EMBEDDED EMPLOYABILTY

A Placement Toolkit for STEM Schools

National **HE STEM** Programme
Wales Spoke
Wales Institute of Mathematical and Computational Sciences
Digital Technium
Swansea University
Singleton Park
Swansea SA2 8PP
01792 60 28 55 • hestem@wimcs.ac.uk • www.hestem.ac.uk

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Contents

1.0 Introduction

This toolkit provides a practical reference point for STEM (Science, Technology, Engineering & Mathematics) schools wishing to develop their existing placement programmes or for those embarking on hosting such a scheme.

It is intended to be a practical guide and although the primary focus is to support a year in industry, many of the principles apply to shorter periods of work experience.

Value of Work Placements

A placement should be more than just 'work experience'. It is a unique opportunity for employers (also commonly referred to as 'hosts') and the university to work together to further an individual's development, to maximise contribution to their study and future career and through that increase their employability. It is a chance for employers to perhaps consider a student as a potential graduate recruit, having had the advantage of observing individuals operate at the necessary level for the placement. Although requiring an investment at the outset, evidence points to greater graduate retention where selection is made from placement students. For example, at Ernst & Young, 91% of those who are selected for a place on their graduate scheme are those who have successfully completed a one year internship. A similar example is that of Intel Corporation UK Ltd, who almost entirely source graduate recruits from those who demonstrated the required aptitude and qualities during their one year internship. Typically a deferred, conditional offer is made at the end of the internship year.

The School gains:

- An opportunity to build relationships with related organisations and employers.
- An opportunity to capitalise on such relationships through research, sponsorship, mentoring and strengthening Alumni networks.
- A practical insight into the workplace ethos and culture of employers of a market sector.

The Student gains:

- A chance to contribute to and learn from the workplace.
- The practical understanding of the context in which their degree is based.
- The development of interpersonal, employability and reflective practice skills and competences.
- Opportunities to bring their learning and experience back to University for their final year.
- A significant improvement in their employability as a graduate.

The Host gains:

- An employee who is keen to contribute and who can bring a flexible and fresh approach.
- An employee of good academic calibre and practical competence.
- A cost effective way of resourcing a job or project.
- An insight into a possible graduate recruit, having gained detailed knowledge of their capabilities during the placement.
- An excellent way to promote graduate recruitment through the student peer group.

Aims and Benefits of a 'Year in Industry'

Sandwich courses are widely respected by manufacturers, contractors, consulting firms, local authorities, government departments, service organisations and professional bodies. Employers recognise the mutual benefits to be gained by giving students the chance to learn within a working environment before they graduate and begin their career. Many students secure their first full-time employment as a result of their performance during the Year in Industry.

Universities may regard the "Year in Industry" as a three-way partnership between the employer (or host organisation), the student and the university. Although the university is not a party to the contract of employment, students on placements remain enrolled as students and one would therefore be expect to take any action necessary to ensure that a student is proving to be an effective, safe and reliable employee.

Start of the Year in Industry

Students are advised that they must not start work before the placement is approved by their academic school. The students must also pass any appropriate examinations before they can start work and should be sent an "Authority to Start Placement" by the university once the various conditions for approval have been met. Employers receive a copy of the "Authority to Start Placement" so that they will know that university approval has been given. Where applicable, the project scope should be agreed between the school and the host employer prior to the placement commencing.

How long is the Year in Industry?

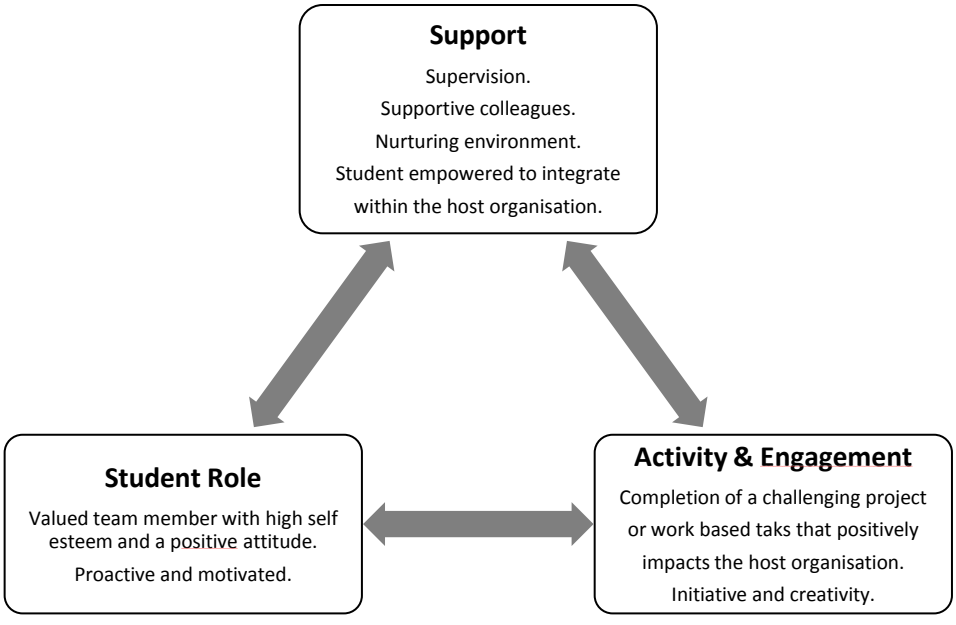
Students will have normally completed two years of study of their degree before beginning the sandwich placement. They are available to begin a placement after their exams – from June onwards, at the latest the beginning of October. Students will normally complete 48 weeks of industrial experience. Responsibility lies with each student and their employer to agree the precise start and finish dates. Indeed many students prefer to work more than 48 weeks in order to earn extra income.

What about the Salary?

Salary varies with the company concerned but currently ranges from £14,000 to £25,000. [1]

[1] Adapted from the 'Year In Industry' handbook – Cardiff University School of Engineering

An Example Model for Successful Placements



Fees

Given the common standard of support and guidance applicable across all placements, the main variable when establishing fee levels is likely to be the extent of structured academic distance learning to be undertaken throughout the placement year.

For example:

- modules to be completed through distance learning while on placement;
- extensive research projects, with a corresponding degree of academic supervision, undertaken in the placement setting;
- additional academic support beyond that offered in a 'standard' placement year.

The setting of student fees is subject to change in response to a range of internal and external factors. It is advisable to contact the relevant department for the latest information and guidance. [2]

[2] Adapted from The Code of Practice for Placement Learning, Cardiff University Registry

The benefits of undertaking a structured placement, rather than one sourced independently, including consideration of value-for-money, must be properly communicated to students. The value proposition to the student will depend upon factors such as:

- how the placement is sourced and supported
- organisation and management of the experience by the School
- enhancement of the student's knowledge, skills and professional development
- accreditation, assessment and contribution towards final degree result

2.0 Glossary of Terms

The term **'work placement'** has multiple meanings and forms. It is therefore important to offer a glossary of terms to explain some subtle differences between various terms which are often used interchangeably. A work placement can take various forms including short term, long-term (e.g. one year) or part-time employment, and could be paid or unpaid. It can be a compulsory, optional or non-requisite part of a higher education courses.

Host: Organisation providing the work placement

Sandwich and industrial placements: a fixed term period of assessed, paid work that forms part of a university degree. It often lasts for a full year.

PTY: Professional Training Year – an alternative name for a Year in Industry (12 month placement)

Work-based project: A specific piece of assessed work for a university course, undertaken at an employer's premises.

Work Placement: A period of work experience, which can be paid or unpaid, and is part of a course of study. This can be arranged through the university with an employer or by the student and is for an agreed period of time.

Internship: A phrase that is increasingly used by large companies and refers to a placement within their organisation. The term internship or intern can refer to either a short term or a full 12 month placement.

YII: Year In Industry (12 month placement)

The National Council for Work Experience (NCWE) also lists other forms of work experiences:

Voluntary work: Any type of work undertaken for no payment, usually outside the university course in student's spare time.

Part-time work: Paid or unpaid work – undertaken either during term-time, in the holidays or both – of less than 35 hours per week. For a project that is providing assessment and accreditation of part-time work.

Work Shadowing: Where a student observes a member of staff working in an organisation, and so gains an understanding of what a particular job entails. [3]

[3] Adapted from National Council for Work Experience (NCWE) 'Glossary of Terms'

3.0 Roles and Responsibilities

Responsibilities made clear at the outset are useful to ensure each party understands minimum expectations. It is recommended this is a documented three way agreement between the school, student and host employer.

Academic School:

- Ensure that students have an understanding of commercial awareness, business etiquette, confidentiality of intellectual property and equality & diversity issues in the workplace.
- Provide a programme of learning that will enable students to develop and document their professional skills and knowledge.
- Give support and expert guidance for finding and securing placements based on the University's strong relationship with external placement providers.
- Allocate each student a designated academic placement contact who will lead the partnership between the student, the placement provider and the University.
- Provide each student with clear and comprehensive information on all aspects of the placement, designated roles and responsibilities, and available support.
- Conduct an initial health and safety assessment of each placement and ensure that any identified risks are appropriately managed by the placement host.
- Ensure students receive a health and safety induction provided by the host within the first few days of the placement.
- Maintain regular contact with students throughout the placement, including site visits.
- Provide timely and constructive feedback on performance and/or assessments.
- Signpost the full range of support services available to Cardiff students whilst on placement.
- Ensure that all students on relevant programmes of study have an equal opportunity to benefit from placement learning.
- Ensure that reasonable adjustments are made for disabled students, working with the student, the employer and the Disability and Dyslexia Service as appropriate.
- Provide comprehensive support should any difficulties arise, including help in finding an alternative placement host if necessary.

Student:

- Confirm with the School and placement provider as soon as possible:
    - acceptance of an offer of a placement
    - the date on which the placement will begin and the expected date of completion
    - the name of your appointed supervisor at the host organisation
    - contact details for the period of the placement
- Maintain contact with the University throughout the placement period.
- Ensure all intellectual property (including copyright and inventions resulting from the placement) shall remain the property of the employer unless otherwise agreed.
- Comply with the health and safety guidelines relating to the placement. Ensure that you receive the health and safety induction.
- Learn about the culture of the placement host and uphold values of dignity, respect and courtesy.
- Comply with the terms and conditions of employment.
- Engage fully in your placement experience to ensure you are able to make the most of your programme and maximise your potential.
- Complete and submit assignments on time (where required).
- Utilise the feedback received on your assignments to improve future work.

- Recognise the skills you are developing and be able to articulate and record these appropriately.
- Inform your appointed supervisor and University contact of any issues that arise in the course of the placement.

Host:

- Employ students in a challenging professional environment which will allow them to achieve the placement learning outcomes.
- Be fully apprised of the programme aims and assessment requirements set out by the University.
- Ensure the health and safety of placement students in the workplace. This will include contributing to the initial University-led risk assessment, providing an induction and any relevant training and the provision of personal protective equipment (PPE) where appropriate.
- Maintaining an environment which is free from harassment and discrimination.
- Maintain effective mentoring and supervision.
- Provide reports and feedback on student activities and performance in accordance with programme requirements.
- Communicate to the University any issues which arise in the course of the placement. [4]

[4] Adapted from the Code of Practice on Placement Learning – Cardiff University Registry

Host Induction

- Ensure the student receives a Health and Safety briefing at the start of the Placement and has access to a written Health and Safety policy.
- Provide suitable induction training in the first few weeks to enable students to gain an awareness of their role in the organisation.
- Ensure the student understands the terms and conditions of employment and has a copy of the staff handbook or similar if applicable.
- Recognise that, although primarily an employee with first responsibility to the organisation, the student is still registered with the University and, as such, is likely to have certain obligations as part of the course.
- Give the students adequate learning opportunities to enable them to achieve their own objectives or any objectives required by their course, provided there is no conflict with the Employer's objectives.
- Provide support and resource to students who are required to undertake tasks or write reports/projects as an element of their course.
- Where possible, allow students, who have to re-sit examinations, time for revision and for sitting the exam. It is recognised that, in some circumstances, the time may have to be taken from holiday entitlement.
- Identify a workplace supervisor or Mentor who will take responsibility for the student's progress towards achievement of objectives set by the organisation, the course and the school. Allow access to visiting tutors from the Academic Institution to discuss progress with the student and the workplace supervisor/mentor.
- Keep the Placement Manager and/or visiting tutor informed of any potential problems encountered by the student.
- Assist in any assessment or appraisal process which is a course requirement, and give the student regular feedback about progress.
- Ensure that students are covered by Employer's Liability and Public Liability Insurance policies and those insurers are notified of placements in accordance with the requirements of policies.

It is recommended there also be a provision to verify a suitable induction has taken place at the host organisation.

Example: Work Placement Induction Feedback Form for partial student completion (GO Wales)

GO Wales - Skills for the Knowledge Economy Convergence Area is a project part-financed by the European Union through the Welsh Assembly Government. For more details regarding the European Structural Funds programming round 2007-2013, please refer to the Welsh European Funding Office's (WEFO) website at: http:/www.wefo.wales.gov.uk

WORK PLACEMENT INDUCTION FEEDBACK FORM

The purpose of induction is to ensure the effective integration of staff into or across the organisation for the benefit of both parties.
Sections 1 & 3. These sections to be completed by the GO Wales Placement Organiser
Section 2. This section to be completed by the Participant (placee) undertaking a GO Wales Work Placement

Host Employer's Registered Name:						
Trading Name (if different):						
Participant's Name:						
Placement Start Date:						
Date of Induction Visit:						
Were you briefed on the following?:						
Hours of attendance	[ ]	Yes	[ ]	No		
Absence/sickness procedure	[ ]	Yes	[ ]	No		
Arrangements for breaks	[ ]	Yes	[ ]	No		
Pay - payment date and method	[ ]	Yes	[ ]	No		
Rules of conduct etc	[ ]	Yes	[ ]	No		
Internet and email policy	[ ]	Yes	[ ]	No		
Holidays/special leave	[ ]	Yes	[ ]	No		
Operation of telephone/fax/email	[ ]	Yes	[ ]	No		
Operation of other relevant equipment	[ ]	Yes	[ ]	No		
Data Protection Act/Freedom of Information Act	[ ]	Yes	[ ]	No		
Were you briefed on the following Health and Safety issues?:						
General safety	[ ]	Yes	[ ]	No		
Evacuation procedures	[ ]	Yes	[ ]	No		
Job/project specific safety	[ ]	Yes	[ ]	No		
Control of substances hazardous to health (COSHH)	[ ]	Yes	[ ]	No	[ ]	N/A
Display Screen Equipment Regulations	[ ]	Yes	[ ]	No		
Dangerous machinery regulations	[ ]	Yes	[ ]	No	[ ]	N/A
Lifting and carrying techniques	[ ]	Yes	[ ]	No	[ ]	N/A
First aid facilities	[ ]	Yes	[ ]	No		
Accident/hazard reporting	[ ]	Yes	[ ]	No		
Are you fully aware of the requirements of the GO Wales Placement?						
[ ]	Yes	[ ]	No			
Do you have a designated supervisor/line manager?						
[ ]	Yes	[ ]	No			
Have you any other comments about the arrangements of your Placement?						

Thank you for taking the time to complete this document

This document is available online, in large print, on electronic CD, and in Braille and DAISY (digital audio). Should you or someone you know require this in an alternative format please contact us on 0845 225 60 50 (voice), via RNID TypeTalk (18001) 0845 225 60 (text) or email info@gowales.co.uk

3. **GO Wales office use only**					
Health and Safety acceptable:	[ ]	Yes	[ ]	No	
Comments on induction:					
Signed by GOW Project Representative:					
Print Name:				Date:	
Higher Education Institute:					
Employer ID:				Opportunity ID:	
Participant ID:					

4.0 Health & Safety

The recognised standard for the management of health and safety for placements is the *UCEA Health and Safety Guidance for the Placement of Higher Education students*. All those involved in the provision on placements should become familiar with this document available at www.ucea.ac.uk

The UCEA guidance encourages a risk-based and risk management approach which allows a scalable approach when assessing placements with relatively low risks and more rigorous control measures where the risks are greater. Where there are low risks in a particular area, no specific actions are likely to be required. Where there may be high risks attached to aspects of the placement, additional documentation, training or support may be necessary. Appendix A of the UCEA guidance provides a full breakdown of risk profiling and possible risk-reducing actions.

A risk assessment form must be completed for each placement. A standard form and supporting information is available as Appendix B of the UCEA *Guidance.* Forms provided by professional and regulatory bodies should be used where required and may substitute the UCEA Risk Assessment Form provided there are no omissions or contraventions to the overarching principles of the UCEA documentation.

For more information please refer to the publications listed on the UCEA website.

Insurance

There is an Association of British Insurers (ABI) working agreement which states that any person who is completing work experience will automatically be covered as if they are an employee. Therefore, providing the host company has Employer's Liability cover (compulsory for 90% of companies) a placement student will be considered an "employee" as per the 1969 Employer's Liability Act and will therefore be covered. This agreement depends on the University fully discharging its responsibility to undertake a suitable assessment of the placement provider. It is therefore essential that the preliminary risk assessment is undertaken so that a reasonable degree of care can be shown to have been exercised in setting up the placement. [5]

[5] Adapted from The Code of Practice for Placement Learning, Cardiff University Registry

Students must understand their obligations in terms of compliance with all aspects of health and safety within the workplace.

School of Mathematics

PLACEMENT HEALTH AND SAFETY CHECKLIST

Name of employer……..……..…

Address……..……..

Telephone ……..…..……..…Fax……....……..……..

		Yes	No
1	Do you have a written Health and Safety policy?		
2	Do you have a policy regarding health and safety training for people working in your undertaking, including use of vehicles, plant and equipment, and will you provide all necessary health and safety training for the placement student?		
3	Is the organisation registered with: **a**- the Health and Safety Executive or ☐ Tick as **b**- the Local Authority Environmental Health Department? ☐ appropriate		
4	**Insurance** **a**- Is Employer and Public Liability Insurance held? **b**- Will your insurance cover any liability incurred by a placement student as a result of his/her duties as an employee?		
5	**Risk Assessment** **a**- Have you carried out risk assessment of your work practices to identify possible risks whether to your own employees or to others within your undertaking? **b**- Are risk assessments kept under regular review? **c**- Are the results of risk assessment implemented?		
6	**Accidents and Incidents** **a**- Is there a formal procedure for reporting and recording accidents and incidents in accordance with RIDDOR? **b**- Have you procedures to be followed in the event of serious and imminent danger to people at work in your undertaking? **c**- Will you report to the university *all* recorded accidents involving placement students? **d**- Will you report to the university any sickness involving placement students which may be attributable to the work?		

Contact Personnel

Who is your nominated contact for compliance with the requirements of health and safety legislation?

Name and position:..……..……Tel…….

The above statements are true to the best of my knowledge and belief.

Signed:……...……...…

Position:……...……Date:…...……..…

Thank you for completing the questionnaire. Please return to your placement officer as soon as possible.

5.0 Professional Accreditation

Degree schemes incorporating a year in industry or year abroad should be accredited by the relevant professional body.

For example, the IMechE (Institution of Mechanical Engineers) state; “The accreditation team would expect to be given assurances that the learning outcomes delivered to students who study in the University would be also delivered to those students who undertake the same year ‘out of University’.”

Example: Extract from Educational Base (Institution of Mechanical Engineers)

11.1 Study Away From the University

IMechE accredited degrees may involve work or study abroad. However, at least two years’ study including the final year, should normally be spent at the home institution. In all cases the home institution will be required to show how the curriculum, assessment methods and monitoring systems used are sufficient to ensure the overseas studies integrate with the accredited degree and meet equivalent academic standards.

The IMechE strongly supports the opportunity for students to undertake work placements in industry or studying abroad; it has become clear to our review teams that students benefit strongly from the availability of these programmes; returning to University with more confidence and enhanced employability.

Example: Variety of degree schemes, including those which incorporate an accredited Year in Industry or Year Abroad – School of Chemistry (Cardiff University Undergraduate prospectus 2013)

Chemistry MChem (4 years) F103
Chemistry BSc F100
Chemistry with a Year in Industry MChem (4 years) F104
Chemistry with a Year Abroad MChem (4 years) F102
Chemistry with Industrial Experience BSc (4 years) F101

Our flagship four-year MChem programmes are designed for those intending a professional career in chemistry, either in an academic or industrial environment, in general scientific research or research management. Our well-established MChem programmes were recently re-accredited by the RSC to ensure they meet the highest national standards for Chemistry degrees.
Two further MChem programmes are available: Chemistry with a Year in Industry and Chemistry with a Year Abroad. In both cases, the third year is spent away from Cardiff, either in the laboratories of a company undertaking research or development related to chemistry, or following a research programme in an overseas university in Europe, North America or Australia. A dynamic range of distance learning modules are provided to enhance academic development and maintain close contact with tutors. These programmes are subject to availability of suitable placements.

6.0 Supervision

Schools should ensure that the progress of students on placement is monitored throughout the placement period. Students and staff should maintain regular contact and staff should monitor pastoral welfare.

Electronic tools can be of particular value when communicating with students away from the University and placement co-ordinators are encouraged to explore how technologies can be used effectively to support learning and communication for students. The virtual learning environment, mobile technologies, e-portfolios, social networks, online voice and messaging all offer many ways to foster sustained dialogue at a distance.

For placements of significant length, structured visits from academic staff will be essential. Visits permit a broad-based evaluation of the placement and the student's progress; they can ensure that the placement is progressing in a satisfactory manner, address any issues that have arisen and provide feedback. The number of visits to students on placement may vary, though, for a year-long placement, it is usual to make at least two visits. These should be scheduled well in advance, allow time for discussion with both the student and the employer and be at least in part focussed on prepared written work, for example, a student's reflective log. The first visit should take place in the early stages of the placement period to confirm the suitability of arrangements.

It should be clear to students that the full range of academic and personal support provided by the University is available to them while on placement. As well as the academic and pastoral support provided by School staff, they have access to Student Support Services, Careers and Employability, Registry and Information Services. Students benefit from receiving information about the range of support available to them and how it can be accessed.

Example: Best Practice for Four Year Programmes with a Year in Industry (Effective Practice in Industrial Work Placement: A Physical Sciences Practice Guide. Higher Education Academy. Wallace, R., Murray, B. and Overton, T.)

Academic Studies in Industry

If the placement is one of the four years contributing to an MChem/MPhys/MSci degree, then some additional academic work is required by most Universities. If this is to make its proper pro-rata contribution to the class of the degree then some academic work should be included and assessed and so become part of the student's portfolio of achievements for the year. This can best be accomplished by converting existing modules to distance-learning format. Assessment can be novel or conventional and ideally, the student should have the support of a period of face-to-face tutorials. Students on M level courses should demonstrate their ability to study new academic material in their own time in addition to their commitment to their placement position. Universities should provide distance-learning material for this purpose.

Example: Differing levels of supervision depending on accreditation of industrial placement or year abroad (Cardiff University Undergraduate Prospectus 2013, School of Chemistry entry)

- A year in industry is offered in the MChem and the BSc routes. In the MChem with a Year in Industry, a substantial amount of academic work is carried out, as well as the work tasks assigned by the industrial host (the 'job' will be very similar to that of a new member of staff) and the entire year is assessed as part of the degree.

- In the BSc programme with Industrial Experience, the placement offers the opportunity for paid work experience, itself very valuable, but without the additional academic requirements and assessments. Students can expect a competitive salary for the duration of both industrial placement courses.
- The MChem with a Year Abroad follows the same pattern as the MChem with a Year in Industry, but the third year is spent in an overseas university. This will involve the same programme of academic work required for the Year in Industry, as well as an extended supervised research project as a junior member of a research group in the host institution. In some cases this will require appropriate language skills, and opportunities are provided during the first two years to develop these.

Example: Placement visit pro forma (Cardiff University School of Engineering)

CARDIFF UNIVERSITY

SCHOOL OF ENGINEERING – Year in Industry VISIT REPORT 1/2 **Form M1**

<table>
<tr><td>Student's name

Uni. No.</td><td>Course/Degree</td><td>Visiting Tutor</td><td>Date of visit
Date employment began
Proposed finish</td></tr>
<tr><td colspan="3">Employer and location

Tel:</td><td>Diary

Contact address</td></tr>
<tr><td colspan="3">Mobile:
Preferred e-mail:
Website:</td><td>Annual salary: £</td></tr>
<tr><td colspan="3">Firm's Officers and position</td><td>Professional Institution

Job title</td></tr>
<tr><td colspan="4">Employer's comments on student</td></tr>
<tr><td colspan="4">Student's comments on training to include H&S induction</td></tr>
<tr><td colspan="4">Visiting tutor's comments</td></tr>
<tr><td colspan="4">Experience gained</td></tr>
<tr><td colspan="4">At next visit</td></tr>
<tr><td colspan="4">Additional information to include accommodation and travel to work</td></tr>
<tr><td colspan="4">Condition of site</td></tr>
</table>

Cardiff University
School of Engineering

FORM M2 **Employers Feedback Report**

Please complete two reports, one for each visit by the university tutor.

First or second visit report: ……

Student's name: …….

Supervisor at work: ……Position……..

Address: …….

……...

Telephone number: …… e-mail……...……

Please complete the following questions and complete Form M3, and give to the visiting tutor.

Has the student demonstrated the personal qualities you would expect to find in a sandwich course student? ……..

……

……

……

……..

If not, how could the student improve performance?

……...……

……

……

Are there any general comments you wish to make? ……..

……

……

……

……

Signed…….(Work based supervisor) Date……..

7.0 Learning Outcomes & Assessment

Expectations of Academic School:

The arrangements for assuring quality and standards for placement learning should be as rigorous, secure and open to scrutiny as those for programmes provided wholly within the institution and through conventional class-based modes of learning. Placement provision should be evaluated as part of the school's quality processes. Students, employers and Schools should be provided with opportunities to give and receive feedback on placements. It is particularly important that students have an opportunity to provide feedback on all aspects of their experience: this can be gathered through existing School mechanisms for receiving feedback, such as online module questionnaires, or bespoke exercises such as focus groups. Any information collected and collated from this should be routinely fed into appropriate quality enhancement processes and activities.

Assessment by Host (based on City & Guilds Senior Level criteria)

The industrial supervisor is responsible for assessing the performance of the student over the period of the placement. The assessment is based on the criteria outlined below. This assessment is normally required towards the end of the placement. A final visit by the mentor should take place in June/July and this will provide an opportunity to discuss any concerns over the host assessment.

To aid industrial supervisors the borderlines for degree classifications are:

>70%	First
60-69%	Upper second
50-59%	Lower second
40-49%	Third

Key Skills	Criteria	Marks
Self Management	Willingness to seek appropriate advice Willingness and ability to learn new skills Appropriate attitudes to work and colleagues maintained.	20
Managing Tasks	Plans for work are provided Difficulties are dealt with effectively Progress is monitored and corrective actions taken Deadlines are met.	20
Communication	Accurate and effective in written and spoken communications. Effective oral presentations.	20
Working with and relating to others	Good working relationships are maintained Ability to work well in groups is demonstrated. Ability to work well under supervision demonstrated.	20
Applying knowledge	Seeks to apply knowledge where appropriate Uses systematic approach at all times.	20
Applying initiative	Takes lead where appropriate Self motivation and initiative are demonstrated	20
Total		**120**

Example: How Placement Modules Assessed (Cardiff University School of Mathematics)

During their placement the students are required to keep a diary which will provide a day-by-day record of their professional training placement. The diary should also reflect on their progress with respect to the objectives of the professional training period and should be available for inspection by the tutor, during his/her visits, and by the supervisor

On returning to the final year the students are required to submit a report on their training period to the Training Organiser. As guidance, the typed report should cover the following points.

(i) An executive summary of about 300 words describing your year in industry including any benefits to yourself.
(ii) General description of the organisation as a whole, the place of your section in the organisation and your place in the section.
(iii) General description of the work you did during your training period.
(iv) Description of the knowledge and experience gained and how these relate to the objectives of the training period.
(v) Suggestions of how it would be possible to improve your training period.
(vi) Any other relevant points of interest, value or concern.

Finally soon after the start of their final year Autumn semester the student must give a presentation on their professional training experience to an audience of staff and fellow students.
Assessment Breakdown

Executive Summary and Report:	50%
Presentation:	30%
Industrial / University evaluation:	20%

Example: Objective Setting for Placement Students (Cardiff University School of Engineering)

- Use your academic knowledge and understanding to make the most of you placement experience.
  i. Indentify limits to your personal knowledge and skills.
  ii. Show how your understanding of technical principles has improved during your industrial experience.
  iii. Explain how technical principles are useful in solving work related problems.

- Apply appropriate theoretical and practical methods to the analysis and solution of technical problems. Contribute to the identification of potential projects and problems.
  i. A systematic and logical approach to problem solving should be developed. What process did your placement host have to tackle problem solving?
  ii. Give an example of how you used a range of skills/techniques in order to help solve a problem at work.
  iii. Outline a project or assignment, based on your intern experience that could be used on your academic course on your return to university.

- Review and select appropriate techniques, procedures and methods to undertake tasks and to develop solutions.
  i. Illustrate how standard procedures that you use at work are linked to core technical principles.
  ii. What is the process you go through to complete a new task given you by your supervisor?

iii. Briefly explain one aspect of your work that involved you in the development of a new technique or a novel solution to a problem.

- Contribute to the implementation of engineering solutions to problems
  i. Consider how suitable application of Health, Safety and Welfare principles has improved your work place environment.
  ii. Briefly outline the solution to a problem that you worked on that reduced costs for your employer.
  iii. Explain how standard procedures used in your place of work (e.g. ISO/British Standards or work place codes of practice) can be effective in producing economic solutions to industrial problems.

- Technical and commercial management

Plan, organise and supervise resources to complete tasks

  i. Illustrate an example of how you gather and use information.
  ii. Briefly outline how the progress of your work is checked.
  iii. Suggest some aspect of your work that could be improved by refining the planning of the task.

- Management or control of budgets, tasks, people and resources
  i. Research and explain the management structure of your organisation.
  ii. Illustrate why effective cash flow management is important.
  iii. Give an example of how you managed a task that you were responsible for.

- Take responsibility for the work of self and others
  i. How do you manage and prioritise your work programme?
  ii. Explain what you did to remedy a problem situation.
  iii. As a junior team member, how did you manage to give instructions to, or influence older, more experienced people?

- Contribute to quality systems
  i. Demonstrate your involvement in the quality system at your place of work.
  ii. Outline an example, from your own experience, of the benefit of the quality system in your work place.
  iii. How would you suggest improving the administration of the quality systems at work?

- Demonstrate effective interpersonal skills
  i. Illustrate the importance of accurate communications at work by giving examples of good and bad communications.
  ii. Give an example to illustrate the value of graphical ability in communication.
  iii. Should more time be spent on communication training at university? Briefly discuss.

- Present and discuss proposals
  i. Briefly describe an effective report that you presented during your placement.
  ii. Illustrate an occasion when you made a significant contribution to a meeting.
  iii. Relate a situation that illustrates your ability to influence the outcome of a technical discussion at work.

- Demonstrate personal and social skills and the ability to work with others
  i. Outline an example, from your own experience, of the benefit of team work.
  ii. Demonstrate how good working relationships are developed and maintained.

iii. Identify a situation that illustrates how your ability to work with others has improved during your sandwich training experience.

- Comply with relevant codes of conduct
  i. Research your relevant Professional Institution.
  ii. Quote the section in the Code of Conduct for your Professional Institution relating to the commitment to Health and Safety.
  iii. Briefly mention current issues and developments affecting your industry.

- Manage and apply safe systems of work
  i. Explain how the Health, Safety and Welfare policy of your employer is communicated to the workers.
  ii. Briefly list the hazards associated with your work.
  iii. Describe one risk assessment you have helped to write or have been involved with.

- Undertake placement activities in a way that contributes to sustainable development
  i. Briefly summarise problems to the environment caused by the industry in which you are working.
  ii. Explain one way in which your employer tries to mitigate the effect of your industry on the environment.
  iii. Suggest some additional, realistic ways in which the environmental impact of your place of work could be lessened.

- Manage your own Continuing Professional Development (CPD)
  i. Attend at least two Regional Meetings of a relevant Professional Institution and describe the salient points of each lecture.
  ii. Briefly list your development needs.
  iii. Explain how you have benefited from your industrial experience in terms of knowledge, skills, confidence, understanding and experience.
  iv. Suggest changes that you think could improve the year in industry programme.

Cardiff University

School of Engineering

Form M3 **Employer's Assessment Report**

Please complete two reports, one for each visit by the university tutor.

Student name ……..

First or Second visit Assessment……

Please assign a grading to each of the categories listed below, where appropriate, using the following grading scale:

5	4	3	2	1	N/A
Excellent	Very Good	Good	Satisfactory	Inexperienced	

	Category of Industrial Training	Grade	Comments
1	Technical knowledge and ability		
2	Practical skills		
3	Ability to learn new concepts and methods		
4	Reliability/accuracy of work		
5	Initiative shown		
6	Ability to accept responsibility		
7	Self confidence		
8	Ability to plan and organise work		
9	Written communication ability		
10	Oral communication ability		
11	Relationship with professional/technical staff		
12	Relationship with non-technical staff		
13	Timekeeping and general reliability		
14	Attitude and enthusiasm		
15	Commercial awareness		

Signed……(Work based supervisor) Date……..

Example : Placement Employability Skills Assessment Criteria (Cardiff University Careers & Employability)

Ref	CRITERIA	EXCEPTIONAL	GOOD	SATISFACTORY	LESS THAN SATISFACTORY
1	Commercial Awareness	Comprehensive and detailed knowledge of business and market sector. Able to articulate ideas that impact bottom line.	Comprehensive knowledge of business and market sector.	Competent knowledge of business and market sector. Requires occasional guidance where necessary.	Limited knowledge of business and market sector. Requires regular guidance.
2	Team Work & Initiative	Seen as a trusted member of the team. Uses initiative and has a heightened awareness to assess the needs of the business and is able to prioritise actions to achieve objectives.	Integrates well within teams. Can offer and / or support initiatives; can recognise and assess alternative options.	Makes efforts to develop interactive skills. Uses basic interactive skills appropriately.	Has problems working with others/ avoids work with others. Does not contribute or contributes inappropriately in groups.
3	Competence & Technical Skills	Can perform complex technical tasks with confidence. Consistent demonstration and application of specialist knowledge.	Able to perform basic skills with awareness of the necessary techniques and their potential uses and hazards. Needs external evaluation.	Able to perform basic skills with guidance on the necessary technique. Needs external evaluation.	Fails to perform even basic skills.
4	Planning & Organisational Skills	Advanced planning, sets self determined deadlines and uses contingency planning.	Almost always meets deadlines. Makes plans and implements them in a satisfactory manner.	Usually meets important deadlines, but often despite lack of planning.	Rarely meets deadlines. Unable to make and implement plans.
5	Personal Performance & Professionalism	Understood company and clients problems/needs and developed specific objectives which meet the clients needs and which the student can reasonably be expected to meet.	Understood company and clients needs but has developed objectives which the student cannot reasonably be expected to meet.	Has developed objectives which for the most part meet the company and clients needs.	Little or no attempt to ascertain company or clients needs and develop a workable brief.

Example: Professional Training Marking Framework (Cardiff University, School of Mathematics)

Outline Criteria-Based Marking Framework for Year in Industry

	Self Management	**Team Working**	**Business and customer awareness**	**Problem Solving**	**Communication and literacy**	**Application of Information Technology**	**Report**	**University Presentation**
90% +	Completely independent and assertive	Fully integrated	Complete and thoroughly assimilated	Tackles new applications with ease	Highly developed and mature	Mastery of all techniques	Comprehensive	Fluent and well structured; completely appropriate to the context
70-89%	Completely independent	Complete involvement	Complete	Tackles most new applications with ease	Highly developed	High level technical competence	Comprehensive	Clear and well structured; appropriate to the context
60-69%	Mainly Independent	Involvement	Good overall grasp	Makes a good attempt at tackling new applications	Well developed	Sound technical competence with few gaps	Minor gaps	Clear and generally well structured; appropriate to the context
50-59%	Some guidance needed	Some involvement	Fair overall grasp	Makes some attempt at tackling new applications	Reasonably developed	Competent in routine techniques only	Minor gaps	Some lack of clarity and immaturity of expression
40-49%	Fairly reliant	Little involvement	Partial grasp	Makes little attempt at tackling new applications	Some evidence of ability	Low level technical competence – numerous errors	Some major gaps	Poorly structured with some confusion
30-39%	Very reliant	Little enthusiasm	Very little grasp	Incapable of tackling new applications	Very little ability	Very low level technical competence – many major errors	Many major gaps	Very confused and lacking in clarity
Below 30%	Completely reliant	No involvement	Much confusion	Incapable of tackling new applications	No ability	Total lack of technical competence	Very patchy	Total inability to express ideas

8.0 Reflection

Students are often encouraged to complete a reflective log. This is an invaluable tool for them to appreciate how they develop during their placement. It will provide students with a wealth of resource to help them complete their final report or presentation. It will also be helpful to students in the future when asked to provide examples of their achievements or experience when completing application forms or at interview.

Reflection involves a process of pausing for a moment and taking time to consider what has been experienced. Just because a student has had an experience it does not necessarily mean that they have learned anything from that experience. In order to fully learn and build on experiences, the student needs to take time to think about what they have done, examine why they did it that way and what they would do differently if the experience was repeated. This process is invaluable for both educational and personal development. Developing this skill will help students to ensure that reflection is a positive experience which will help review experiences, develop new understandings and provide a basis for future development.

Example: Reflective Log (GO Wales Personal Development Award in Quality Work Experience)

"Reflective thinking turns experience into insight – John Maxwell"

When writing a reflective log, students should be encouraged to think of the following points:

- Describe activities for the day/week/month.
- How did it go? What feedback did you get from your co-workers or customers?
- How did the student feel about what work was carried out and what can they take away from the experience? Remember to encourage consideration of positive and negative experiences as you will learn from them both.
- What new skills or knowledge has the student gained and what previous skills and/or knowledge has been utilised?
- How would the student retrospectively approach certain tasks or projects differently?
- Where applicable, what progress is being made towards the student's Personal Development Plan?
- How has general business and commercial awareness been developed over the course of the placement?

Example: Reflective log for students to complete (Cardiff University Careers & Employability)

Reflective Log

Please complete the table electronically. Please add new columns or duplicate the table to a new page where required.

Reference :				
Activity (the focus of your reflection)				
What… **…is the situation? …am I trying to achieve? …actions did I take? …was the response of others? …were the consequences – for myself and others?**				
So what… **…does this teach me? …was I thinking and feeling? …other knowledge can I bring to the situation? …is my new understanding of the situation?**				
Now what… **…do I need to do to improve things further? …broader issues need to be considered if this action is to be successful? ….might I do differently in the future? …might be the consequences of this action?**				

Students should be encouraged to consider their personal or employability skills development. Completing a self-assessment will help them to identify areas of strength or areas for development. It is useful for students to do this twice i.e. at the beginning and end of their placement to allow comparison.

Example: Personal and key skills – Self assessment (Cardiff University Careers & Employability, Cardiff Award resource material)

1. Started but need more practice	**2. Able to do this with some help**
3. Competent without help	**4. Competent and able to help others**

	1	2	3	4	Evidence
SELF MANAGEMENT ▪ Use, evaluation and adapt a range of academic skills (analysis, synthesis, evaluation, argument) ▪ Manage your time effectively (meet deadlines, get to appointments/classes on time) ▪ Set realistic objectives, priorities & standards ▪ Monitor, evaluate and adapt own performance ▪ Clarify personal values ▪ Evaluate your own potential for employment ▪ Show intellectual flexibility (be willing to see that there may be more than one way to solve a problem) ▪ Take responsibility for acting in a professional/ ethical manner ▪ Deal with criticism constructively					
MANAGING YOUR LEARNING ▪ Take responsibility for your own learning and personal growth (monitor, evaluate and adapt your own performance; work towards long term aims and goals) ▪ Demonstrate an awareness of learning processes ▪ Set realistic objectives, priorities and standards ▪ Develop, evaluate & adapt learning strategies ▪ Use learning in new or different situations/ contexts ▪ Learn through collaboration ▪ Purposefully reflect on own learning and progress					
PROBLEM SOLVING ▪ Identify the key features of the problem ▪ Think laterally about the problem ▪ Conceptualise the issues ▪ Identify the options ▪ Identify solutions ▪ Plan and implement a course of action ▪ Carry out solutions ▪ Monitor, evaluate and adapt solutions and outcomes					

	1	2	3	4	Evidence
COMMUNICATION ▪ Present oral/visual information competently ▪ Use appropriate language in a range of activities (essays, reports, presentations, interviews) ▪ Listen actively and effectively ▪ Offer constructive criticism ▪ Verbal communication (speak fluently and confidently to a variety of audiences) ▪ Produce a variety of written documents (using appropriate formats, accurate information, spelling, punctuation and grammar) ▪ Use charts, diagrams and other illustrations to support verbal and written communication ▪ Evaluate and adapt strategies for communication					
WORKING WITH OTHERS ▪ Plan with others (ensure clear goals, take responsibility and carry out appropriate tasks) ▪ Respect the views and values of others ▪ Adapt to the needs of the group/team (take initiative, lead, delegate, stand back, negotiate etc) ▪ Assist and support others in learning ▪ Delegate and stand back ▪ Negotiate with individuals/groups ▪ Work to collective goals (work to agreed plans, within agreed resources) ▪ Monitor, evaluate and assess processes of group/team work					
DATA HANDLING ▪ Use appropriate sources of information (library, retrieval systems, IT, people etc) ▪ Use appropriate technology and media including IT ▪ Handle large amounts of information and data effectively ▪ Record and interpret results/data ▪ Interpret a large variety of information forms ▪ Use appropriate numerical information ▪ Use information critically and innovatively ▪ Use data as a tool in support of argument ▪ Translate data into words, visual images, concepts ▪ Evaluate and adopt strategies for handling data and information					

Example: Guidance Notes for Placement Presentation (Cardiff University School of Engineering)

Following the return to University the student will be expected to make a presentation to:

- Fellow students
- Members of staff

Duration: 25 minutes (approximately 15 minutes for presentation and 10 minutes for questions and discussion.) The purpose of this activity is to give the student an opportunity to make a critical assessment of the benefits gained from the placement and to provide experience of making a formal presentation. It also provides encouragement and useful information for students preparing for a placement.

Visual aids are to be used where appropriate. The use of Power Point is recommended.

Students are assessed on the following criteria:

- **Quality of the oral presentation**
  Appropriate style and material
  Relevance and quality of visual aids
  Enthusiasm and create interest

- **Responses to questions**
  Clear answers
  Opportunity to expand upon related subjects

- **Depth of relevant knowledge displayed during discussion**
  Ability to draw conclusions
  Develop a cogent argument if the opportunity arises
  Call on relevant elements of your YII experience to illustrate a point

- **Quality of your assessment of the placement period**
  How experience gained relates to YII Objectives
  Critical review of performance
  Inclusion of references to any mistakes
  Identification of lessons learned

The list of points on the assessment form as follows:

- Appropriateness of presentation style: language style, body language
- Introduction: employer overview, description of range of activities
- Description of main activity
- Problems / issues solved
- Lessons learned
- Social aspects
- Benefits of Year in Industry

- Rounding off & lead into questions
- Response to questions & discussion generated
- Quality of material used
- Variety of material used
- Timing

Possible discussion points *not* on the assessment form:

- How did you obtain your placement?
- What was the interview like?
- How did you find accommodation?
- How much were you paid?
- Would you advise others to do a year in industry?

The oral presentation is an essential part of the assessment of the Year in Industry. In order to be credited with the Year in Industry and a Sandwich Degree the presentation must be given.

9.0 Case Studies

The following example case study extracts have been written by former students of Cardiff University. The extracts highlight the challenges and benefits of undertaking a year in industry or study abroad scheme.

Example: Placement Case Studies – Year in Industry Industrial and Year Abroad, Cardiff University School of Chemistry

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Daniel Griffiths – GlaxoSmithKline (Stevenage)

My placement was in Fragment Based Drug Discovery and was enjoyable because I got to experience working as part of a team. The skills I learned can be applied to many projects which contain both computational and chemical hurdles. The main project I worked on contained a large amount of computer programming in various programming languages. I compared algorithms which broke apart large long chain potential drug molecules into smaller fragments. This resulted in a large database of unique 'fragments' or parts of molecules (1 to 20 atoms) with over 30 million fragments contained within and with various property filtrations available. I then built a graphical front-end to this database. The chemistry research I undertook was designed to give drug developers increased novelty and notions about where to expand the particular chemical series they were testing when struggling for ideas.

Celine Shepherd – Montpellier University, France

My placement was spent in Montpellier, south of France. I was enrolled in the prestigious chemistry institution École Nationale Supérieure de Chimie de Montpellier (ENSCM) for the first semester until Christmas. I then undertook a six month project in one of the laboratories linked to the school focusing on microporous materials. I worked on a gas chromatography machine investigating the separation of different hydrocarbons on a range of Metal-Organic Frameworks (MOFs). It was a very challenging year balancing the language, the intense classes and exams at ENSCM, the independent lab work, as well as adapting to a new environment and culture. I will

however always appreciate the wonderful opportunity that honestly pushed me to my limits, giving me two diverse, unique experiences of studying and researching in a foreign country. I would encourage every student to take this opportunity as you will learn about a new country and culture and realise your personal potential.

Example: Placement Case Studies – Year in Industry Industrial and Year Abroad, Cardiff University School of Chemistry (continued)

Elizabeth Emery – AstraZeneca (Macclesfield)

My placement year was spent working for AstraZeneca, a multinational pharmaceutical company. I was based in the analytical chemistry department, where I worked on drug substance analysis and gained experience in techniques such as HPLC, UPLC, GC and NMR. I was also able to work on some drug product analysis, which involved testing tablets and creating a chiral NMR method. I found that everyone was very welcoming, friendly and I feel like I gained a great deal and definitely enhanced my CV. I would certainly recommend the experience to other students.

Katherine Hunter – Vectura (Chippenham)

From the beginning of my placement, I was treated like a permanent employee and became part of a project team who were developing a product to launch in the USA. The company specialises in pulmonary drug delivery and we worked on development of the combination of dry powder formulations in the inhalation device. It involved use of equipment I had learned about in my first 2 years of university and some specialist industry techniques. I was able to work with brilliant people who had superb knowledge. I gained a great insight into the workings of a pharmaceuticals business and was given more responsibility as I progressed. I really enjoyed being part of a smaller company where my input was noticed, instead of working for the pharmaceutical giants where I would've been a small fish in a big pond. My practical and theoretical knowledge base improved far more then I had hoped from this experience, and now know what to expect when I graduate. I highly recommend for everyone to do a year in industry, it was the best choice I ever made.

Example: Variety of Industrial placement case studies - Cardiff University School of Mathematics

School of Mathematics, Cardiff University

A Year in Industry.....

Two of our degree schemes, Mathematics and its Applications and Mathematics, Operational Research and Statistics provide a valuable opportunity to spend a year in salaried employment outside of the University, working as a mathematician or statistician.

The companies with which we have links have been taking students for many years and provide work of a standard appropriate to their level of academic development. The work involves real life problems and using mathematics to produce results that somebody actually needs.

The scheme is popular because:
- Students obtain firsthand experience from specialists who apply their expertise directly to the business world.
- Potential employers are attracted to graduates who have undertaken professional training.
- Competitive salaries offered, normally £15,000 to £23,000.

.....the start of your career

EADS

Stuart MacGregor

Final Year Student

Mathematics and its Applications

Placement: EADS Defence and Security Systems Ltd

Department: Systems Design entre and innovation Works

Location: Newport

"In three words my placement with EADS has been exciting, motivating and insightful. The placement presented me with a wealth of experience in the workplace, opening my eyes to the real world of work and allowing me to develop my key personal and transferable skills. I travelled to Germany for workshops and training and have developed a keen interest in the aerospace and defence industry. My placement has also secured me a graduate position upon completion of my final year."

MY YEAR IN INDUSTRY

LLOYDS BANKING GROUP

Holly Robinson

Final Year Student

Mathematics and its Applications

Placement: Lloyds Banking Group

Department: Business Analysis

Location: Bristol

"I was excited to join Lloyds Banking Group, the UK's largest retail bank, spending time in their Business Analysis team. My role involved using newly learnt data mining and analyst skills to answer real business questions. I feel I grew as a person and gained a lot that will hopefully make me a more attractive graduate. I never thought I would enjoy working so much!."

MY YEAR IN INDUSTRY

gsk GlaxoSmithKline

Tim J Wyatt

Final Year Student

Mathematics, Operational Research and Statistics

Placement: GlaxoSmith Kline

Department: Discovery Analytics

Location: Stevenage

"It has been an incredible year, I've learnt so much about the industry, how important statisticians are and how they fit into the drug development process. It is by far the best decision I've made during my time at University. Constant interaction with scientists was extremely valuable and aside from developing existing skills I have learnt a vast amount of new ones too. There is nothing I would change about my placement – I couldn't have asked for a more varied and interesting experience."

MY YEAR IN INDUSTRY

Llywodraeth Cynulliad Cymru Welsh Assembly Government

Alexander Croker

Final Year Student

Mathematics, Operational Research and Statistics

Placement: Welsh Assembly Government

Department: Statistical Directorate

Location: Cardiff

"Amongst the highlights of my year at WAG was creating the first Authority-level Productivity Index for Education. The benefits of my placement year have been the realisation that the GSS would be a suitable career path, the experience of working with senior staff members and a considerable growth in self-confidence. As well as taking away knowledge of how statistics is applied in the real world and the dynamics of working in a government environment, I completed over 100 hours of formal training. I am proud of my achievements and development over the past year and would highly recommend a placement year in industry."

MY YEAR IN INDUSTRY

10.0 Resource List

General Work Experience Resources

National Council of Work Experience

http://www.work-experience.org/

Prospects – Work Experience and Internships

http://www.prospects.ac.uk/work_experience.htm

TARGETjobs – Internships and Work Experience

http://targetjobs.co.uk/work-experience

Health & Safety

University & Colleges Employers Association (UCEA)

http://www.ucea.ac.uk/en/empres/hands/index.cfm

International Students

UK Border Agency - Study Visa

http://www.ukba.homeoffice.gov.uk/visas-immigration/studying/

UK Border Agency - Post Study Work Visa and changes

http://www.ukba.homeoffice.gov.uk/visas-immigration/working/tier1/poststudy/

Professional Body Specific

Royal Society of Chemistry – Work Experience Section

http://www.rsc.org/Education/courses-and-careers/workexp.asp

Institute of Physics – Making the Most of Work Experience

http://www.iop.org/careers/university/considerations/work_experience/page_39407.html

Institution of Mechanical Engineers – Knowledge Library

http://www.imeche.org/knowledge/library

Institute of Mathematics (and its applications) – Careers Section

http://www.ima.org.uk/careers.cfm

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