# GRADUATE EMPLOYABILITY MASTERCLASSES

Supporting Scotland's Growing Life and Chemical Science Sector

The Scottish Universities Life Sciences Alliance (SULSA) is a strategic alliance between eleven Scottish universities which aims to drive collaboration across universities as well as the industry sector, the National Health Service, and across disciplines.

SULSA strives to enhance Scotland's vibrant life sciences research community by improving opportunities for cross-cutting collaboration, inward investment, lifelong learning and translational research. SULSA aims to advance Scotland's research and innovation in the life sciences, and secure Scotland's position as a world-class centre of research excellence.

We would like to extend a special thank you to Glasgow Economic Leadership, Kevin Moore, OBE and Ronnie Palin (Skills Development Scotland) without whom these Masterclasses would not exist. We would also like to acknoledge Dr Alan Wiles and the hard work he put into the 2021 Chemistry Masterclasses.

This report was written by Laura Zoch, Research and Policy Support Officer at SULSA and Dr. Alison Dun, SULSA's Executive Director. Published online, 06 July 2021.


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Table of contents



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# Executive Summary

SULSA, in cooperation with the Glasgow Economic Leadership, Skills Development Scotland and ScotCHEM, have successfully delivered the 2021 Graduate Employability Masterclasses, allowing the scheme to grow significantly during the pandemic. Under these extraordinary circumstances this consortia, alongside 12 of our university careers services, have delivered training from 25 industry organisations to 500 students from diverse fields of study. This remarkable collaborative effort demonstrated the **adaptability, flexibility and resilience of the Scottish Higher Education sector** and talent pool, as well as the life sciences and chemical sectors. SULSA is working, with partners, on expanding the graduate employability portfolio to further support **skills development**, **business engagement** and **effect system change** within Scotland.

# Background

## The Scottish life science and chemical sectors

Scotland is home to one of the largest life sciences clusters in Europe. A range of multinationals and small and medium enterprises (SMEs) with a strong track record of creating and growing start-ups make up this dynamic landscape. Between 2009 and 2015, Scotland created more than 170 life sciences start-ups with a success rate of 85%, and over 60 university spinouts, demonstrating Scotland's supportive environment for life sciences ventures.[i]

Scotland's chemical sciences sector covers all areas of chemical sciences. With strong expertise in industrial biotechnology and continuous manufacturing, Scotland has been leading the way in innovative sustainable chemical manufacturing.[ii]


The Scottish Life and Chemical Sciences Landscape
Source: Scottish Industry Directories 2021[iii]

Scotland has comprehensive supply chains and world class manufacturing expertise supplying chemical and healthcare equipment, pharmaceutical services, medicines, vaccines and diagnostics to the world. The cluster continues its rapid expansion building on a strong industry base, leading universities with a thriving entrepreneurial culture and close collaborations across industry, academia, the National Health Service and government.[iv]

Both the Life and Chemical Sciences sectors in Scotland have experienced considerable economic growth during 2021 compared to overall GDP growth. With employment in the life and chemical sciences sectors increasing steadily, the sector will play a key role in Scotland's economic recovery after the Covid-19 pandemic.[v]


Scottish Quarterly GDP Index, 2020 Q4
Source: Office of the Scottish Chief Economic Adviser, March 2021

### THE CHALLENGE OF GRADUATE EMPLOYABILITY

The life and chemical sciences industries are high tech and innovative sectors which require a highly skilled and motivated workforce. Equipping life science graduates with the necessary toolkit to start a successful career in the industry is challenging. Apart from practical (laboratory) skills, a significant proportion of Life Sciences employers emphasise the importance of core soft skills such as problem-solving, team working, planning and organisation and self-motivation. A positive attitude to work, relevant work experience and knowledge of their chosen career are also essential skills for life sciences graduates.[vi]

As a consequence, designing tools which provide graduates with the **skills needed to succeed in the industry** is crucial to secure Scotland's leading position in the future.

## DEVELOPING GRADUATE EMPLOYABILITY WORKSHOPS

In order to address industry concerns over the modest knowledge graduates have of the Scottish Life and Chemical Sciences sectors, the Glasgow Economic Leadership Life Sciences Work Stream group developed an action plan for Life Sciences in 2012. One suggested area for action was around Graduate Employability, specifically

- to increase the number of 'industry ready' graduates,
- to increase the number of graduates entering the Life Sciences and Chemical sectors and
- to broaden graduates understanding of the diversity of roles within life science companies and organisations such as Innovation Centres.

There was also a strategic fit with the Skills Investment Plan for Scotland's Life and Chemical Sciences, aligning with the theme of Building Graduate Work Readiness, notably to make university students aware of the range of job opportunities and manage their expectations of working in the industry.

In order to complement university curriculums, Kevin Moore, OBE and Ronnie Palin (Skills Development Scotland) developed two new schemes targeted to meet these industry needs: the Graduate Employability Masterclasses and the Scottish Life Science Internship Programme.

The aim of the **Graduate Employability Masterclasses** (GEM) was to support universities in providing future graduates with insights about the diversity of roles and careers within the Scottish Life and Chemical Sciences sectors, giving them relevant industry knowledge focused on future job opportunities.

Adding to the individual universities engagement efforts, the scheme was set up not only to strengthen university links with industry, but also to connect careers services officers across Scottish universities. At the same time, the pan-Scotland character was designed to create student networks across Scottish universities, allowing cross-fertilisation of students of different disciplines, institutions and year groups. This **collaborative planning** across all relevant partners is a key to the **delivery of skills** necessary to create a **circular Scottish economy** and to become a **sustainable society**.

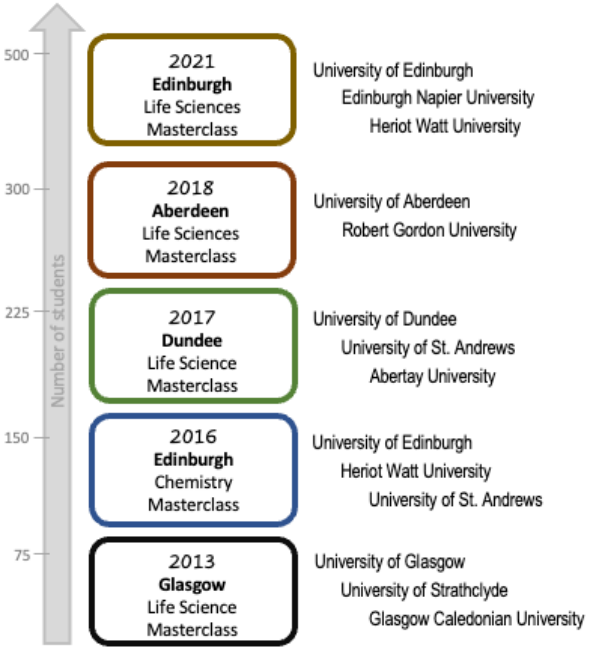
The Life Science Workshops, which are now the Graduate Employability Masterclasses, were piloted at Glasgow Caledonian University in 2012 with 40 graduates.

> "The knowledge and connections that I gained throughout the masterclass are invaluable and opened my eyes to the wide range of opportunities that my biomedical science degree actually has to offer. I would highly recommend if given the opportunity to participate in the life science masterclass to definitely do it."
> (Claudia, 3rd year student at Abertay University)

## Programme Overview

Since 2013, the scheme has been extended continuously, bringing Life Sciences Masterclasses to Glasgow, Dundee, Aberdeen and Edinburgh, and a Chemistry Masterclass to Edinburgh. Since 2021, the Graduate Employability Masterclasses involve 12 universities across Scotland.

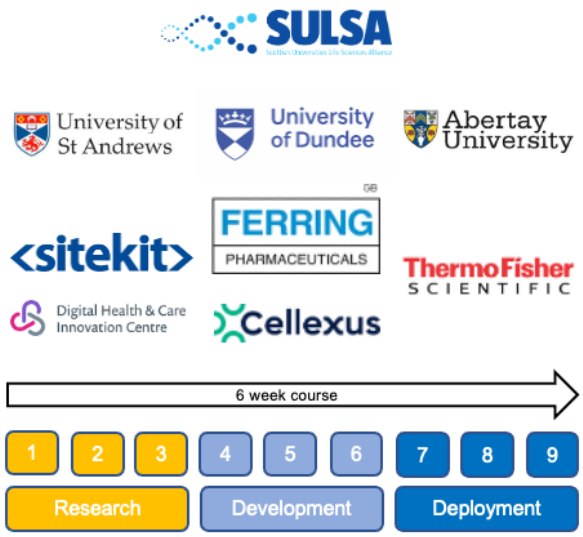
The programme is aimed at undergraduates studying a degree in Life or Chemical Sciences at a Scottish University. The programme takes the students through the different aspects of science companies from early product development through to market entry. To this end the programme is delivered by industry representatives.




Development and upscaling of the Graduate Employability Scheme (2013-2021)

## Format of a Graduate Employability Masterclass

Over the course of 6 weeks, up to 100 students attend 3 modules that cover all stages of product development, in accordance with Technology Readiness Levels.




Concept of a Masterclass: The 3 modules are designed according to Technology Readiness Levels with different companies presenting around core topics (Dundee Life Science Masterclass 2021).

Each session runs for 2hr 30min with two modules per session. Industry speakers give a 20-minute presentation on their organization and explain key business processes. The students then work on an interactive exercise focusing on that particular business activity, assisted by industry experts. Finally, there is a general Q&A session.

"So helpful in helping me recognise what career I want!"
(4th year student at Glasgow Caledonian University)

"The format of the masterclasses is fantastic. The short talk introduces the topic and the supervised group exercises allow you to work on the concepts and use them to get the answers while collaborating with your peers. Really informative and interesting! "
(4th year student at University of Aberdeen)

## Industry support

The programme has known wide spread support across SMEs, multinational companies and innovation centers.

> "At Charles River we regularly look for new talent to join our various departments and I hope by showcasing just a few of the lesser-known career paths available we have given them some inspiration for pushing their careers forward."
> (Emma Garrell, Senior Team Leader Toxicology Admin & Reporting at Charles River Laboratories)

> "At Thermo Fisher Scientific we are passionate about attracting and developing talent. These classes provide an excellent forum for attendees to really think about the many different opportunities suppliers offer and the different routes to career success."
> (Paul Blackburn PhD, Cell Culture and Cell Therapy TSS Leader EMEA Region at ThermoFisher)


# Impact of the 2021 Masterclasses

## Successful upscaling in the time of pandemic

In 2020 the Scottish Universities Life Sciences Alliance (SULSA), in partnership with the Scottish Universities Chemistry Pool (ScotCHEM), joined the organising committee. The **Scottish Research Pool's** established networks across Universities and **our Scottish Innovation Centres** has enabled this scheme to grow significantly. In 2021 the Graduate Employability Masterclasses have been delivered across 12 universities in Scotland, with **25 companies** in total contributing invaluable insight and knowledge to over **500 students**.

With the development of the Life and Chemical Science sectors in Scotland, recruiting more graduates into careers in the industry has become both more attractive and necessary. Also, with the far-reaching impacts of COVID-19 and the **urgent need for economic recovery** in Scotland, this scale-up of the Masterclasses Program has come at a time of need.

During the pandemic, public spending has reached new record levels. At the same time, it has become much more challenging for Higher Education institutions to attract a sufficient number of EU students.[vii] For international students in particular, **employability is one of the top priorities** when deciding on what to study, and where. Brexit has limited the funding landscape for researchers making it more challenging for universities to offer sufficient employment options mid-term. What's more, practical experience in placements for 3rd and 4th year undergraduates has been severely affected as a result of COVID-19. As a consequence, finding ways to **enhance Scotland's attractiveness** to graduates and enabling current academic staff to pursue alternative careers in the industry is now more important than ever.

Additionally, there is a need for practical (laboratory) skills which has been amplified by Covid-19 and the requirement for online learning. It is estimated that there will be a significant demand for skilled workers across a range of occupations relating to Covid-19 testing and vaccine production.[viii]

"The workshops help to build our students business awareness as well as give them an opportunity to work on typical projects they would encounter in industry. The masterclasses also help our student to find out about different roles in industry outside the typical lab-based setting. I would like to say a big thank you to all who got involved."
(L. Pickering, Senior Careers Advisor at the University of Dundee)

For the first time in 2021, Graduate Employability Masterclasses were held online which enhanced the availability of the classes to a broader range of students and (multinational) companies, reducing travel costs and time. The successful cross-university online format showed the adaptability of the entire organisational team at universities and industry, as well as the students.

### Feedback in numbers

4.5 STARS

Students average rating of the 2021 Masterclasses

Over 95% of students provided positive feedback on the Masterclasses and the benefit to them in their career planning. Post-Masterclass, a majority of students indicated they would

- research graduate job opportunities,
- going to update their CV's or LinkedIn profiles.
- proactively make connections i.e., on LinkedIn
- seek opportunities for work experience or placements.

"I learned so much about the grassroots of a company and what is necessary for its success. I gained a lot of inspiration from the speakers and students alike who were very enthusiastic. Attending makes me keen to pursue a career in industry."
(Uswah, 4th year student at University of Strathclyde)

4.7 STARS

Companies' average rating of the 2021 Masterclasses

Companies were able to connect with potential recruits, understand their abilities and skill levels. Company feedback suggests that participants of the GEMs are likely to reach out to company representatives and are more prepared to apply for jobs within the companies participating in the sessions.

"Talking to students about the range of potential roles in industry is important not just for the future of our company but for the industry as a whole. It allows us to feel we are giving something back and guiding the next generation of scientists."
(F. Dempsey, Director of Scientific Operations at Medannex Ltd)

## Improving Outcomes

The Graduate Employability Masterclasses have built a highly engaged and proactive talent pool that can and should be built on to maximise outputs. Furthermore the expansive program is building better connectivity between industry, academics and careers officers, supporting longer-term and sustainable relationships into the future for our academic instititions.

There is a consensus from all parties involved in organising and delivering this program that more can and should be done to capatilise on the structure in place.


Abbie Wishart
Business Development Manager
at Reprocell

*1. Having attended the classes in 2016, how specifically has it helped you in pursuing your current career?*
The classes gave me general information about a more customer facing science role and convinced me it was the career path I wanted to pursue after university.

*2. Did you mention your participation in GEM in your interview and do you think that made a difference in your application?*
It was a talking point of my interview, as well as other events for undergrads - very favourable!

*3. For your company, do you feel that graduate positions are easy to fill with suitable candidates?*
We are happy to take on graduates and have done on several occasions for laboratory work, marketing and sales (I myself came in straight from uni). There is a lot of enthusiasm with graduates that is great to bring into a company.

## GEM LinkedIn group

Following the 2021 Masterclasses, SULSA and ScotCHEM created a dedicated LinkedIn group, exclusive to participants of the 2021 workshops. To date, the group has been successful in connecting more than 230 participants of the 2021 classes, ranging from students to industry and innovation centre representatives, as well as careers services officers. Providing students with digital badges enabled them to proactively advertise and showcase their achievements on their LinkedIn profiles.

## Graduate Employability toolkit

SULSA wants to take this program further so that companies, students, career officers and academics are **proactively working together** to improve first job placement, CPD development of the graduate employee within the job and ongoing monitoring of progress, to support Universities in enhancing the graduate offering, which is **promoted on a global scale**.

The pandemic has moved on the agenda for learning and has shown the **importance of new technologies** in supporting upskilling of new and entry staff in companies. Industry has highlighted the importance of soft skills in this new environment whereas traditionally universities are more comfortable within the taught / trained skills area. This approach will encourage involvement of graduates in adapting new digital technologies and the use of **soft skills**.

Consulting industry, universities and students, we are proposing a **Graduate Employability Toolkit** which would focus on **strengthening relationships** across the life science and chemical sectors and the Higher Education institutions and would entail:

- Expansion of the current program in Life Sciences from 4 to 5 courses and in Chemistry from 1 to 3 courses,
- Creation of a promotional video showcasing the entire program,
- Creation of additional multimedia resources for the students to enhance their learning pre- and post- Masterclass,
- Driving more interactive links to students and life and chemical science companies during and after entering first destination jobs,
- Broadening the offering to include more postgraduate students,
- Organisation of career events across Scotland focused on hot topic areas,
- Support of a university led Internship programme.

"These classes covered areas not conventionally taught about in classrooms- the ability to expand my knowledge about potential employers and career opportunities directly from current employees is invaluable."
(Dave, 4th year student at Edinburgh Napier University)

The activities listed above would significantly expand the program, building on the groundwork laid by the Graduate Employability Masterclasses. The SULSA Graduate Employability Toolkit would aim at maximising the likelihood of **retaining and preparing the talent** within this proactive cohort of students at Scottish universities. Early approaches have been made to industry as regards financial support of the Masterclasses and while formal sign off has still to be made there was a positive response.

## CONCLUSION

Since it's creation in 2012, the Graduate Employability Masterclass Programme has grown into a **driver of cross-university collaboration**, **pan-Scotland student network growth** and has acted as a **company-university axis facilitator**. At this critical time, there is a need for an immersive and symbiotic, deeper and **longer-term investment** in these relationships.

"Great course organised by SULSA and the affiliated universities and companies. A broad range of industry areas covered which gave great insight into areas I did not even consider before. The tasks and breakout room discussions allowed us to engage to real life examples which was an added bonus to appreciate how it is working in a multi-disciplinary team to make decisions. The added careers advice from the speakers was the cherry on top and their offer to offer advice and connect on LinkedIn was much appreciated. Overall a very insightful, well-organised course and I will highly recommend to anyone looking to get into industry, whether they know what they want to do within industry or not.."
(Kelvin, 4th year student at Edinburgh Napier University)

"A fantastic display of many different sectors. It has given me confidence in what jobs I can seek, and I cannot wait to attend again."
(3rd year student at Heriot Watt University)

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