Dear Reader - Michaelmas 2015

This fifth issue of the record for Wolfson Engineers includes news of the 2015 intake and of the 2016 deferred offers to undergraduates and our Part 1 supervisors. The Wolfson College website already includes download links to Wolfson Engineer (Issues 1-4) to provide an insight into those people already involved here to readers intending to apply for mature undergraduate engineering places.

New students

These biographies, shown in order of receipt at Wolfson, use the words of the students themselves.

**Jing Xuan Koh writes:** Hi! My name is Koh Jing Xuan and I am from Singapore. You can call me Jing Xuan or James, and I will be starting my undergraduate Engineering course at Wolfson College in 2015. I have been serving in the Singapore Armed Forces for the past 2 years. Since young, I have always been interested in mathematics and the physical sciences, but I want to study engineering as I hope to invent and create things that can help the world. I plan to specialise in aerospace engineering but I am open to learn about all of the different branches of engineering. In my free time, I enjoy reading books on World War II history, psychology and basically nearly everything under the sun. I also love doing sports and other outdoor activities, including hiking, cycling and judo. Cambridge University has always been my dream school and I really look forward to learning from the world-class faculty here in the months to come.

**Philip Salmony writes:** Hello, my name is Philip Salmony. I am 21 years old and from Heidelberg, Germany. During my past two gap years I have been working at SAP (a large business software company), travelling, and self-studying A-level Further Maths to help me with my undergraduate engineering course. I am very excited to start Engineering Part 1A later this year in October 2015 and am really looking forward to the course, especially Mechanical and Aerospace Engineering. The Cambridge course is ideal to me as I hope to get a broad understanding of many parts of Engineering before specialising in my favourite field. In my free time I love playing the guitar, programming, and going mountain biking. During my time at Cambridge and Wolfson I would love to try out a couple new sports, join societies, and make friends with lots of fun and interesting people.
Jason Jee Too writes: Hello, I'm Jason from a small town in Malaysia. I am extremely excited to start reading Engineering this October (2015) at Wolfson College. Since a tender age, I've been interested in Physics which I've concluded is simply a beautiful marriage between Mathematics and Logic. Thus, I am deeply passionate in creating a sustainable future through the Engineering discipline. Since graduating from A-Levels in November 2013, I spent a year working in a Malaysian NGO, EPIC Homes, dedicated to providing sustainable homes for the Orang Aslis of Malaysia. This gave me the opportunity to travel around Malaysia and get a deeper understanding of local culture. Following that, I enrolled myself into a 5 month long Intensive Chinese Language Program at Tsinghua University in February this year. During that time I've had the luxury to travel around China and experience Chinese culture that was truly a unique experience. I've always admired the role the arts play in pivoting society's focus and concerns to a more noble cause. Thus my hobbies include listening to lot's of music, football and reading humanities related books. I'm really looking forward to starting my university life, develop a deeper understanding in Engineering and meeting new people.

Shutong Feng writes: Hi, my name is Feng Shutong, and I am from China. After having finished my secondary school in China, I was selected by a program to study in Singapore. So I have actually spent five and a half years in secondary school and two years in high school before I get to enter the university. Just imagine how anxious I was when all my Chinese friends went to university while I was still struggling with my A-levels. Since I have waited for so long, I am now extremely excited to join Cambridge.

I found my love towards engineering when I came along robots in my high school. I could spend the whole day sawing and screwing, and I really enjoyed making something amazing out of small gadgets. Besides robots, I also like doing sports and playing bass and guitar. Therefore, while trying to achieve my dream to be an excellent engineer at Wolfson College, I also hope to lead a colourful life by looking for new friends and carrying on my hobbies.
Aaron Szekely writes: I am from Hungary. I will be joining Wolfson College in October 2015. I can’t wait to begin the Engineering course at Cambridge. I am very keen to learn about robotics and machine learning, and look forward to further exploring them or other exciting subjects. I am fluent in Hungarian, English and French and hope to learn a new language through the Language Unit provided for engineering students (Chinese or Japanese probably). For the last year I have been working at an architecture firm in London which has been a great experience and has given me a unique perspective on the city. I now know London well, but looking forward to exploring more of the UK with new people. I like to keep busy, drawing, cooking, and playing sports (I can even be persuaded to play football).

That’s our freshers for 2015: after tough entry and Part 1 exam standards.

Wolfson, as a college for mature (21+) undergraduate students, may offer several deferred places to suitable applicants. These students may not have completed their A-levels or equivalents when they are interviewed and examined for conditional places at Wolfson. The “gap” year can be spent doing a work placement to help satisfy the requirements of the Cambridge Engineering degree or to gain further academic expertise ready for the start of the 1A course. Others often choose to take a break. Whatever the route taken, to be admitted to Cambridge requires meeting the entry level standards, irrespective of whether a college has offered a conditional place. The overall level of applications to Cambridge for Engineering has an entry success level of only 1 in 7 in recent years, although here at Wolfson the success level is closer to 2 in 5 because unfortunately we get far fewer applicants. Several applicants were interviewed overseas. The five students offered places at Wolfson this year were able to meet the very high entry requirements for Engineering at Cambridge University. This emphasises the very competitive environment for high quality places. Students will experience very high workloads across a range of topics so have to be near top of class. Under the Cambridge system, only those students passing their yearly Tripos can expect to proceed into the next year.

New Supervisors (2015-2016)

Mr Kristian Saul started his PhD in Division B of the Cambridge Engineering Department in 2013 after receiving his MEng in Mechanical Engineering from Loughborough University. A significant part of his undergraduate was focused on the development of robotic surgical equipment for neurosurgery. During his degree he also participated in an eight week research project funded by EPSRC developing a concept for human machine interaction. While in his final year Kristian also taught dynamics to penultimate year MEng students. His current research is now focused on the development of a mathematical model of the human heart. Kristian took on the 1B mechanics course in Lent 2015 and will now supervise all Part 1 Mechanics.
Dr Alena Puchkova joined the Institute for Manufacturing in March 2014 as a research associate to work on DisTAL (Disruption Tolerant Automated Lean Factories) project, funded by Boeing. Her research is focusing on developing mathematical model of the operation of a distributed production network and identifying the right trade-offs between lean operations and resilience to disruptions. Alena graduated in '09 from the Faculty of Computational Mathematics and Cybernetics, Lomonosov Moscow State University (MSU), Russia, with a degree in applied mathematics and computer science. She received her PhD in 2013 from the Department of Optimal Control, MSU. "Nonlinear Optimal Control Models in Biological Systems" investigated optimal strategies for fishery harvesting model with state constraint and microbial growth optimisation. Dr Puchkova has industrial and international research experience, having worked as a research and technical associate with Norilsk Nickel Australia in Perth, Australia and also spent three months as an academic visitor at the University of Western Australia and at the Curtin University in Australia. Previously Alena worked as a research assistant at the International Institute for Applied Systems Analysis (IIASA) in Vienna, Austria. working on models for predicting economic recessions and for optimising infrastructure applied to land-use in developed countries. Alena will supervise Part 1 Mathematics.

Mr Peicheng Xu started his PhD study in Cavendish Laboratory, physics department, in October 2014, shortly after he gained MSc degree in Sustainable Energy Systems from University of Edinburgh. Peicheng has also received first class honours in Telecommunications Engineering. He first began to be acquainted with optical materials when he was doing his undergraduate project about solar cell fabrication especially in making growth of CdTe films. The experience of studying in Edinburgh helps him lay a solid foundation for material science and provides him a good opportunity to know his current supervisor in Cambridge. He is now doing research in Optoelectronics Group on synthesizing new materials with DNA linker for optical devices. Though Mr Xu is currently based on physics department, his research is quite a multi-disciplinary one, which requires him to have many collaborations with chemistry and material science department. Peicheng will supervise Part IB materials.

Mr Anirban Lahiri is a Senior Technologist in R&D Department at Xaar Ltd., Cambridge. His current research interests encompass various aspects of “datapath” and drivers for inkjet print-heads. These include enhanced image processing algorithms, high-speed data communication, ultra-high-performance real-time computation and energy-efficient technologies for driving piezo actuators. He has previously been with ARM Ltd., Cambridge, where he introduced and led various projects on Multi-core processors especially for mobile devices like smartphone and tablets. His research enabled and
promoted the Big-Little architectures now commercialized by ARM. Prior to this Anirban has held positions in Philips-NXP Research, University of Texas, Austin and Siemens. His inventions there are widely used in modern hybrid and electric cars. Anirban will supervise Part 1 linear circuits and computing.

Mr Sijun Du is currently a PhD candidate in the engineering department at University of Cambridge. He received an MSc with distinction in Electrical Electronic Engineering from London Imperial College and a Bachelor’s degree with first class honours from University Paris VI in France. His PhD research is on vibration energy harvesting, which involves design of mechanical structures of energy harvesters and interface power conditioning circuits. Energy harvesters can be MEMS-scale or macro-scale; the conditioning circuit design is on both CMOS and board-circuit. His research interests are CMOS/MEMS design, low-power sensors, smart systems, etc. Sijun will supervise Part 1A vibrations.

Dr Maria Cristina Rodriguez-Rivero received her Master in Mechanical and Electrical Industrial Engineering (2008) and her PhD in Chemical Engineering on the topic of Fluid dynamics, flows instabilities and rheology (2014) from the University of Salamanca in Spain. During her PhD she collaborated with different international groups (Department of Aeronautics at Imperial College London or the Institute for Polymers at the University of Minho) and participated in several international conferences. She joined the Department of Engineering at the University of Cambridge in June 2014 and works in the IfM Inkjet Research Centre. Her current research focuses on novel droplet technologies and instrumentation techniques for Drop-on-Demand and Continuous Inkjet systems and on the study of fluid instabilities, microfluidics and other topics of Fluid Dynamics. Cristina will supervise Part 1A thermofluid mechanics.
Mr Joel Adams received his BEng degree in Electrical Engineering with first class honours from Niger Delta University (Nigeria). After completing his first degree he worked with AOS Orwell, an Oil Service firm before proceeding for postgraduate studies. Joel holds a Masters degree in Control Systems from Imperial College London. His MSc project involved the design of fault detection and isolation algorithm for sensors of industrial processes. Joel joined the Distributed Information and Automated Laboratory (DIAL), IfM in January 2015 to pursue a PhD under the supervision of Dr Ajith Parlikad and Prof Andy Neely (Advisor). His research is aimed at developing a rationale framework for optimising maintenance strategies of physical assets with dynamic criticality. Joel will supervise Part 1B control engineering.

Ms Iila Li is a final year PhD in the Structures Group, Division D. Her research project is designed as four years on a geometric shape to develop novel deployable structures. She received her MSc for 3 years of research on steel high-rises in Qinghua University, Beijing, and her BSc for 4 years study on constructional structures in civil engineering. Iila enjoyed Structural Mechanics course the most when she was a first-year undergraduate. She is more than ready to share the freedom of critical thinking and the excitement of solving problems creatively and efficiently. She encourages students to use intuition and curiosity, and therefore welcomes any "bizarre" questions. She strives to build a broad vision and a deep understanding on structures in general in students, which forms the foundation of their future investigation themselves. She has taken all the lectures and example classes of the course she supervises, and solved all paper questions as you will do the same. So sit back, relax and enjoy your exploration into 1A Structural Mechanics with her.

These changes reflect the completion of postgraduate studies by several Wolfson Part 1 supervisors. Wolfson Engineer Vols3-4 contains short form bios and photos for this year’s continuing supervisors.

Part 1 Supervisors

Part 1A (1st year): Mr Kristian Saull (mechanics); Dr Alena Puchkova (maths); Mr Anirban Lahiri or Miss Thilini Daranagama (linear circuits, computing); Mr Ed Flaherty (digital processing); Dr Rasha Rezk (materials); Dr Steve Hoath (dimensional analysis, physical basis of electronics, AC circuits, electromagnetics); Dr Cristina Rodriguez-Rivero (thermofluids); Mr Sijun Du (vibrations); Ms Iila Li (structures).

Part 1B (2nd year): Mr Kristian Saull (mechanics); Miss Emily Woodhouse (structures); Mr Joel Adams (linear systems & control, part); Dr Alena Puchkova (vector calculus, PDE, probability, linear algebra); Mr Anirban Lahiri (Linear circuits); Miss Diana Sher (thermodynamics) and Dr Steve Hoath (electrical power, EM fields & waves); Mr Peicheng Xu (materials).

Part 2 supervisors are arranged by the Department of Engineering rather than by the Part 2 DoS.
Goodbyes...

Dr Di Hu (Part 1 mechanics) had to withdraw after one week’s supervisions through serious illness and we wish him well. Mr M. Fazan Ahmed (1B Control) also withdrew under pressure of completing his postgraduate work. Dr Rafael Castrejón-Pita was appointed to a Lectureship at Queen Mary College London after completing his Part 1 supervision work for Wolfson and we wish him every success in the future. Electrical supervisors Dr Kun Li, Miss Thilini Daranagasama, Mr Salman Abdi, Mr Mehdi Baghdadi and Mr Xuefeng Li completed their research. Mr Peter Levi (1A mechanics from Michaelmas 2014) will concentrate on his industrial work. Mr Marco Zaccaria (1A structures) has completed his PhD and returned to Italy after 3 years committed service as a Wolfson supervisor. Mr Ashley Butcher (1B control) had ably supervised for us, at very short notice last year, but plans to leave Cambridge soon. We welcomed briefly Mr Peter Levi (1A mechanics from Michaelmas 2014), Mr Ashley Butcher (1B linear systems & control), Dr Tariq Masood (1A vibrations Easter Term) and Mr Kristian Saull (1B mechanics from Lent 2015) to our supervision team during the 2014-2015 year.

... and Hello new supervisors

For the 2015-2016 year we welcome: Mr Kristian Saull (Part 1 mechanics); Dr Alena Puchkova (Part 1 maths); Mr Anirban Lahiri (Part 1B linear circuits); Mr Joel Adams (Wolfson PhD) (Part 1B control); Mr Sijun Du (1A vibrations); Mr Peicheng Xu (1B materials); Dr Steve Hoath (Wolfson Fellow, DoS Part 1, 1A electrical prep, physical basis for electronics, dimensional analysis, electromagnetics, AC; 1B electrical power, 1B EM fields and waves); Dr Cristina Rodriguez-Rivero (1A thermodynamics) and Ms Iila Li (1A structures)

News

Dr José Rafael Castrejón-Pita (Isaac Newton Trust Teaching Fellow) was appointed to a Lectureship at Queen Mary College London and left Wolfson College to take up this full-time post in July 2015. Dr Rasha Rezk (JM) was appointed as a Junior Research Fellow at Wolfson from October 2015. Dr Stephen Hoath (Fellow) took a PhD by incorporation of his Oxford DPhil (1977) on 25th April 2015. Meg Westbury (Lee Librarian) was appointed a Governing Body Fellow at Wolfson on 13th May 2015.

DoS activities

Dr Rasha Rezk will be shadowing the DoS Part 1 during 2015-2016. She will assist with the usual DoS duties on Departmental and College Open Days, Freshers Welcome and Registration, College Tests, Supervisor Recruitment and mentoring, Undergraduate Admissions process (Selection for Interview, Interviewing, Test marking and assessment) for which she will receive the mandatory UoC training. She will also attend all Departmental and College DoS meetings on a shadowing basis for 2015-2016.

Dr Antonio Lombardo will be continuing his DoS Part 2 activities, augmented by his involvement with the JRFs, other Fellows and postgraduate students with the aim of improving recruitment of Part 1 supervisors from Wolfson and generally extending the Wolfson Engineer beyond Undergraduates. Other Colleges have nearly all undergraduate teaching performed by Fellows, whereas Wolfson has recently shed its shared supervision provided by Newnham Fellows.

http://www.wolfson.cam.ac.uk/news/congratulations-all-round shows some of the new doctorates in engineering on April 25th. Rasha and Steve are involved in supervising Part 1 students at Wolfson.

Library Resources

Meg Westbury is the Lee Librarian at Wolfson College and is always happy to receive suggestions for additions to the Library’s collection (ask 1B’s Andreas Theodosiou) and to help students with their information needs in any way she can. To contact Meg please email library@wolfson.cam.ac.uk.
Undergraduate Students

Last year

*General Admission on June 27\textsuperscript{th} 2015*

Xian-Jie Tay, Lan Xiao and Jonathan Godden, all gained degrees of MEng (Hons with Merit).
University Prizes and Tripos Achievements
Wolfson engineering students have traditionally performed well in their Tripos exams and of 17 in 2015, 1 achieved class I, 12 were at Merit or Class III, 3 at class IIIi, 0 at class III but 1 Failed Tripos.

Wolfson College Jennings Prizes for First Class or Distinctions in University Exams

Distinctions: -
Firsts: Luechao Wen (2A)

Leavers
Jonathan Godden, Xian Jie Tay, Lan Xiao and Aik Khim Tan
Godden family: Jonathan (2011), Mum, Francis (2010) and younger brother at the Lee Hall reception.

Jonathan (Home), Xian-Jie (Singapore) and Lan Xiao (China) about to start their formal procession from Wolfson College to receive their degrees at the University of Cambridge Senate House.
Graduate stories:
Two of the new Graduates provided short articles [specifically for the Wolfson Engineer Vol 5]:

Hello everyone! My name is Jonathan, I am a recent graduate of the Manufacturing Engineering Tripos [MET] here at Cambridge University. My journey started 4 years ago in the same place as every other Cambridge engineering undergraduate, studying ridiculously challenging mathematics, mechanics and electronics (amongst many other lovely topics!), and it has truly been the best experience of my life.

Cambridge engineering introduces you to a vast range of interesting areas of study before allowing you to choose your own path. I found my home in MET, and have thoroughly enjoyed all of the lectures, labs, practical’s and company visits that are all part of this great course. The final year in particular, MET IIB, was extremely useful. Over the course of the year I have had lectures from industry experts, learned to write code for automated robots, and worked on projects for four different companies; ranging from 4 days of information mapping at a plastics factory, to 7 weeks of concept design of a feature in the next generation Range Rover vehicle.

The MET course in general was also fun outside of the learning environment. The lectures and staff at the IfM are all brilliant, and very useful people to network with. MET students are also the best engineering students there are! The course builds great teamwork and social skills, which developed the class from colleagues to real friends.

I couldn’t be happier with my experience here at Cambridge, and can completely recommend the MET course to anyone who likes to learn a lot and have a great time doing so.

Year 4 is heaven; year 4 is hell. Hi, I am Lan (Xiao), an information engineer.

In year 4, you break free of all the shackle of supervisions. You are once again your own man. You no longer have to read notes until exams or coursework deadlines. It used to be play hard and work hard. It can now be play hard for months and work (really) hard for days. It clearly seems like a pleasant change.

Depending on your supervisor, you might be forced to meet him/her every week or more. Trust me, it would be a good thing. One year doing only one project seems like more than enough time. I certainly thought so. I was painfully wrong. Learning this the hard [way], I would recommend keeping a steady level of working and regular meetings with your supervisor throughout [as always recommended by your DoS].

Naturally, with machine learning or computer vision being the hot things these days, information engineering leads to a lot of jobs. But, wanting to go into software industry, I spent a lot of time learning new things and interviewing for positions. It was fun juggling university courses and self-learning and it paid off. I am going to a software company in London.

The Editor thanks Jonathan and Lan for providing this feedback on their Part 2 (and 1) experiences. They are quoted verbatim [apart from the Editors additions in a couple of places].
Undergraduate Students

Expected this year (2015-2016)
First Year: Shutong Feng, Jing Xuan Koh, Philip Salmony, Aaron Szekely & Jason Jee Too
Second Year: Shauna Greenidge, Ioannis Menikou, and Andreas Theodosiou.
Third Year: Michael Friedman, Kuto Kebaikanye, Matthew Laskey, Thomas Mullners, Claudio Ravasio, and Samuel Willis.
Fourth Year: Yang Chen, Junyu Wei, Luechao Wen, and Changwei Zhou.

Deferred offers (Chemical Engineering via Engineering)
First Year (2016) Han Yuan, and Di Fu Zhu;

Aspiring Engineers

The following generic link provides problems that aspiring engineers might wish to attempt. They are a guide to the questions that might be asked in entry interviews or tests at any top-rated University.
http://i-want-to-study-engineering.org/

Wolfson Research Event –

Friday 1st & Saturday 2nd May 2015 – Lee Hall
College held a series of presentation talks and posters about the research by Wolfson students – postgrads, undergrads, post-docs, Fellows, Emeritus Fellows,..., followed by a reception and Formal Hall for all speakers and their guests. Feedback was provided to every student who had contributed. Students from St Antony’s, our sister college at Oxford contributed to Wolfson’s day of celebration. We also heard a presentation from a pair of Wolfson undergraduates, who outshone everyone else. Engineering postdocs and postgraduates from Wolfson also presented interesting talks and posters.

Friday 4th March 2016 – Lee Hall
Next year WRE will be held at the end of Lent Term, so that more Wolfson students can be involved. Wolfson Science Society will be directly involved in WRE organisation for the first time this decade. Presentations from Wolfson Engineers and Scientists would be very welcome – perhaps ex UROP?? [Undergraduate Research Opportunities Program: summer work placements of Cambridge students]

Wolfson 50th Anniversary Celebrations
The achievements of Wolfson’s top students were lauded: 31 Distinctions and Firsts in Tripos (17%) equalled last year’s record performance, amply demonstrating the top quality of the mature intake. Over 450 alumni and guests were present at the Anniversary Dinner (black tie) held on July 4th 2015.

Wolfson Science Society

The Science Society aims to explore various facets of Science, for the benefit of members of the College and of the larger Cambridge community, and encourage new journeys into science. All our talks are accessible to non-initiates – so whether it’s your first trip to the Science world, or you’re a great traveller of those lands, join us in our next journey! Details of the talks are available on the usual Cambridge drums: talks.cam, Agora and at www.wolfson.cam.ac.uk/seminars/science.
Wolfson Engineering Fellows and Emeritus Fellows

Undergraduates (and Postgraduates) are encouraged to make contact with any of Wolfson College’s Senior Members, Junior Research Fellows, Fellows and Emeritus Fellows of the College, including:

Professor John Naughton (Professor of Public Understanding of Technology @ OU); Professor Steve Evans (IfM Industrial Sustainability); Mr Tom Ridgman (IfM External Education);

Dr Rasha Rezk (JRF 2015, DoS Part 1 shadow); Dr Antonio Lombardo (JRF 2014, DoS Part2, Cambridge Graphene Centre); Mr Simon Pattison (IfM Course Director, ISMM);

Dr Ivor Day (Rolls Royce Fellow, Whittle Lab, aeronautics); Dr Stephen Hoath (IfM inkjet, DoS Part 1 & MET)