



The Electrical, Electronics and Computing Engineering Newsletter



IN THIS ISSUE

STUDENTS TEAMS

PHD CORNER

**BUDDY
MENTORING**

THE STAFF CORNER

**INTERNSHIPS
TESTIMONIALS**

**ATHENA
SWAN
BURSARY**



Welcome

Matt Dunnigan - Head of EECE

Dear EECE Student,

As Head of EECE and on behalf of all the Academic staff I would like to welcome you to the new Academic Year whether you are a new or continuing student. For returning students I hope the summer has given you a welcome respite from your academic studies. For new students I hope you are excited by the prospect of a new direction in your life.

There is no doubt that the past three academic years have been incredibly challenging for all students (and staff) as we moved rapidly to online delivery of all classes with the considerable disadvantage of the cancellation of practical activities in the Laboratories. The delivery and assessment methods have changed during the course of the pandemic and you have had to adjust to these which we know has not been easy. Thankfully, we are now in the situation where this new Academic Year will look normal with almost all lectures and tutorials being delivered face to face and practical Labs fully reinstated.

It is important to know who you can turn to if you experience issues during your study whether these be academic or personal. For academic issues relating to a particular course you should contact the Academic delivering that course. For issues that are non-academic which are affecting your ability to study you should contact your Personal Tutor who can advise you accordingly. Your other points of contact are your Year coordinator and myself. If you are experiencing problems please reach out early for help.

Although the pandemic created a multitude of problems it was incredibly pleasing to see how active you have been during the last academic year and this has been exemplified by the efforts of three student project teams - Cansat, Aerowatt and Formula student. A particular highlight was the incredible fourth place achievement from the Cansat team in this international competition which took place in the USA. This tells me that our students are capable of achieving great success through their considerable talents, creativity and hard work. Long may this continue!

ALL THE BEST FOR THE FORTHCOMING ACADEMIC YEAR.

BEST REGARDS,
MATT DUNNIGAN



Liza Masson, EECE
School Officer

Hi everyone and welcome to Heriot-Watt University and to this new academic year! I'm Liza, co-president of the Robotics Society, treasurer of the EECE Society and School Officer! I'm a 4th Robotics student trying to get the best experience possible and helping others to do so!

I will be getting in touch with all of you regularly via emails and some coffee breaks to make sure you all have the best university and academic experience. If there are any problems within your course get in touch with your Class Reps or with me.

If you are interested in being a representative of your class and the student's voice, please volunteer to become a Class Rep and get in touch with me at lm388@hw.ac.uk or on Teams! We are actively recruiting!

I'm often wearing red, so if you see me, come and say hi! I might have a biscuit for you!

EECE DEPARTMENT

A new university might be scary and it's easy to feel lost. We want to avoid that and help you feel comfortable in your department!

Find below a list of contacts that might help you in future questions!

Head of EECE	Matthew Dunnigan
Deputy Head	Jose Marques Hueso
1st Year Coordinator	Yoann Altmann
2nd Year Coordinator	Dimitris Anagnostou
3rd Year Coordinator	Abderrahim Halimi
4th Year Coordinator (BEng)	Jiasheng (Jason) Hong
MEng Coordinator for 4th and 5th Year	Anne Bernassau
MEng Industrial Advisory Board Coordinator	Jonathan Swingler

MSc. RAIS Programme Director	Mauro Dragone
MSc. Data Science Programme Director	Yves Wiaux & Yoann Altmann
Associate Student Lead	Matthew Dunnigan
GA EDM (Electronic) Prog. Director	Adnan Ilyas

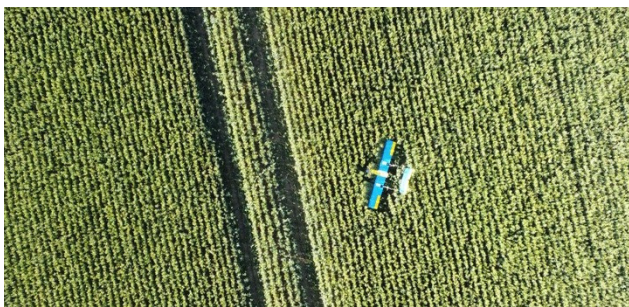
GA Data Science Prog. Director	Gule Saman & Hebatallah Shoukry
PGR Coordinator	Anne Bernassau
Special Needs Coordinator	Gule Saman



TEAM AERO-WATT

For those who read issue 1 of the EECE Newsletter, yes we did crash on one occasion, however, we rebuilt and flew at the competition (as shown by some of our lovely photos!)

We are Team Aero-Watt, a down-to-earth multidisciplinary team annually building a fully autonomous plane for the IMechE UAS challenge! Teams from different universities all over the world take part in the competition that this year took place at BMFA Buckminster over 4 days - completing missions such as way point navigation, image recognition, and more. This year, the competition was flying far above the rest, with organisers noting that teams were out flying earlier in the week than ever before!



a fully autonomous VTOL plane in the history of the competition! On top of that, our UAS - coined AW404 - absolutely lived up to its name, going missing a few fields over and holding the flight line back an hour during its first flight...

However, eventually we were more successful, but the story certainly has much more turmoil than that. You might just have to speak to one of our previous team members at the Watt Welcome Fair to learn more or follow our Instagram at @aerowatt to hear about any other events we'll be at!

Does any of this rambling sound interesting to you, or have an idea that you think would be amazing? Well, get ready to spread your wings and fly, as we are recruiting for the coming academic year!

RECRUITING !



Applications will open on the 5th of September (start of Welcome Week!) and will be open until the 23rd of September (end of week two!). Applications will be quick, and short-listed applicants will be interviewed during September, with a focus on interest rather than specific knowledge (you will learn, that's why it's a project!).

Connect with us through the QR Code below!

We look forward to meeting many of you at the Welcome Fair, and hopefully seeing many of you applying!



Our team is made up of around 18 members but are generally split into two sub-teams: Airframe and Aerodynamics (AA) - focusing on the physical plan, materials, build, and layout of the plane, and Software and Electrical Systems (SES) - focusing on the power system, autonomy, and control of the plane. However, we try to promote as much cross team collaboration and both teams are involved in big decisions! Working through year-round deliverables, ensuring the plane fits technical specifications, and physical rapid-prototyping alongside iterative assembly, we really try to provide an industry-similar experience but with all the perks of being student led, such as regular socials!

Being only our second year competing, we obviously went for the top spot - unfortunately for us, we didn't win. However, we came 7th overall, and more impressively were the first team to successfully take off, transition, and land

THE ROBOTICS SOCIETY



**HERIOT-WATT
ROBOTICS**

We welcome all students from any background to join the society as long as you have an interest in doing some tinkering around with electronics and motors!

We offer weekly "Come & Build" sessions in the GRID lab (we might get our own space soon, stay tuned!). It's a time for you to come along and bring any project or idea that you wish to work on. Some people will team up together and others will just join for some help and company!

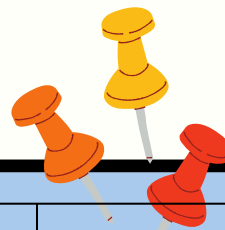
As you can see on the calendar below, during the semester there will be some key events here and there, like Crash Courses and social events to make robotics even funnier! There will be a competition at the end of the semester! Keep an eye out for any announcement!

With the new National Robotarium opening in September, it feels like Heriot Watt is all about robots lately. There's no better place than for the HWU Robotics society! Founded four years ago (already?!), we've grown and have been keeping ourselves busy! The society aims to bring the fun side of robotics at university by creating a sense of community among our students.



If you are interested just come and see us on Wednesday at the Fair or at any time between 2 pm and 4/5 pm on Wednesdays in the GRID.

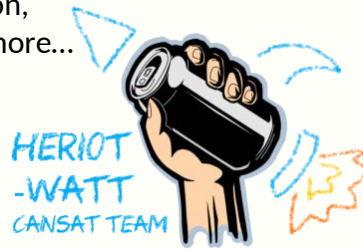
Follow us on our social media to stay updated!



Freshers			Freshers Fair		Pub Engineering
Week 1			Tour Introduction		Bit Drop Challenge
Week 2			CrashCourse Come&Build		BBQ Social
Week 3			NR Opening Come&Build		
Week 4			Come&Build		
Week 5			Come&Build		
Week 6			Movie Night Social		Pub Crawl

CANSAT TEAM

If this is the first time you've heard about us, you may be thinking: what on earth is CanSat? Well, the CanSat competition is an international challenge organised by the American Astronautical Society, which has teams from universities competing to design and build a rocket-launched probe to be deployed at the start of summer. At least that's the official (and boring) explanation, but we've learned it's much more...



It starts like every university project does, with complete chaos. We receive a mission guide, which outlines every detail of the year's competition, and have only six months to put together a rocket payload. To stand a chance against the world's top universities, we spend the year perfecting our design: building, testing, and re-building to meet the extensive requirements in hopes of attending the launch in America.

Last year, our efforts paid off when we placed 4th internationally, despite many last-minute hurdles and copious amounts of duct tape; after months of work, and dozens of sleepless nights we were all incredibly proud to have had the chance to launch our design. Even getting to spend some time in Washington D.C and Virginia, as well as meeting some incredible people from all across the globe.

RECRUITING

We loved our time at the competition and would love for you to **join us this year**. If you are interested, look for further information from us, we are **recruiting** new members soon!

If you would like some more information please contact us at: sw2029@hw.ac.uk
Or come see us at the Freshers fair on Wednesday 7th, to ask any questions you have.



Want to see what our project looked like? Head over our Instagram and watch this video!



FORMULA STUDENT



HWRacing is Heriot-Watt’s entry to IMechE’s yearly Formula Student Competition. We are a team of dedicated students who design and build a race car to compete against other universities from all over the world. In 2022 we presented our first Electric Vehicle entry to the competition and were the third best new entry in that category and 20th place across all categories. This year we aim to beat that..

steering, brakes to brackets and other driving controls fall under the mechanical team. The powertrain team designs the accumulator and everything that comes with it and electrical systems takes care of everything else electrical on the car. Our aerodynamics team is the youngest and works with the bodywork and wings of the car to give better driver control.

The Formula Student competition takes place annually at the Silverstone circuit. Students from around the world build their own race cars to compete. Cars are judged on design, costing and manufacturing processes, a business plan as well as performance in terms of acceleration, efficiency and other dynamic properties. Concluding over a week in July, the teams bring their cars to Silverstone for the competition to race in the dynamic events.

The team works in four major areas, mechanical, powertrain, electrical and aerodynamics. Everything from the chassis, suspension,

RECRUITING



This year’s recruitment will open on the 5th of September. Have a lookout on our site at the union to find the link. Recruitment will take the form of an initial application letter followed with more of a chat than an interview to get to know you before we bring you onto the team. We welcome students of all years studying undergraduate or masters courses (competition rules, not ours) from any course of study. Although previous knowledge is welcome, we really do look for enthusiasm above all else!



Come visit our stall at the Watt Welcome Fair to get a look at the car and a chance to chat with us if you are interested or feel free to email us at fs60@hw.ac.uk with any questions you have!



EECE SOCIETY

The EECE Society is a new society for all people in the department including: undergraduate, graduate apprentices, postgraduates, and academics. The aim of this society is to create a community within the department to create a better experience for current and incoming students as well as make academia more approachable. We aim to do this in three ways: community outreach, bring awareness to diversity in STEM, and student-to-student support.

We will achieve this through regular seminars, highlighting underrepresented people in STEM, running a Buddy System, and through this newsletter! Apart from this, we will have two main social events each semester. The first will be a Winter Ceilidh (more information in this newsletter!) and the second a summer BBQ.

Meet your committee

Elisa Ramil (esr1@hw.ac.uk)
2nd year PhD
President

Tanya Chakona (tc2000@hw.ac.uk)
3rd year EEE
Co-President

Liza Masson (lm388@hw.ac.uk)
4th year MEng Robotics & School
Officer
Treasurer

Bolu Julius (baj1@hw.ac.uk)
3rd year EEE
Secretary

*you're
invited!*

The Winter Ball will be happening on the 26th
of November at the Corn Exchange.
Register through the QR code for the pre-sale.



THE PHD CORNER

Institute of Sensors, Signals and Systems (ISSS)

ISSS PGR Rep - Elisa Ramil

As postgraduate researchers' representative, I am working towards increasing the sense of a community within our institutes and across the School of Engineering and Physical Sciences (EPS). This year, our research institute (support provided by the Head of Institute Prof George Goussetis) provides free coffee, tea to the PhD students, and access to a microwave (in front of EM2.40).

In addition, EPS has funded a walking tour and pizza event in March for all PhD students across the school.

We started organizing monthly seminars (ISSS/EECE events) and weekly coffee (Tuesdays@1pm) catchup meetings which will resume in September. If you have suggestions on topics or ideas of events, please get in touch. We have also further plans in the works, so keep an eye out on your email and the PhD Whatsapp group!

If anyone would like to participate in the organization of events, have any feedback, or questions feel free to contact me at esr1@hw.ac.uk

Freshers			Freshers Fair		
Week 1					Buddy Mentoring last call
Week 2		How to learn and study Seminar			
Week 3	Experiment Design Seminar			Industrial Event	
Week 4				Industrial Event	
Week 5				Industrial Event	
Week 6	Report Writing Seminar				

EECE Society's Calendar

STUDENT EXPERIENCES

Chirsty Ritchie's Athena Swan Bursary Experience

The Athena Swan Bursary is something I am extremely grateful to have been offered. The bursary supports gender equality in the research community and as a woman in STEM - which has commonly been a very male dominated space - this is something I can strongly support. The bursary allows students the freedom to undertake a research project that they are passionate about over the summer months and really helps develop technical and social skills involved in this.

The project I conducted was based on solar energy and ways to improve, specifically, the efficiency of solar cells. I was using equipment in a lab that I hadn't been introduced to before and it was exciting. I really felt that I had been given the opportunity to learn and expand my knowledge freely by experimenting with devices and processes which I hadn't had much knowledge of prior and being creative in finding solutions to problems that occurred.

It really opened my eyes to how fascinating research projects can be and even allowed me to decide on a placement I would undertake for my master's because of how interesting and motivating the experience was.

I believe that being given this opportunity over the summer through the Athena Swan Bursary has really benefitted me by preparing me for what to expect when undertaking my master's placement and giving me a new field of engineering to enjoy and potentially make a career out of.

Internship Experience - Bolu Julius, 3rd year EEE

As a student who was in 2nd year, it was difficult for me to find an internship in the industry. I contacted my personal tutor for advice or any opportunities he had information about. He gave me information about an internship opportunity he could provide me within the department.

This was a paid internship, funded by AWE, which lasted for a duration of 8 weeks. It involved writing a tracking code (using MATLAB) for a regular Kalman filter, and a discretized Kalman filter.

As I did not have a lot of background with Bayes filtering, I was initially given tasks that would help me become familiar with the necessary general concepts. The first 3 weeks involved writing code for tracking a single object using the normal Kalman filter, while the latter stages of the internship involved writing a code for tracking multiple objects with the discretized Kalman filter.

This internship was a very nice experience, as it gave me the opportunity to experience research, it also gave me ideas of fields I would be interested in going into after I graduate. In addition, it helped improve my proficiency in MATLAB which is something I am happy about, as this will help me in the latter stages of my studies.

Internship Experience - Stefan Ganescu

Research internships are a great way to provide students with opportunities to learn through practice and gather valuable experiences. I took a two-and-a-half-month internship last summer, where I aided in the research of using an event-based camera in the field of microscopy. During this time, I had focused on building and modifying parts of a microscope to compare two cameras at the same time. This may provide a cheaper and easier way of observing moving specimens, such as objects flowing through liquid.

Being able to learn from experimentation while also building something new is quite compelling, and the general research environment is very friendly. Through this training, I am now more capable of quickly understanding a project and finishing it in a much faster and superior way. Overall, I have really enjoyed my time during this internship since I was able to work on something that was both interesting and fun to do. This has also made me strongly consider a career in the field of research.

THE STAFF CORNER

A new manufacturing laboratory at the Earl Mountbatten Building

Marc Desmulliez - MDMC Manager

A new centre, called the Medical Device Manufacturing Centre (MDMC - <http://www.mdmc.hw.ac.uk>) has been created to offer SMEs access to manufacturing facilities for the creation of off-the-bench prototype to low volume of products.

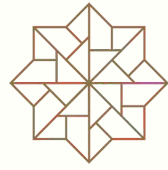
The Centre, sited in EMG.17 and to a less extent EMG.76, purchased around £2M of new pieces of equipment for processes such as injection moulding, bonding (laser systems), engraving (laser), drilling (electrical discharge machine, CNC machine), deposition of metal tracks (conductive track 3D printer),

rapid prototyping (resin and filament based printer), analytical characterisation (SEM and optical profilometer), and reliability (vibration test, T and RH cycling chamber). Four technology specialists use the machines and help companies.

It is possible for PhD students and PDRAs to use the facilities for their research once charging fees for the use of the labs and equipment has been arranged with the supervisors. Students and PDRAs will be trained by the technology specialists and then free to use the facilities. A photograph of the lab is provided below. For more information, please contact Marc Desmulliez at m.desmulliez@hw.ac.uk.



THE UNIVERSITY CORNER



THE NATIONAL
ROBOTARIUM
PEOPLE CENTRED :: INTELLIGENCE DRIVEN

The National Robotarium, the UK's centre for Robotics and Artificial Intelligence, is officially opening on 28 September.

Located on Heriot-Watt University's Edinburgh campus, in partnership with the University of Edinburgh, it will be the largest and most advanced applied research facility for robotics and artificial intelligence (AI) in the UK, creating an innovation hub for the practical application of robotics and autonomous systems.

The VIP opening event will gather leading figures from government, industry, research and the robotics community for robot demonstrations and a tour of the multimillion-pound, purpose-built facilities, central to the development and testing of robotics and AI solutions across three distinct areas; Robotics and Autonomous Systems (RAS), Human and Robot Interaction (HRI) and High-Precision Manufacturing.

Find out more about how the National Robotarium will advance robotics innovation on a global stage:



BUDDY MENTORING

Student-Led Peer Mentoring Systems for improved resilience at EECE

Mathini Sellathurai - Dean of Science and Engineering

During the 2021/2022 academic year, we developed a support system for students to share their personal, educational, and professional experiences with their peers by pairing up with a junior student (year 1 to year 4 students) with a "Buddy" who is a senior student (year 4 and year 5 students). We call this scheme a "Buddy-Network". This Buddy-Network is also part of "Heriot-Watt University IEEE Student branch" initiative.



Without a doubt, the Buddy-Network increased Student Action for Resilience last academic year. A student Buddy is a Peer Mentor. They can listen and help with a friendly face to their university experience and short-term difficulties. The project also aimed to offer insights into future career perspectives, skills set, job market (present and future), internship opportunities and experiences, and course selections (optional course selections), and overall organisation. These are sometimes perceived difficult for many and a buddy who

can share their experiences or knowledge going through the same or similar system to offer advice and help.

This year, the Buddy-Network will also be available from year 1 to year 4 students as Mentees. Volunteers from year 5 and 4 students (graduating students) will nominate themselves as mentors. **The mentor's work will be recompensated by a gift payment from the department.**

Joining our "Buddy network" will help student-student and student-staff communications. EECE Staff in particular believe Buddy-Network feedback will help us improve teaching and administration aspects.

If you are keen to join as a buddy (student mentor) or as a student mentee in our Buddy Network, please get in touch with the EECE Society contact: Liza Masson, lm388@hw.ac.uk or Elisa Ramil Brick, esr1@hw.ac.uk.

Thank you to everyone who contributed to this issue!

Do you have something interesting to share?

Your group project result must be seen?

You want to be in the newsletter or just help us out?

Contact us: eece-newsletter@hw.ac.uk

Instagram: [@hwu.eece](https://www.instagram.com/hwu.eece)

Look out for our next issue in week 6!



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