

# Postgraduate Programme Specification

| Session                         | 2025/26                               | Last Modified 300625  |                                       |  |  |  |
|---------------------------------|---------------------------------------|---|---------------------------------------|--|--|--|
| Named Award Title               | MSc Advanced Drone                    | e Technology  |                                       |  |  |  |
| Award Title for Each            | PgC Advanced Drone T                  | echnology   |                                       |  |  |  |
| Award                           | PgD Advanced Drone T                  | echnology   |                                       |  |  |  |
|                                 | MSc Advanced Drone 1                  | Technology  |                                       |  |  |  |
| Date of Approval                | 30/05/2025                            |   |                                       |  |  |  |
| Details of Cohort<br>Applies to | September 2025 intake                 | e onwards.  |                                       |  |  |  |
| Awarding Institution            | University of the<br>West of Scotland | Teaching<br>Institution(s)  | University of the<br>West of Scotland |  |  |  |
|                                 |                                       |   |                                       |  |  |  |
| Language of Instruction         | on & Examination                      | English   |                                       |  |  |  |
| Award Accredited by             |                                       |   |                                       |  |  |  |
| Maximum Period of Ro            | egistration                           | For full time students the normal period of registration is 12 months, and the maximum period is 24 months. For part time students the normal period of registration is 24 months, and the maximum period is 36 months. |                                       |  |  |  |
|                                 |                                       | Authorised Interruption (uws.ac.uk)   | i Guidance notes                      |  |  |  |
| Duration of Study               |                                       |   |                                       |  |  |  |
| Full-time                       | 1 year                                | Part-time   | 2 years                               |  |  |  |
| Placement<br>(compulsory)       |                                       |   |                                       |  |  |  |
| Mode of Study                   | ∑ Full-time                           |   |                                       |  |  |  |
|                                 | □ Part-time                           |   |                                       |  |  |  |
| Campus                          | Ayr                                   | ∠ Lanarkshire   | Online / Distance                     |  |  |  |
|                                 | ☐ Dumfries                            | London  | Learning                              |  |  |  |
|                                 |                                       | Paisley   | Other (specify)                       |  |  |  |
| School                          | Computing, Engineer                   | ing and Physical Scienc   | ces                                   |  |  |  |
| Divisional<br>Programme Board   | Computing                             |   |                                       |  |  |  |

#### **Admissions Criteria**

Candidates must be able to satisfy the general admission requirements of the University of the West of Scotland as specified in Chapter 2 of the University Regulatory Framework together with the following programme requirements:

# **Appropriate Undergraduate Qualifications:**

Applicants will typically possess a degree or equivalent. In the absence of a degree, where entry requirements do not conform to the general entry requirements, other evidence can be considered on an individual basis in line with Regulations 2.13 – 2.36 (Recognition of Prior Learning – RPL / Recognition of Credit).

## Appropriate Undergraduate Qualifications:

Applicants will typically possess an Honours Degree (2.2 or above) in Computing/ Engineering (or Relevant Disciplines) from a UK academic institute or an equivalent 4-year international degree qualification.

In the absence of a degree, where entry requirements do not conform to the general entry requirements, other evidence can be considered on an individual basis in line with Regulations 2.13 – 2.36 (Recognition of Prior Learning – RPL / Recognition of Credit).

#### Other Required Qualifications/Experience

Candidates who have other academic, vocational, or professional qualifications, and candidates who have at least two years of industrial experience in an Information Technology role will be considered. A decision on a candidate's eligibility to register will be made on a case-by-case basis by the Programme Admissions Officer. Candidates may be required to attend an interview. The Recognition of Prior Learning Guidelines (as laid down in the University's Recognition of Prior Learning Handbook) will be applied. We welcome applications from international students with equivalency of qualifications.

#### Further desirable skills pre-application

It is expected that candidates' qualifications/or experience will be in a variety of domains cognate with advanced drone technology, robotics, and autonomous systems.

## **General Overview**

The MSc Advanced Drone Technology is designed to equip students with the essential competencies needed to lead the future of the drone industry. The programme provides a strong foundation in drone systems, applications, and operations, with the opportunity for certified pilot training (General Visual Line of Sight). This training fosters a deep understanding of operational contexts and technical requirements, while also equipping graduates to effectively communicate with aviation stakeholders.

Students can specialise in key areas based on their future career goals and aspirations, including Software Engineering, Artificial Intelligence, and Cyber Security. The programme is designed to align with the most sought-after roles in drone technology, enabling graduates to pursue careers in fields such as:

- Remote Sensing Data Analyst: Proficient in processing and visualising geographical survey, mapping, and inspection data.
- Software Engineer: Skilled in developing low-level and embedded software to control drone flight, navigation, and communication systems.
- Autonomous Systems Engineer: Specialising in algorithms for path planning, obstacle avoidance, and in-flight decision-making.

- Computer Vision Engineer: Applying artificial intelligence for object recognition, tracking, and scene understanding.
- Cyber Security Engineer: Securing the software, hardware, and communication protocols of drones, and developing security policies specific to drone operations.

The programme is connected with the Drone Systems Laboratory at UWS, led by Professor James Riordan. Established in 2020, the lab is a key driver of innovation in autonomous drone technologies and has become an interdisciplinary centre of excellence. Major projects include RAPID (Risk Aware Port Inspection Drones), a Horizon 2020 project that revolutionised infrastructure inspection at the Port of Hamburg, increasing productivity 20-fold through the use of autonomous drones. This success positioned UWS as a leader in applying drone technologies to real-world challenges, with the European Commission recognising the project's "exceptional results and significant immediate impact." Another standout project is FLORA-SAGE, funded by NERC, which advances biodiversity monitoring in agricultural ecosystems to support sustainable practices. Additionally, Professor Riordan serves as the UWS Principal Investigator for the Digital Dairy Chain (DDC), a UKRI Strength in Places project aimed at decarbonising the dairy supply chain.

These cutting-edge projects, alongside collaborations with prominent local industry partners, offer substantial benefits to the MSc programme. Students will have opportunities to engage with the latest technologies and innovations in real-world contexts, leveraging the regional presence of these companies. This research-led environment provides direct access to developments in drone systems, AI, and autonomous technologies, allowing students to gain hands-on experience in designing, deploying, and optimising drones for various applications.

For the capstone 60-credit module, students apply their knowledge through either an intensive research dissertation embedded within the Drone Systems Laboratory, or a hands-on 3-month internship with sector-leading industry employers. The vibrant research environment ensures that both options equip students with technical expertise and practical experience, preparing them for high-demand roles in the evolving drone technology sector. Throughout the programme, students gain practical experience with specialist hardware, software, and toolchains during coursework and lab sessions, ensuring they are well-prepared to meet industry demands. Teaching & Learning are delivered through face-to-face and small group activities, supported by the virtual learning environment Aula. Case studies provide real-world, employability-focused contexts, while teamwork remains a critical theme. Assessments are designed not only to evaluate technical skills but also to foster leadership and collaboration. Coursework, class tests, and formal examinations provide a balanced approach to individual and group assessments.

Students also have the opportunity to pursue further studies through research degrees such as MPhil or PhD. The programme is offered in both full-time and part-time formats, embracing hybrid learning to offer flexibility and maximise engagement for students across various learning modalities.

## **Typical Delivery Method**

The MSc Advanced Drone Technology programme supports student engagement through a blended / hybrid learning approach. In-person lectures and practical engagement are the norm, with instruction delivered face-to-face. Supporting materials, including simulations and additional resources, are made available online through virtual learning environments to enhance the learning experience.

#### Any additional costs

There is no mandatory cost however optional cost varies from £200 to £2000

#### Graduate Attributes, Employability & Personal Development Planning

This MSc in Advanced Drone Technology has been specifically designed to reflect the UWS Graduate Attributes of being Universal, Work Ready, and Successful. Graduates will develop a global perspective by engaging with international drone regulations and industry trends, while also incorporating sustainability and ethical considerations into their work. The programme equips students with practical skills through hands-on experience with industry-standard tools and technologies, ensuring they are ready to meet the challenges of a rapidly evolving field. By integrating critical problem-solving, teamwork, and leadership development into the curriculum, students become adaptable professionals prepared for multidisciplinary and complex roles. With opportunities for internships and industry-led projects, graduates are positioned for success in both technical and managerial roles, while also being encouraged to pursue lifelong learning and professional development through research or further academic study.

Employability skills are embedded throughout the programme at various stages, ensuring that graduates are not only equipped with advanced technical expertise in drone technology but also possess a range of transferable skills that are highly sought after across many industries. These skills include problem-solving, teamwork, communication, and leadership, which are built into the module learning outcomes and assessments.

By the end of the programme, graduates will have developed a portfolio of work through practical modules, industry-linked projects, and their capstone experience (either the Masters Project or Professional Development and Industry Internship). This portfolio will showcase their technical competencies, project management skills, and ability to contribute to innovative solutions, all of which contribute directly to their Personal Development Planning (PDP).

Personal Development Planning is embedded throughout the programme and is aligned with the UWS Personal Development Planning Framework. PDP is introduced at the beginning of the programme, and students are encouraged to engage with it consistently through reflective practice and regular workshops. These workshops are designed to guide students in assessing their strengths and areas for improvement, setting goals, and preparing for the next phase of their academic and professional development. Specific coursework tasks and project reflections are used as mechanisms for students to track their progress, enabling them to take ownership of their personal and professional growth.

The UWS Careers Team provides invaluable support to help students achieve their career aspirations by offering professional careers education, information, advice, and guidance. All students are automatically registered with the UWS Careers & Academic Skills Website, where they can access a wide range of resources related to career planning, employability, and academic skills development. The website also offers an online calendar for booking one-to-one appointments and workshops on career-related topics.

Key Career and Employability Resources Include:

- Self-awareness: Helping students identify their skills, values, motivations, and interests in relation to their career ambitions.
- Exploring your options: Providing resources and tools for students to explore various career paths in the drone technology industry, including emerging roles in AI, cybersecurity, and data analysis.
- Career planning and decision making: Assisting students in setting realistic career goals and devising actionable plans to achieve them, supported by the PDP framework.

- Developing your employability: Offering guidance on how to enhance skills and gain relevant experience, such as internships, collaborative projects, and industry certifications.
- Job searching: Teaching students effective strategies for job searching, including networking, using job portals, and targeting specific industries like aviation, logistics, and technology.
- CVs and Job Applications: Providing support in crafting tailored CVs, cover letters, and application forms that reflect the technical and soft skills gained throughout the programme.
- Interview preparation: Equipping students with tips for interview success, including access to an interview simulator and practice aptitude/psychometric tests.
- Specialised support: Offering specific resources for international students, students with disabilities, and those with other protected characteristics to ensure inclusivity and tailored career support.

This comprehensive approach to employability ensures that graduates are fully prepared to enter the workforce with confidence, equipped not only with specialist knowledge of drone systems, AI, and cybersecurity but also with the soft skills and career management tools necessary to succeed in a competitive global job market.

# **Work Based Learning/Placement Details**

Placements may be available for the capstone project through the University's established industrial and research contacts. Many postgraduate students have successfully secured projects in the past by leveraging these connections. The 60-credit Professional Development and Industry Internship module will offer students the opportunity to apply for an internship on a competitive basis. This competitive process encourages students to actively engage with the University's industry partners and demonstrate their capabilities, fostering both initiative and employability.

The internship allows students to integrate theoretical knowledge with practical experience, further developing critical reflection, professional skills, and enhanced communication abilities—all of which are essential for career readiness in the drone technology sector. Internships offer the unique advantage of working within a relevant industrial setting, applying drone technology in practice while building a professional network.

Students undertaking the internship will produce equivalent Learning Outcomes and assessments to those completing the Masters Dissertation, ensuring consistency in academic rigour and skill development across both options.

## **Attendance and Engagement**

In line with the <u>Student Attendance and Engagement Procedure</u>, Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.

For the purposes of this programme, academic engagement equates to the following:

The engagement and attendance requirements of individual modules are detailed in the module descriptors.

#### **Equality and Diversity**

The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: <u>UWS Equality, Diversity and Human Rights Code.</u>

The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code. Equality, Diversity, and Inclusion (EDI):

The MSc in Advanced Drone Technology promotes EDI in line with the UWS Equality, Diversity and Human Rights Code, ensuring equal opportunities for all students.

Inclusive Curriculum and Teaching:

Teaching materials and case studies reflect global perspectives and diverse cultural contexts. Assessments accommodate varied learning styles with flexible formats.

Accessibility:

Resources are offered in alternative formats, with captioned videos, accessible materials, and assistive technology support. Students are encouraged to disclose needs early for tailored adjustments via the University's Disability Service. Virtual machine images enable remote access to specialist software, supporting inclusive practical learning.

Work-Based Learning and Placement:

Internship and research opportunities are allocated fairly and transparently. Professional Development:

Students build technical and interpersonal skills through group projects with peers from varied backgrounds, preparing them for diverse workplaces.

# Programme structures and requirements, SCQF level, term, module name and code, credits and awards (<a href="Chapter 1">Chapter 1</a>, Regulatory Framework)

# Learning Outcomes

|           | SCQF LEVEL 11 - Postgraduate Certificate (PgCert)   |
|-----------|---|
|           | Learning Outcomes   |
|           | Knowledge and Understanding   |
| A1        | Demonstrate knowledge of the main areas of Uncrewed Aerial Systems (UAS) theory, including terminology, features, and boundaries and understanding of the ethical, social, and environmental implications of drone technology in professional practice. |
| A2        | Understand the principal theories and application of enabling technologies in drone systems, including their role in enhancing safety, security, and quality control capabilities.  |
| А3        |   |
| <b>A4</b> |   |
| <b>A5</b> |   |
|           | Practice - Applied Knowledge and Understanding  |
| B1        | Conduct preliminary assessments of requirements in advanced drone technology, employing principal methodologies and research and enquiry techniques covered in the modules.   |
| B2        | Demonstrate competence in utilising advanced drone technology tools and techniques to investigate, compare, and evaluate advanced drone technology and practices.   |
| В3        | Apply data analysis principles to process and interpret data from drones, utilising standard frameworks and libraries.  |
| B4        |   |
| B5        |   |
|           | Communication, ICT and Numeracy Skills  |
| C1        | Employ fundamental ICT tools and software to support basic drone operations, including flight planning software, data logging systems, data analysis, and basic troubleshooting procedures.   |
| C2        | Apply fundamental mathematical, physics, and statistical techniques to interpret data collected from drone flights, ensuring accurate data analysis and reporting of drone flight dynamics and performance metrics.                                     |
| C3        | Communicate, using appropriate methods, to a range of audiences with different levels of knowledge/expertise, including peers, more senior colleagues and specialists.  |
| C4        |   |
| C5        |   |
|           | Generic Cognitive Skills - Problem Solving, Analysis, Evaluation  |
| D1        | Demonstrate the ability to synthesise information from various sources to gain a coherent understanding of the social, ethical, economic, and environmental implications of drone technology and practices.   |

| D2 | Apply critical analysis and evaluation to known issues in drone systems, effectively conceptualising and defining straightforward problems within the context of advancing drone technology. |
|----|--|
| D3 |  |
| D4 |  |
| D5 |  |
|    | Autonomy, Accountability and Working with Others   |
| E1 | Exercise substantial autonomy and initiative for personal and professional learning and development.   |
| E2 | Working with others to understand and develop teamwork and leadership skills.  |
| E3 | Take responsibility for own work and/or significant responsibility for the work of others.   |
| E4 |  |
| E5 |  |

# Postgraduate Certificate (PgCert) Modules

## CORE

| SCQF  | Module    | Module Title                                     | Credit | Term |   |   | Footnotes |
|-------|-----------|--|--------|------|---|---|-----------|
| Level | Code      |  |        | 1    | 2 | 3 |           |
| 11    | COMP11135 | Theory & Operation of<br>Uncrewed Aerial Systems | 10     |      |   |   | 1         |
| 11    | COMP11136 | Advanced Drone Systems<br>Integration and Design | 10     |      |   |   |           |
|       |           |  |        |      |   |   |           |
|       |           |  |        |      |   |   |           |
|       |           |  |        |      |   |   |           |
|       |           |  |        |      |   |   |           |

## Footnotes for Core Modules

1 Students will undertake the module COMP11135 Theory & Operation of Uncrewed Aerial Systems, a hybrid module delivered by a third party, during the term in which they commence their studies. This module aligns with professional industry certification standards and covers the essential safety, regulatory, and operational aspects of engaging with and operating drones. However, recognising inclusivity, the practical flight test component is not mandatory for students with physical disabilities. Such students will instead engage in alternative assessments focusing on planning, risk management, and communication, ensuring they can fully participate in the module

# Postgraduate Certificate (PgCert) Modules

## OPTION

| SCQF  | Module Code | Module Title                            | Credit | Term |   |   | Footnotes |
|-------|-------------|---|--------|------|---|---|-----------|
| Level |             |   |        | 1    | 2 | 3 |           |
| 11    | COMP11130   | Intelligent Drone Perception<br>Systems | 20     |      |   |   |           |

| 11     | COMP11131         | Remote Sensing and Data<br>Analysis                          | 20 |             |             |  |
|--------|-------------------|--|----|-------------|-------------|--|
| 11     | COMP11080         | Foundations of Cyber Security                                | 10 | $\boxtimes$ |             |  |
| 11     | COMP11094         | Network Penetration Testing                                  | 10 | $\boxtimes$ |             |  |
| 11     | COMP11129         | IoT Security   | 10 | $\boxtimes$ |             |  |
| 11     | COMP11017         | Research Design and Methods                                  | 10 |             | $\boxtimes$ |  |
| 11     | COMP11076         | Advanced Network Security                                    | 10 |             | $\boxtimes$ |  |
| 11     | COMP11099         | Threat Intelligence  | 10 |             |             |  |
| 11     | COMP11132         | Software Engineering for<br>Autonomous Drones and<br>Systems | 20 |             |             |  |
| 11     | COMP11XXXX        | Collaborative Drone Project                                  | 20 |             | $\boxtimes$ |  |
| Footno | tes for Option Mo | odules   |    |             |             |  |

# Level 11- Postgraduate Certificate (PgCert) Criteria for Award

Please refer to <u>UWS Regulatory Framework</u> for related regulations

There is no progression within stages at SCQF Level 11.

In line with the Regulatory Framework, for the award of Postgraduate Certificate (PgC) Advanced Drone Technology, at least 60 credit points must be achieved of which a minimum of 40 are at SCQF Level 11 and none less than SCQF Level 10.

No Distinction is awarded at PgCert level (Regulation 3.25).

Links: UWS Regulatory Framework; and Student Experience Policy Statement.

|            | COOF LEVEL 44 Posterio divisto Divisione (DeDiv)   |
|------------|--|
|            | SCQF LEVEL 11 - Postgraduate Diploma (PgDip)  Learning Outcomes  |
|            | Knowledge and Understanding  |
| A1         | Demonstrate a critical awareness of current technology issues in the drone sector and demonstrate extensive, detailed, and critical knowledge and understanding of the role that responsible and trustworthy drone technology plays in creating a more sustainable future. |
| A2         | Extensive, detailed and critical knowledge and understanding in one or more programme specialisms and developments at the forefront of sensing, artificial intelligence, cyber security, and software algorithms for the navigation, guidance, and control of drones.      |
| А3         |  |
| A4         |  |
| <b>A5</b>  |  |
|            | Practice - Applied Knowledge and Understanding   |
| B1         | Implement advanced state-of-the-art techniques to develop complex drone systems incorporating real-time data processing and decision-making capabilities.  |
| B2         | Utilise professional skills and specialised research techniques to analyse a given business scenario and offer recommendations to enhance workflow practices and tools leveraging recent advances in drone technology.   |
| В3         | Plan and execute a comprehensive risk assessment project to validate that a drone application meets standards  |
| B4         |  |
| <b>B</b> 5 |  |
|            | Communication, ICT and Numeracy Skills   |
| C1         | Effectively present complex drone operation scenarios and systems engineering solutions to diverse audiences, including stakeholders and clients, using advanced presentation tools  |
| C2         | Develop, integrate and manage various ICT systems and software applications used in drone technology, including advanced flight simulation software, drone-specific data analysis tools, and secure communication networks.  |
| C3         | Apply advanced statistical methods and mathematical modelling and simulation techniques to process and interpret large datasets obtained from drone missions, providing actionable insights and optimising drone performance under various operational conditions.         |
| C4         |  |
| C5         |  |
|            | Generic Cognitive Skills - Problem Solving, Analysis, Evaluation   |
| D1         | Apply critical analysis and evaluation to forefront issues related to the sustainable and responsible exploitation of drones and effectively conceptualise and define innovative solutions that address ethical, environmental, and social challenges in the field.        |
| D2         | Develop original solutions to improve the productivity and scalability of drones in a responsible manner.  |

| D3         |  |
|------------|--|
| D4         |  |
| D5         |  |
|            | Autonomy, Accountability and Working with Others   |
| E1         | Demonstrate leadership and/or initiative and make an identifiable contribution to change and development and/or new thinking.                                  |
| E2         | Practise in ways which draw on critical reflection on own and others' roles and responsibilities.  |
| E3         | Manage complex ethical and professional issues and make informed judgements on issues not addressed by current professional and/or ethical codes or practices. |
| E4         |  |
| <b>E</b> 5 |  |

# Postgraduate Diploma (PgDip) Modules

# CORE

| SCQF   | Module                     | Module Title                                     | Credit | Term        |             |   | Footnotes |
|--------|----------------------------|--|--------|-------------|-------------|---|-----------|
| Level  | Code                       |  |        | 1           | 2           | 3 |           |
| 11     | COMP11135                  | Theory & Operation of<br>Uncrewed Aerial Systems | 10     |             |             |   |           |
| 11     | COMP11131                  | Remote Sensing and Data<br>Analysis              | 20     |             |             |   |           |
| 11     | COMP11129                  | IoT Security                                     | 10     | $\boxtimes$ |             |   |           |
| 11     | COMP11136                  | Advanced Drone Systems<br>Integration and Design | 10     |             |             |   |           |
| 11     | COMP11133                  | Collaborative Drone Project                      | 20     |             | $\boxtimes$ |   |           |
|        |                            |  |        |             |             |   |           |
| Footno | Footnotes for Core Modules |  |        |             |             |   |           |

# Postgraduate Diploma (PgDip) Modules

# OPTION

| SCQF  | Module    | Module Title                            | Credit | Term        |             |   | Footnotes |
|-------|-----------|---|--------|-------------|-------------|---|-----------|
| Level | Code      |   |        | 1           | 2           | 3 |           |
| 11    | COMP11130 | Intelligent Drone Perception<br>Systems | 20     |             |             |   |           |
| 11    | COMP11080 | Foundations of Cyber Security           | 10     |             |             |   |           |
| 11    | COMP11094 | Network Penetration Testing             | 10     | $\boxtimes$ |             |   |           |
| 11    | COMP11017 | Research Design and Methods             | 10     |             | $\boxtimes$ |   |           |
| 11    | COMP11076 | Advanced Network Security               | 10     |             | $\boxtimes$ |   |           |
| 11    | COMP11099 | Threat Intelligence                     | 10     |             | $\boxtimes$ |   |           |

| 11       | COMP11134   | Autonomous Software<br>Engineering   |           | 20        |       |        |       |            |
|----------|---|--|-----------|-----------|-------|--------|-------|------------|
|          |   |  |           |           |       |        |       |            |
| Footno   | tes for Option N  | 1odules  |           |           |       |        |       |            |
|          |   |  |           |           |       |        |       |            |
|          |   |  |           |           |       |        |       |            |
|          | _   | te Diploma (PgDip)   |           |           |       |        |       |            |
|          | a for Award   |  |           |           |       |        |       |            |
| Please   | refer to <u>UWS Re</u>  | <u>egulatory Framework</u> for re  | lated reg | gulations |       |        |       |            |
| There is | s no progressio   | n within stages at SCQF Le   | vel 11.   |           |       |        |       |            |
| Advand   | ed Drone Tech   | tory Framework, for the aw<br>nology, at least 120 credit p<br>ninimum of 90 are at SCQF | oints m   | ust be ac | hieve | d (inc | ludin | g all core |
|          | Distinction will be awarded in line with University Regulations and no imported credit can be used. (Regulations 3.35 & 3.26) |  |           |           |       |        |       |            |
| Links:   | Links: UWS Regulatory Framework; and Student Experience Policy Statement.   |  |           |           |       |        |       |            |
|          |   |  |           |           |       |        |       |            |
|          |   |  |           |           |       |        |       |            |
|          |   |  |           |           |       |        |       |            |
|          |   |  |           |           |       |        |       |            |
|          |   |  |           |           |       |        |       |            |

|           | SCQF LEVEL 11 – Masters   |
|-----------|---|
|           | Learning Outcomes (Maximum of 5 per heading)  |
|           | Knowledge and Understanding   |
| A1        | Critically evaluate evidence from the latest science, policy, and regulation to synthesise information and gain a coherent understanding of advanced drone technology theory.   |
| A2        | Evaluate and synthesise advanced theories and developments to address complex issues in drone technology.   |
| А3        |   |
| A4        |   |
| <b>A5</b> |   |
|           | Practice - Applied Knowledge and Understanding  |
| B1        | Demonstrate competency in deploying a wide range of professional techniques and tools to develop and optimise drone systems capable of fully autonomous operations in dynamic and unpredictable environments.   |
| B2        | Creatively apply advanced enabling technology to develop novel solutions that address current challenges in drone technology, including multi-sensor data fusion and real-time processing.  |
| В3        | Independently design and execute a significant research project, investigating new technology frameworks to integrate ethical, social, and environmental considerations and sustainable practices in drone technology, showcasing original thinking and creative problem-solving. |
| B4        |   |
| B5        |   |
|           | Communication, ICT and Numeracy Skills  |
| C1        | Lead and facilitate interdisciplinary teams in the design, development, and deployment of sophisticated drone systems, ensuring effective communication and project management throughout the project lifecycle.  |
| C2        | Develop advanced ICT infrastructure with custom software algorithms to enhance the functionality and performance of drone systems while ensuring seamless integration and scalability.  |
| C3        | Utilise advanced computational models and analysis techniques to solve complex problems related to drone operations, driving informed decision-making and innovation.   |
| C4        |   |
| C5        |   |
|           | Generic Cognitive Skills - Problem Solving, Analysis, Evaluation  |
| D1        | Critically review, consolidate, and extend knowledge, skills, practices, and thinking in advanced drone technology, to make informed judgements in situations with incomplete or inconsistent data and define new and abstract problems.  |
| D2        | Create original responses to complex ethical, social, economic, and environmental issues in the field and develop innovative solutions that push the boundaries of the discipline in a responsible manner.  |
| D3        |   |
| D4        |   |

| D5         |  |
|------------|--|
|            | Autonomy, Accountability and Working with Others   |
| E1         | Work collaboratively with multidisciplinary and specialist teams, taking a leadership role in the design, development, and deployment of complex drone systems that address real-world challenges.         |
| E2         | Take full accountability for the management, optimisation, and sustainable operation of advanced drone systems, ensuring that projects are delivered within ethical, environmental, and legal constraints. |
| E3         | Apply advanced problem-solving techniques to lead socially responsible and innovative engineering practices, contributing to the sustainable development of the drone industry.                            |
| E4         |  |
| <b>E</b> 5 |  |

# **Masters Modules**

# CORE

| SCQF   | Module                     | Module Title                                     | Credit | Term        |             |   | Footnotes |
|--------|----------------------------|--|--------|-------------|-------------|---|-----------|
| Level  | Code                       |  |        | 1           | 2           | 3 |           |
| 11     | COMP11135                  | Theory & Operation of<br>Uncrewed Aerial Systems | 10     |             | $\boxtimes$ |   |           |
| 11     | COMP11131                  | Remote Sensing and Data<br>Analysis              | 20     |             |             |   |           |
| 11     | COMP11129                  | IoT Security                                     | 10     | $\boxtimes$ |             |   |           |
| 11     | COMP11136                  | Advanced Drone Systems<br>Integration and Design | 10     |             | $\boxtimes$ |   |           |
| 11     | COMP11017                  | Research Design and Methods                      | 10     |             |             |   |           |
| 11     | COMP11133                  | Collaborative Drone Project                      | 20     |             | $\boxtimes$ |   |           |
| Footno | Footnotes for Core Modules |  |        |             |             |   |           |

# **Masters Modules**

# OPTION

| SCQF  | Module Code | Module Title                            | Credit | Term        |             |   | Footnotes |
|-------|-------------|---|--------|-------------|-------------|---|-----------|
| Level |             |   |        | 1           | 2           | 3 |           |
| 11    | COMP11130   | Intelligent Drone Perception<br>Systems | 20     |             |             |   |           |
| 11    | COMP11080   | Foundations of Cyber Security           | 10     | $\boxtimes$ |             |   |           |
| 11    | COMP11094   | Network Penetration Testing             | 10     |             |             |   |           |
| 11    | COMP11076   | Advanced Network Security               | 10     |             | $\boxtimes$ |   |           |
| 11    | COMP11099   | Threat Intelligence                     | 10     |             | $\boxtimes$ |   |           |
| 11    | COMP11134   | Autonomous Software<br>Engineering      | 20     |             | $\boxtimes$ |   |           |

| 11     | COMP11XXX         | Professional Development and Industry Internship | 60 |  |             |  |
|--------|-------------------|--|----|--|-------------|--|
| 11     | COMP11024         | Masters Project                                  | 60 |  | $\boxtimes$ |  |
| Footno | tes for Option Mo | odules   |    |  |             |  |

# Level 11- Masters Criteria for Award

# Please refer to **UWS Regulatory Framework** for related regulations

In line with the Regulatory Framework, for the award of Masters of Advanced Drone Technology, at least 180 credit points must be achieved of which a minimum of 150 are at SCQF Level 11 and none less than SCQF Level 10.

Distinction will be awarded in line with University Regulations and no imported credit can be used. (Regulations 3.35 & 3.26)

Links: UWS Regulatory Framework; and Student Experience Policy Statement.

# **Regulations of Assessment**

Candidates will be bound by the general assessment regulations of the University as specified in the <u>University Regulatory Framework</u>.

An overview of the assessment details is provided in the Student Handbook and the assessment criteria for each module is provided in the module descriptor which forms part of the module pack issued to students. For further details on assessment please refer to Chapter 3 of the Regulatory Framework.

To qualify for an award of the University, students must complete all the programme requirements and must meet the credit minima detailed in Chapter 1 of the Regulatory Framework.

#### **Combined Studies**

There may be instances where a student has been unsuccessful in meeting the award criteria for the named award and for other more generic named awards existing within the School.

Provided that they have met the credit requirements in line with the SCQF credit minima (please see Regulation 1.21), they will be eligible for a Combined Studies award (please see Regulation 1.61).

For students studying at Level 11, they will normally be eligible for an exit award of PgCert / PgDip / Masters in Combined Studies.

#### Version no: 1

Change/Version Control

| What | When      | Who           |
|------|-----------|---------------|
| v1   | June 2025 | James Riordan |
|      |           |               |
|      |           |               |
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