EMPLOYABILITY SKILLS & MATHEMATICS

careers & employability
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The University has accepted the following definition of employability as articulated in 'Future Fit: preparing graduates for the World of Work' published by UUK/CBI (2009)

"A set of attributes, skills and knowledge that all labour market participants should possess to ensure they have the capability of being effective in the workplace – to the benefit of themselves, their employer and the wider economy"

The University has agreed the following attributes as important in the development of an employable graduate: self management; teamworking; business and customer awareness; problem solving; communication and literacy; application of numeracy; application of information technology.

Self management – readiness to accept responsibility, flexibility, resilience, self-starting, appropriate assertiveness, time management, readiness to improve own performance based on feedback/reflective learning

Teamworking – respecting others, co-operating, negotiating/persuading, contributing to discussions, and awareness of interdependence with others

Business and customer awareness – basic understanding of the key drivers for business success – including the importance of innovation and taking calculated risks – and the need to provide customer satisfaction and build customer loyalty

Problem solving – analysing facts and situations and applying creative thinking to develop appropriate solutions.

Communication and literacy – application of literacy, ability to produce clear, structured written work and oral literacy – including listening and questioning

Application of numeracy – manipulation of numbers, general mathematical awareness and its application in practical contexts (e.g. measuring, weighing, estimation and applying formulae).

Application of information technology – basic IT skills, including familiarity with work processing, spreadsheets, file management and use of internet search engines

Underpinning all these attributes, the key foundation, must be a **positive attitude**: a 'can-do' approach, a readiness to take part and contribute, openness to new ideas and a drive to make these happen.

BUT

HOW WILL THESE SKILLS BE DEVELOPED THROUGHOUT YOUR MATHEMATICS DEGREE?.....

Most of the degree schemes in the School of Mathematics at Cardiff will involve studying core mathematical principles as well as giving an opportunity to look at the way mathematical applications can be used to solve practical problems in commercial and industrial settings.

COURSEWORK

Problem solving is at the heart of most mathematical modules and you will develop a rigorous approach to this involving logical analysis and abstract reasoning. You will learn to formulate problems and be able to present clear solutions and construct rigorous mathematical arguments. This ability to think and to argue clearly, logically and precisely is valued by many employers in a wide range of jobs, not just those related to high level mathematics. In addition, most modules will require at least 50 hours of independent self study which will develop your **self management** skills in order to plan your work, achieve the required standard and meet deadlines.

Some modules, such as Computing Skills, will also involve you in groupwork where you will need to **communicate and work effectively with others in a team** in order to achieve a result. A group presentation may also be required which will further develop your **communication and presentation skills**, which are sought after by many employers.

IT/APPLICATION OF NUMERACY

Most mathematicians initially became interested in the subject because of their love of numbers, but at degree level this need for numeracy becomes a little distant as more abstract concepts take over. As a mathematics student, you will have far surpassed the level of **numeracy** required for general graduate positions, but don't be blasé about psychometric tests which most blue chip companies will use. The numeracy tests are a measure of speed and accuracy in completing numerical problems you may not have tackled since GCSE days. Some mathematics students do not find it easy to switch back quickly to this basic level, so completion of practice tests, available from the Careers Service, is advisable before you tackle the real thing!

You will develop **IT skills** across several modules, some generalist e.g. appropriate word processing and spreadsheet packages, techniques for accessing computer based information, preparation of presentations, which are all covered in the Computing Skills module.

From the very beginning of your studies, you are introduced to a range of information resources and computer applications which support your work. These include bibliographic databases, *MathSciNet* and *Web of Knowledge*.

Other packages in optional modules may be very specific eg JAVA, Visual Basic, statistical software packages. You will also develop the ability to learn other packages on your own, as required to back up other modules. Your **IT skills** will be

far more highly developed than students on non Mathematics/Engineering/IT courses and your level of **self management skills** will be valued by all employers.

RESEARCH SKILLS (PROJECT AND MMATH)

In the 3rd year a Project or Half Project (worth 20 and 10 credits respectively) are available as optional choices. Should you choose this route, you will be required to undertake, with supervision, a relatively substantial piece of project work which will develop skills of enquiry and innovation and which will enhance your critical and **communication skills**. You will demonstrate **self management skills** by planning the work, setting and achieving targets and meeting deadlines. In addition, you will develop both **written and oral communication skills** by presenting a written report and an oral presentation at the conclusion of the project. A project such as this reflects a way of working which is very close to that which you may experience post graduation once you enter employment, so most employers are very keen to hear about this type of experience and what you have learnt from it.

Should you decide to take the MMath option, your research skills will be developed still further by the completion of a supervised major piece of novel research. You will develop skills in critical evaluation and thinking and **problem solving** as you evaluate a body of mathematical work and produce a scholarly short thesis. Your **oral and presentation skills** will also be developed when you present a seminar to an audience of academics and peers on your results.

As with the Research Project, your **self management skills** will be developed by this independent study, and you will gain an appreciation of what research work in academia, or in a technological company, might involve.

PLACEMENT YEAR

All students have the opportunity to opt for a placement year between years 2 and 3 of their study. This is an excellent chance to develop your **business and commercial awareness skills**, a skill often cited as lacking in many of today's graduates. During your year in industry/commerce, you will develop your ability to solve practical mathematical problems in the workplace, but you will also develop the general skills required in all graduate careers such as **team working, time management, problem solving, IT and communication**, both with colleagues and with clients.

Being selected for the placement in the first place is not easy and will require you to develop your application interview and presentation skills, but the rewards are worth it, as placement students stand a good chance of being offered a permanent position with their host company post graduation. Even if this does not happen, placement students have a very good record generally in gaining employment following their degree, due partly to the excellent evidence of employability which they can present to an employer.

CAREER MANAGEMENT SKILLS (CMS)

CMS sessions delivered in year 2 will show you how to make sense of the **employability skills** developed throughout your degree and help you articulate these skills effectively both on paper and at interview to an employer. This link between academia and employment is essential, especially for those wanting to enter employment straight after their study. The Careers Service is available to help you further with this throughout all stages of your academic degree

The Careers Service has a full programme of fairs, employer presentations and employer-led skills sessions that give undergraduates opportunities to meet employers and start developing their **commercial awareness** skills. Furthermore, this insight will allow you to better prepare for the job search and application process.