



Summer Undergraduate Research Programme 2026

The CREATE-DKIT Summer Undergraduate Research Programme (SURP) funds short-term research projects for up to 8 weeks during the summer months for undergraduate student researchers

Students must be on course to start year 3 and/or year 4 of their undergraduate degree in DkIT in Semester 1 of the 2026/2027 academic year. Through this programme, DkIT seeks to:

- o facilitate short-term projects that will generate preliminary data for future research proposals;
- o identify the next generation of outstanding postgraduate researchers,
- o Provide valuable, real-world research experience to undergraduate researchers

Undergraduate researchers will receive a bursary of €200 per week, paid fortnightly.

To apply, please email a copy of your CV and a short cover letter outlining your motivation for applying to the supervisor listed under your preferred project. **Deadline for applications is Monday July 6th.**

CREATE-DKIT is co-funded by the Government of Ireland and the European Union through the ERDF Southern, Eastern & Midland Regional Programme 2021-27.

SURP PROJECTS:

Project reference number:	SURP2601
Project name:	An Investigation into the Life and Writing of Catherine Gaskin
<p>Project Overview:</p> <p>The aim of this project is to briefly investigate the life and works of Dundalk born author Catherine Gaskin (1929–2009). The project will explore Gaskin’s background and early life before her family’s relocation to Australia, and the themes apparent during her prolific writing career between the ages of 17 until her death at the age of 80. The project aims to identify gaps in existing literature and knowledge of her life and work. The themes may influence future studies such as the area of Gothic literature or the portrayal of women in romance novels.</p> <p>The objective of this project is to provide an undergraduate with the opportunity to immerse themselves in a research project that will enhance their investigative, communicative, and written skills. The student will develop practical skills in planning and managing a project; sourcing and evaluating academic literature; critical and creative thinking and reviewing outcomes.</p> <p>In addition, the student will enhance their problem-solving skills, learn to analyse, synthesise and present findings and respond to feedback. In addition, as the short timeframe of the project will encourage focus, the student will learn how to conduct a literature review that conducts meaningful outcomes. This venture will offer the student an insight into academia, project management and writing for publication, and encourage their own exploration into opportunities in these career areas</p> <p>Candidate profile:</p> <p>The student is required to be focused and organised, to maintain a steady work output over the term of the project. An interest in history, literature, or women’s studies is desirable along with basic IT skills. It is foreseen that this project will only require the use of Microsoft packages,</p>	



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including Word, Powerpoint and Excel. A basic introduction to the use of Canva and Zotero software will be provided by the second supervisor. Library and internet access is required for this project, and the student will work on a hybrid/remote basis.

To Apply:

Send your CV and a short cover letter outlining your motivation to undertake this project to

Dianne.McPhelim@dkit.ie

Daithi.Kearney@dkit.ie

Project reference number:	SURP2602
Project name:	Mapping the North East Regional Ecosystem – Enterprise, Heritage, Cultural, Education, Sport and Community Assets

Project Overview:

The aim of this two-person project is to develop a searchable central database of the North East regional ecosystem which includes the counties of Louth, Meath, Cavan and Monaghan. Working as a team of two, students will research, gather, classify and integrate data from multiple verified sources into a single user-friendly platform and database.

This project will support the new Research Centre in the School of Business and Humanities. The database created will support researchers to access reliable up-to-date information on regional activities and potential collaborators.

This project will suit a second or third-year student who is interested in learning more about secondary research and is comfortable gathering data and a second student with IT skills interested in developing the platform.

The objectives of the project are as follows;

- To research, gather and record** key organisations and their corresponding information and contacts across the North East regional ecosystem using verified sources of information. This includes gathering and classifying data on industry and local business, sporting organisations, heritage sector, arts, culture and creative industries, community and national and local government organisations.
The information gathered will cover the four counties in the region, Louth, Meath, Cavan and Monaghan.
- To establish a structured searchable data framework** to support information collection and presentation. The framework selected should be usable, searchable and easy to update.
- To build an initial regional database** for researchers and academic staff within the school. Platform and database format to be agreed with supervision team.
- Write a report and instructions on how to use and update the database. Include any gaps within the data collected.
- Create an excel sheet (hyperlinks) containing all sources accessed and when.



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Candidate Profile:

This project is seeking 2 undergraduate researchers.

Student one (Data and research focus): A detail-oriented student with strong research and organisational skills who can find, classify and record data from multiple platforms into a structured format.

Student two (Technical and systems focus): A technically minded student with an interest in IT who can design and develop a searchable database and dashboard to integrate and present the data effectively.

Both students will work together with the supervisory team to identify the information required the plan of work for the project.

Students should be self-motivated and good at time management.

Students will be expected to meet with supervisors both in person and remotely on MS Teams and will be based in the School of Business and Humanities

To Apply:

Send your CV and a short cover letter outlining your motivation to undertake this project to

Maeve.mcardle@dkit.ie

Colin.cooney@dkit.ie

Project reference number:	SURP2603
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Project name:	Enhancing SME Cybersecurity Readiness: Exploring Awareness, Barriers and the Role of AI-Enabled Support Frameworks: A scoping study of Co. Louth
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Project overview:	<p>The aim of this project is to explore current awareness and challenges of cyber security among SMEs and the potential of digital and AI powered solutions to provide a more accessible and practical cybersecurity framework.</p> <p>Students will examine current guidelines and policy governing cyber security in Ireland for SMEs and working with local business networks (LEO, Chamber of Commerce) develop a survey and conduct interviews with local businesses to understand their challenges and practices.</p> <p>The project will also aim to develop linkages between DKIT and local business in terms of cybersecurity, and help towards future internships and job opportunities.</p> <p>The objectives of the project are to:</p> <ul style="list-style-type: none"> • Assess the level of awareness and current attitudes among SMEs towards cyberattacks. • Explore the current challenges facing SMEs in accessing and employing traditional cybersecurity tools.
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- Examine the potential opportunities and limitations of digital and AI in enabling SMEs to manage their cyber security needs.
- To garner insights to develop a practical framework to enable SMES to manage their cyber security.
- Help DKIT develop links with SMEs in terms student internships, program development etc.

Student profile:

Student with a business/marketing/computing background with an interest in cybersecurity &/or SME/enterprise development and entrepreneurship.

Skills: Essential skills: Strong communication skills; (writing and oral communication); ability to work independently, engage regularly with academic supervisors, ability to organise and manage their time effectively and willingness to travel to meet local companies in Dundalk & Drogheda.

Desirable skills – Prior experience in basic research skills (survey design skills (using SurveyMonkey or similar tools) & conducting Interviews), Data literacy Skills (familiarity with excel desirable).

Based: The student will be based in the Business School @ DkIT and have access to computers in Lab. Hybrid working model consisting of some face-to-face meetings with supervisor and external companies, and off campus/online and remote working.

To Apply:

Send your CV and a short cover letter outlining your motivation to undertake this project to Paula.duffy@dkit.ie & Kate.Johnston@dkit.ie

Project reference number:	SURP2604
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Project name:	Defining the contribution of Orai channels to purinergic bladder smooth muscle contraction
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Project Overview:

This 8-week SURP project will investigate how Orai calcium channels contribute to bladder smooth muscle contraction. The bladder contracts during urination through activation of nerve-released signals including ATP. In some bladder disorders, including overactive bladder, ATP-dependent (purinergic) contractions becomes more prominent, but the calcium entry mechanisms supporting this response remain unclear. The student will work in the Smooth Muscle Research Centre (SMRC) to test whether blocking or enhancing Orai channel activity changes purinergic contractions in mouse bladder tissue. The project will generate preliminary data on how Orai channels and intracellular calcium store release contribute to bladder contractility, while providing practical training in smooth muscle physiology, pharmacology and data analysis.

Under supervision, the student will: learn preparation of physiological solutions and safe laboratory practice; dissect mouse bladder and prepare detrusor smooth muscle strips; use organ bath isometric



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tension recording to measure contractions evoked by a purinergic agonist, α,β -methylene ATP; test the effects of Orai channel inhibitors (GSK7975A/Synta66) and the Orai enhancer IA65; analyse contraction amplitude and area-under-the-curve using recording & analysis software; and prepare graphs and an end-of-project short internal report/presentation. Training will be provided throughout by Dr Caoimhin Griffin and Dr Srijit Ghosh.

Candidate Profile:

The student will be based fully on campus in the SMRC at DkIT. Applications are invited from registered DkIT undergraduates due to commence Year 3 or Year 4 in Semester 1 of 2026/2027, particularly students in Bioscience, Pharmaceutical Science, Biopharmaceutical Science or related Life and Health Sciences programmes. The project suits a student with a strong interest in physiology, pharmacology and laboratory-based biomedical research. Good practical skills, attention to detail, reliability and willingness to engage with data analysis are important. Previous research experience is not essential; training will be provided. Strong performance in relevant practical/laboratory modules would be advantageous.

To Apply:

Send your CV and a short cover letter outlining your motivation to undertake this project to

caoimhin.griffin@dkit.ie

Project reference number:	SURP2605
Project name:	Hospitality Experiences of Families with Neurodivergent Members in Ireland: Barriers, Facilitators and Recommendations for Inclusive Practice

Project Overview:
This project aims to investigate the hospitality experiences of families that include at least one Neurodivergent member in Ireland, with a particular focus on dining-out and hotel-stay contexts. This research will utilise the census definition of a family: a couple with or without children, or a single-parent household with one or more children. Family members must be usual residents of the household in question (CSO, 2022). Despite growing scholarly attention to disability-inclusive service design, families with autistic members remain significantly underserved by mainstream hospitality providers (Jamin et al., 2024). This study seeks to generate empirical, Ireland-specific evidence that can inform practitioner guidance, industry training, and future research funding applications. The primary aim of this project is to explore and document the lived hospitality experiences of families with neurodivergent members in Ireland, identifying key barriers, facilitating factors, and recommendations for service improvement.

Objectives:

- To examine the frequency and nature of hospitality engagement (dining out and hotel stays) among families with autistic members in Ireland.
- To identify the principal challenges and stressors encountered by these families within hospitality settings, including sensory environment, staff awareness, menu accessibility, and spatial design.



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- To document the factors that positively enable or enhance the hospitality experience for these families, including pre-visit communication, staff training, and sensory-friendly adaptations.
- To discover which service dimensions are most important to families when selecting or evaluating a hospitality provider.
- To obtain actionable, family-led recommendations for hospitality operators seeking to improve the accessibility and inclusivity of their offerings.
- Also, to produce a preliminary dataset and summary report that can support the development of future, larger-scale research and funding proposals in this domain.

Candidate Profile:

The ideal candidate will bring a combination of academic competence, interpersonal sensitivity, and a genuine interest in disability-inclusive research. The student will gain direct experience of the full research cycle from design and ethical approval through to data collection, analysis, and written output and will be supported throughout by regular supervision. This experience is expected to be of direct benefit to students considering postgraduate research or careers in the tourism, hospitality, or disability sectors.

Academic Background:

Candidates from degree programmes in Hospitality Management, Tourism Studies, Business, Social Sciences, Psychology, or related disciplines are particularly encouraged to apply. The project does require some prior research experience, though familiarity with qualitative research concepts (e.g., through coursework or modules in research methods) would be advantageous.

Skills and Attributes:

- Strong interpersonal and communication skills, essential for conducting sensitive interviews with family members.
- Ability to work independently and manage time effectively across the 8-week project period.
- Attention to detail and capacity for careful, systematic data management and analysis.
- Proficiency in standard office software (Microsoft Word, Excel) and willingness to engage with qualitative data tools (e.g., NVivo or equivalent).

Location and Working Arrangements:

The student will be primarily campus-based at DkIT for the duration of the project, with access to appropriate office space and computing facilities. Given that data collection will be conducted remotely (via telephone or video conferencing), no significant off-campus travel is anticipated. Weekly meetings with the supervisory team will be held (hybrid arrangement or on campus subject to supervisory approval).

To Apply:

Send your CV and a short cover letter outlining your motivation to undertake this project to diako.khodaei@dkit.ie or Ben.McCabe@dkit.ie

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Project reference number:	SURP2606
Project name:	Women in Construction – do we have a Leaky Pipeline?

Project Overview:
 The research aims to investigate the “leaky pipeline” affecting women in the Irish construction industry, with a focus on if women are leaving the industry at a high rate, if so; why women leave the sector. While considerable efforts have been made in Ireland to encourage more women into construction education, apprenticeships, and professional careers, retention remains a significant challenge. Research suggests that increasing female participation alone is insufficient if women do not remain and progress within the industry long-term. The aim of this project is to develop a foundational understanding of women’s retention and attrition within the Irish construction sector through a structured literature review and analysis of existing academic, industry, and policy research. The project will investigate whether women are leaving the industry in significant numbers, identify the key factors contributing to this and explore measures that may improve retention, inclusion, and progression.

The specific objectives of the project are:

- To undertake a structured review of Irish and international literature relating to women’s participation, progression, and retention within construction;
- To identify and critically examine the factors contributing to women leaving construction careers
- To review existing Irish and international initiatives aimed at supporting women in construction;
- To identify gaps in current Irish research and develop recommendations for future empirical study and industry engagement.

Candidate Profile:
 The proposed project is suitable for an undergraduate student with an interest in construction, the built environment, social sustainability, equality and diversity, or gender-related research. The ideal candidate would be entering Year 3 or Year 4 of an undergraduate programme in an area such as any construction related degree, social sciences, humanities, or a related discipline. Students with an interest in research, critical analysis, and contemporary issues affecting the construction industry would be particularly well suited to the project.

Given the interdisciplinary nature of the research, the project would also be appropriate for students with an interest in gender studies, workplace equality, organisational culture, or workforce sustainability. Prior knowledge of women’s participation within construction is not essential; however, an interest in exploring issues relating to diversity, inclusion, and retention within traditionally male-dominated sectors would be beneficial.

The project primarily involves desk-based research and therefore requires a student who is organised, self-motivated, and capable of working independently. The student should possess strong written communication skills, attention to detail, and an ability to critically engage with academic and industry literature. Experience using academic databases, reviewing literature, or academic writing would be advantageous. Student to work remotely.

To Apply:
 Send your CV and a short cover letter outlining your motivation to undertake this project to



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Joanne.white@dkit.ie

Project reference number: 2607

Project name: Exploring Kv7 potassium channels as an alternative therapeutic target in erectile dysfunction

Project overview:

Erectile dysfunction (ED), the inability to achieve or maintain an erection, affects millions of men worldwide, and is especially common in those with diabetes, high blood pressure, or obesity. The most widely prescribed treatments, such as Viagra, work by boosting a chemical signalling pathway in penile tissue. However, roughly a third of patients do not respond, because this signalling system is already too damaged.

This project investigates a different type of drug target: Kv7 potassium channels. These ion channels are found in penile smooth muscle cells, and when activated, cause muscle relaxation, which is required for erectile activity. Crucially, this pathway works independently of the one Viagra relies on, making Kv7 channels a promising option for patients who don't respond to current treatments. This project will test exactly how a Kv7-activating drug works in penile tissue, whether it acts on the muscle cells, the nerves that control them, or both. The student will contribute to the following objectives over the 8-week project:

- **Learn core laboratory skills** - including mouse tissue dissection, isometric organ bath preparation, and electrical field stimulation (EFS) protocols.
- **Collect superfusate samples** - from organ bath preparations during EFS in the presence and absence of the Kv7 activator, to capture released noradrenaline (NA) under controlled conditions.
- **Quantify noradrenaline by ELISA** - using a validated ultra-sensitive catecholamine ELISA kit to measure NA concentrations in superfusate fractions.
- **Confirm findings by HPLC** - applying high-performance liquid chromatography with electrochemical detection as a complementary, higher-resolution method for NA quantification.
- **Analyse and interpret data** - using GraphPad Prism to statistically compare NA release between conditions.

Contribute to scientific communication - preparing scientific data as figures to be disseminated at laboratory meetings and in the form of a project report. The candidate may also have the opportunity to participate in preparing a journal article and/or a conference abstract/poster.

Candidate Profile:

The student will be based on-campus in the research laboratories of the Smooth Muscle Research Centre (SMRC) at DKIT for the full 8-week project duration.

We are seeking an enthusiastic and motivated undergraduate student, with a career-interest in biomedical research, who entering the final year of a BSc programme related to Physiology,



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Biomedical Sciences, (Bio)pharmaceutical Science. Candidates should demonstrate strong academic performance consistent with a first-class or high 2:1 honours trajectory. A willingness to learn hands-on laboratory skills, including animal tissue dissection, organ bath recording, and biochemical assay techniques (ELISA, HPLC), is essential, though no prior experience with these specific methods is required, as full training will be provided. Good organisational skills and the ability to work carefully and methodically in a laboratory setting, maintaining accurate records and adhering to safety and ethical guidelines, are expected.

To Apply:

Send your CV and a short cover letter outlining your motivation to undertake this project to

Keith.Thornbury@dkit.ie

Mitchell.Mercer@dkit.ie

Project reference number:	SURP2608
Project name:	Enhancing female reproductive tract contractions with IA-65

Project Overview:

The **aim** of this project is to train as student in methods and thought processes of conducting a novel, evidence-based physiology research project. We will investigate the myometrium, the smooth muscle lining of the female reproductive tract, the physiology of which is poorly understood. We aim to establish pilot data that will provide proof of concept evidence that an appropriate activator of Orai channels, IA-65, can enhance myometrium contractions. To accomplish this overall aim, we will train an undergraduate student in dissection and preparation of female mouse myometrium tissues in the Smooth Muscle Research Centre (SMRC). The student will be mentored to record contractions and relaxations of myometrium tissues using organ bath equipment already in place in the SMRC. From these experiments, it is envisioned that the student will be trained to regularly record myometrium activity and apply drugs that will enhance Orai Ca^{2+} entry in myometrium cells.

Objectives:

The uterus is composed of walls of smooth muscle cells (SMC), collectively referred to as myometrium. During pregnancy, the myometrium remains relaxed to accommodate growth of the developing fetus. During labour, myometrium SMC develop regular, coordinated contractions that allow for movement of the fetus towards the cervix to enable birth. Irregular contractions or aberrant relaxations of the myometrium can lead to pre-term birth and other labour complications causing lethal risk to infant and maternal mortality. Contractions and relaxations of the myometrium are regulated by changes in intracellular calcium (Ca^{2+}). If Ca^{2+} increases in myometrium SMC, cells will contract and when Ca^{2+} levels fall, SMC relax. There are situations where *increasing* myometrium contractions would be clinically needed. For example, in hypotonic uterine dysfunction, when labour cannot progress due to insufficient contractions of myometrium, representing a potentially life-threatening situation for the fetus and mother which often requires caesarean sectioning. *Investigating this is crucial, as this is a critical gap in our understanding of treating female reproductive pathophysiology* In this project, we seek to train an undergraduate student to study how the drug IA-65, a specific *activator* of Orai channels (proteins that allow Ca^{2+} to enter SMC) affect myometrium contractions.

Candidate Profile:

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We seek applications from registered DkIT undergraduate students who at the end of May 2026, will have completed their 2nd or 3rd year in one of the following programmes:

- Level 7 BSc Bioscience
- Level 7 BSc Pharmaceutical Science
- Level 8 BSc (Hons) Biopharmaceutical Science

Student should have a minimum GPA of 1.1 (70%) at the end of their 2nd or 3rd year (if May 2026 examination results are pending at the time of project application, the January 2026 examination results will be reviewed to predict overall GPA). Students that have demonstrated technical proficiency, high marks (>70%), and enthusiasm for research in any of the following 2nd or 3rd year modules would have a distinct advantage:

- Biotechnology
- Biochemistry

Physiology & Pharmacology

To Apply:

Send your CV and a short cover letter outlining your motivation to undertake this project to bernard.drumm@dkit.ie

Project reference number:	SURP2609
Project name:	Targeting the bronchoconstrictor effects of acetylcholine and inflammatory mediators on airway smooth muscle with potassium channel openers.

Project Overview:

Asthma is a highly prevalent chronic respiratory disease, characterised by excessive airway narrowing, airway hyperresponsiveness and respiratory symptoms such as wheeze, cough, chest tightness and breathlessness. It affects up to 29% of the global population and was responsible for 461,000 deaths globally in 2019. The primary treatment approach for asthma is a combination of inhaled corticosteroids and β_2 -agonists. Yet, despite the widespread availability of these therapies, up to 55% of asthma patients have uncontrolled asthma symptoms, increasing the risk of life-threatening exacerbations and diminished quality of life. New therapeutic approaches for asthma are therefore urgently required. A recent study from our lab showed that acetylcholine-induced contractions of the airways involved closure of the Kv7 family of voltage-gated K^+ channels. The purpose of this proposal is to evaluate the effects of targeted K^+ channel openers on contractions of airway smooth muscle induced by clinically relevant bronchoconstrictors, including acetylcholine, serotonin and thromboxane.

Objectives:

- 1 Examine the effect of the Kv7 channel opener, ML213 on contractions of mouse bronchial rings induced by a range of cholinergic stimuli including: application of cholinergic agonists; electrical stimulation of cholinergic nerves; and application of the acetylcholinesterase inhibitor neostigmine.

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2 Determine the effects of GoSlo-SR5-6, a K^+ channel opener developed 'in-house' within the smooth muscle research centre (SMRC) in DkIT, on cholinergic contractions of mouse bronchial rings.

3 Compare the effects of ML213 and GoSlo-SR5-6 on contractions of bronchial rings induced by serotonin and thromboxane

Candidate Profile:

The student will be based fully on campus in the SMRC at DkIT. Applications are invited from registered DkIT undergraduates due to commence Year 3 or Year 4 in Semester 1 of 2026/2027, particularly students in Bioscience, Pharmaceutical Science, Biopharmaceutical Science or related Life and Health Sciences programmes. The project suits a student with a strong interest in physiology, pharmacology and laboratory-based biomedical research. Good practical skills, attention to detail, reliability and willingness to engage with data analysis are important. Previous research experience is not essential; training will be provided. Strong performance in relevant practical/laboratory modules would be advantageous.

Project reference number:	SURP2610
Project name:	Development of a Laboratory-Based System for Reproducing Floating LiDAR Platform Motions Using a 6DOF Stewart Platform,

Project Overview:

Floating LiDAR Systems are increasingly used for offshore wind resource assessment, but wave-induced platform motions can influence wind data quality. The CREDIT Technology Gateway has access to a 6-degree-of-freedom (6DOF) Stewart Platform capable of reproducing complex motions in a laboratory setting. This project will develop a workflow to prepare real-world or representative motion data for replay on this platform, enabling future controlled experiments on motion-induced measurement error.

The undergraduate researcher will review motion data requirements, process time-series data, prepare input files for the Stewart Platform, and support initial laboratory testing. The emphasis is on understanding the engineering problem and creating a repeatable workflow

Objectives

Review the use of Floating LiDAR Systems in offshore wind resource assessment and identify why platform motion is an important consideration.

- Identify key motion components relevant to laboratory testing (pitch, roll, heave, yaw).
- Review representative platform or buoy motion datasets and assess their suitability for laboratory based motion replay.
- Develop a simple data processing approach (MATLAB/Python/Excel) to prepare motion time-series data for the Stewart Platform.
- Prepare suitable input files for selected motion cases (units, sampling rate, duration, platform limits).
- Support initial laboratory-based motion replay tests using the Stewart Platform, subject to equipment availability.
- Compare target motion data with replayed/executed platform motion where feedback data are available.
- Document the system, assumptions, limitations and recommendations for future testing.

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Candidate Profile:

Candidates should be entering their third or fourth year on an Engineering course at DkIT. They should possess the following skills:

- Strong understanding of mechanics, dynamics, and control systems – directly relevant to Stewart Platform kinematics.
- Experience with MATLAB, Python, and Excel for handling engineering data and time-series analysis.
- Ability to work independently on literature reviews, data processing, and technical documentation.

Working arrangements

On-campus (2–3 days per week) – Induction, laboratory familiarisation, Stewart Platform testing, supervisory meetings, equipment-related work. On-campus attendance is required during early project stages and active testing periods.

- Remote working (remaining days) – Literature review, data processing, coding, plotting, report writing, poster preparation.

This arrangement can be adjusted depending on project stage, Stewart Platform availability, and specific weekly tasks

To Apply:

Send your CV and a short cover letter outlining your motivation to undertake this project to

Fergal.orourke@dkit.ie

CheeMeng.Pang@dkit.ie