

# Electronics After Hours Club

## Enhancing Students' Practical Skills

Hands-on practical work is a crucial part of any Engineer's skillset and in high demand in industry. The latest [IET survey](#) on the skills gap, found nearly half of employers in the technology sector reported a gap in skills in their internal workforce at the professional, operative and technician level. Moreover, around a third say they are seeing a shortage of technical skills in their apprentices or other trainees.

Typically, university students studying Electronic and Electrical Engineering, or a related degree, are introduced to practical work and lab equipment as part of their assessed courses. However, with marking and grades looming in the background this introduction can be a daunting and stressful experience. Furthermore, the design tasks carried out in assessed courses are fixed and there is limited opportunity for personal creativity.

Started in 2013 by Dr. Martin Reekie, the After Hours Club (AHC) at the University of Edinburgh provides motivated students with an opportunity to rapidly expand their practical electronics skills alongside peers in a supportive and collaborative non-credit bearing environment. The club has since developed and broadened its agenda to include for example summer projects and guided learning sessions. However, the driving force behind the club is to provide a space for students to design and build their own electronics projects and give them access to specialised lab equipment not available at home. The club runs in the university teaching labs once a week for 2-3 hours, outside teaching hours.



Unlike university societies, the After Hours Club is a school-led initiative and requires no sign-up or membership fee. It is managed by the club organisers, lab technicians and a member of teaching staff. It operates on a small budget provided by the school for the occasional component purchase. The club is open to anyone interested in electronics (not just engineering students!) and participants can attend on the weeks they want; no commitment is necessary. The role of the school is to provide a (small) budget, access to the teaching labs and arrange for a technician to oversee health and safety on university premises. The club organisers run the weekly sessions and assist participants during club hours. The club has only one rule (barring health and safety): no university work allowed!



In the past, student projects have involved drones, LED cubes, PCB design, 3D printing, learning about microcontrollers and much more. No specific expertise is required by the organisers nor students; an interest to learn and discover is enough. The amount of work to manage the club is small, organisers can simply aid student's projects, or choose to produce material for more directed forms of learning based on their interests. For example, by running a 3D printing tutorial or teaching the basics of a new microcontroller platform.

There is limited course time dedicated to laboratory work in an already packed curriculum and staff recognise the importance of developing student's practical skills further. It is evident the After Hours Club is a great success. Students enjoy the relaxed learning environment and can use the time they have spent on personal projects to highlight their skills and interests to prospective employers. Recently, the club has started running paid summer projects for keen students. In the past few years two successful projects have taken place, both based on an open-source robot arm controlled by a Raspberry Pi. The robot arm "Bob ROS" has since been used during university open days to showcase exciting electronics projects to prospective students.

Professor John Thompson from the School of Engineering, the current staff member leading the AHC, said, "The After Hours Club has been a successful activity, since it was initiated by my colleague Dr Martin Reekie. It is nice that the club is now run by students for students, and it has been my pleasure to see the club develop in the last few years. The club is now changing leadership and I hope it will continue to be successful in the future!"

PhD student Filip Taneski, the current organiser of the club, said, "The After Hours Club is exactly the sort of space and community I would have loved to exist when I was an undergrad, so I am hugely grateful to help provide this now for our current undergraduates. The weekly schedule also helps to ensure that I get a healthy balance of time to work on fun experimental projects outside of work commitments."

Filip was nominated, and one of three shortlisted, for an Edinburgh University Students Association (EUSA) Teaching Award (Student Tutor of the Year). Filip was also nominated for a university Tutor Award for his efforts running the club.

A member of the After Hours Club explains the benefits, "Filip voluntarily runs the After Hours Club for electronics on a weekly basis, providing students a space where we can creatively practice our technical knowledge, while engaging in a social space at the same time. There are very few social spaces on the King's Buildings campus for engineering, so this club is a great way to engage with course mates outside of teaching hours. It really helps create a sense of community. The technical support is outstanding, as Filip goes out of his way to create a great learning space with all the equipment we may need. He is very approachable and open to trying out new ideas. I think the After Hours Club is unique in being able to employ a couple of undergraduate student tutors and even facilitate summer internships, thus really encouraging our professional development."