBM, ARM, Microsoft Research, Imagination Technologies, Huawei, Nvidia, Samsung and Google, just to name a few.



Ms Yusha Liu (MSc in WComms (2016), currently a PhD student of SW) said: "Studying here gained me access to the excellent lab facilities, world-leading research achievements as well as the prospective job opportunities during the MSc year. While enjoying challenging lectures every day, I was able to conduct productive research under the supervision of both academics and final-year PhD candidates."



Dr Panagiotis Botsinis (MSc in WComms (2011), PhD from SW (2015), and currently a research fellow at SW) said: "The courses of MSc WComms were taught by world-class, inspiring and knowledgeable academics. They were challenging but enjoyable, where teamwork and determination were keys to success. These are some of the reasons that the vast majority of the MSc

WComms alumni are able to secure their next career step, either in industry or academia, even before the end of the MSc programme. I highly recommend the MSc WComms and I am sure that next year's graduates will be feeling likewise."

## School of ECS

The School of Electronics and Computer Science (ECS) at the University of Southampton, which was one of the first departments of its kind in the world, was founded in 1946 by Professor **Erich Zepler**, the pioneering contributor to radio receiver development. Today ECS is the UK's largest research grouping in the area, with around 250 academic and research staff, 270 PhD students, as well as about 800 undergraduate and over 300 MSc students. Innovation and creativity make ECS a great place for our students to thrive. Excellent facilities, key partnerships with major industries and a world-leading research base ensure that studying with us is productive, challenging and enjoyable - it would set you on the road to future success.



→ The Guardian University Guide 2017 league tables show the University of Southampton first in the UK for Electronics and Electrical Engineering and our Computer Science programmes have been in the top ten in this guide for more than 10 years.

→ The Times Good University Guide 2016 shows our Electrical and Electronic Engineering ranked third in the UK, and Computer Science in the top ten

→ We are first in the UK for the volume and quality of our research in Electrical and Electronic Engineering and 100% of our Computer Science research impact is recognised as world-leading or internationally excellent (REF 2014)

## Southampton Wireless (SW)

MSc WComms is taught by the world-leading professionals of Southampton Wireless (SW) (<http://www.wireless.ecs.soton.ac.uk/>). This team has played a key role in advancing wireless communications since the early 1980s. Its research spans a rich spectrum of diverse areas in RF and optical wireless communications, classic and quantum signal processing as well as wireless networking. The group has been actively involved in the research of all prior generations of mobile communications systems, and has made well-recognised contributions both to long-term communications theory as well as to industrial implementations.



## Academics from SW



Prof. Lajos Hanzo ([www.ecs.soton.ac.uk/people/lh](http://www.ecs.soton.ac.uk/people/lh)), Head of SW, Wolfson Fellow of the RS, FREng, FIEEE, FIET, Fellow of EURASIP, DSc) has 40 years of experience in telecommunications, and has held various research and academic posts in Hungary, Germany and the UK. Since 1986 he has been with ECS, UoSoton, where he heads SW. He has successfully supervised 100+ PhD students



and co-authored 20 books on mobile radio. Prof. Sheng Chen ([users.ecs.soton.ac.uk/sqc/](mailto:users.ecs.soton.ac.uk/sqc/)), FREng, FIEEE, FIET, CEng, DSc, PhD, BEng) has had a 35-year distinguished academic career in the UK. Since 1999, he has been with the School of Electronics and Computer Science, the University of Southampton. In March 2004, Prof. Chen was named an ISI (Institute for Scientific Information) highly cited researcher in engineering. He was elected to a Fellow of the Royal Academy of Engineering of the UK in 2014.



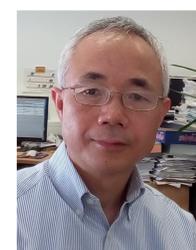
Dr. Mohammed El-Hajjar ([www.ecs.soton.ac.uk/people/meh](http://www.ecs.soton.ac.uk/people/meh)) has been a lecturer in Southampton Wireless since January 2012. He worked as a design engineering for Imagination Technologies between 2008 and 2012. He has published a Wiley-IEEE Press book and in excess of 70 papers. His research focuses on the design of intelligent wireless communications systems.



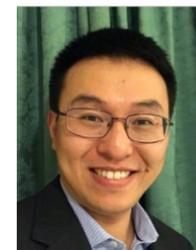
Associate Professor Soon Xin Ng ([www.ecs.soton.ac.uk/people/sxn](http://www.ecs.soton.ac.uk/people/sxn)) received the B.Eng. degree (First class) in electronic engineering and the Ph.D. degree in telecommunications from the University of Southampton, in 1999 and 2002, respectively. His research interests include various transceiver designs for radio frequency channels as well as quantum communications. He has published over 200 research papers in these fields.



Dr Robert G. Maunder ([www.ecs.soton.ac.uk/people/rm](http://www.ecs.soton.ac.uk/people/rm)) has graduated from ECS and earned his PhD in 2007. He has been a member of academic staff since 2007. His research interests include the joint design of signal processing algorithms and their hardware implementation. He has recently launched a spin-out company AccelerComm to commercialise this research. He is an active participant in the standardisation of 5G.



Prof. Lie-Liang Yang ([users.ecs.soton.ac.uk/lly/](mailto:users.ecs.soton.ac.uk/lly/)), PhD, FIEEE, FIET, Distinguished Lecturer of the IEEE Vehicular Technology Society) has 26 years of research and academic experience in the field of telecommunications. His research interests are in wireless communications, networks, signal processing for wireless communications, and molecular as well as nano-scale communications. He has published 340+ research papers and three books.



Dr. Rong Zhang ([www.ecs.soton.ac.uk/people/rz](http://www.ecs.soton.ac.uk/people/rz)) is an Assistant Professor in the School of ECS of the University of Southampton. He is also a RAEng Industrial Fellow at British Telecom. He is a senior member of the IEEE, a member of the IET, a fellow of the HEA, a member of the EP-SRC Associate College, a member of the Tommy Flowers Institute for ICT and a member of the Isaac Newton Institute for Mathematical Science.

## Contacts/Links for Further Information

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Southampton Wireless: [www.wireless.ecs.soton.ac.uk](http://www.wireless.ecs.soton.ac.uk)  
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