

## Course Specification

<b>Published Date:</b>	14-Sep-2020
<b>Produced By:</b>	Laura Clode
<b>Status:</b>	Validated

## Core Information

<b>Awarding Body / Institution:</b>	University of Wolverhampton		
<b>School / Institute:</b>	School of Mathematics and Computer Science		
<b>Course Code(s):</b>	MM002K23UV	Sandwich	4 Years
<b>UCAS Code:</b>	G103		
<b>Course Title:</b>	BSc (Hons) Mathematics with Sandwich Placement		
<b>Hierarchy of Awards:</b>	Bachelor of Science with Honours Mathematics, having satisfactorily completed a sandwich placement Bachelor of Science with Honours Mathematics Bachelor of Science Mathematics, having satisfactorily completed a sandwich placement Bachelor of Science Mathematics, having satisfactorily completed a sandwich placement Diploma of Higher Education Mathematical Studies Certificate of Higher Education Mathematical Studies University Statement of Credit University Statement of Credit		
<b>Language of Study:</b>	English		
<b>Date of DAG approval:</b>	25/Sep/2017		
<b>Last Review:</b>	2019/0		
<b>Course Specification valid from:</b>	2013/4		
<b>Course Specification valid to:</b>	2024/5		

## Academic Staff

<b>Course Leader:</b>	Mr Pardeep Sud
<b>Head of Department:</b>	Mrs Ruth Fairclough

# Course Information

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Location of Delivery:	University of Wolverhampton
Category of Partnership:	Not delivered in partnership
Teaching Institution:	University of Wolverhampton
Open / Closed Course:	This course is open to all suitably qualified candidates.

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## Entry Requirements:

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Entry requirements are subject to regular review. The entry requirements applicable to a particular academic year will be published on the University website (and externally as appropriate e.g. UCAS)

### 2017 Entry

- A Level minimum of A\*A\* or BBC including Maths at grade B
- BTEC National Diploma grade DMM, BTEC National Certificate grade D\*D\*
- BTEC QCF Extended Diploma grade DMM, BTEC QCF Diploma grade D\*D\*
- Access to HE Diploma full award (Pass of 60 credits - of which a minimum of 45 credits must be at level 3 including 18 at Merit or Distinction).
- Applicants will normally be expected to hold GCSE English and Maths at grade C+/4 or equivalent
- If you've got other qualifications or relevant experience, please contact [The Gateway](#) for further advice before applying.
- International entry requirements and application guidance can be found [here](#)
- Successful completion of the [International Foundation Year in Science and Engineering](#) guarantees entry on to this course

### Other Requirements

Students must have studied a minimum of two years post GCSE level. However, it is expected that some applicants will be mature students with work experience, who wish to further their career development. These applicants will be processed through standard procedures, which may involve an interview as part of the process. Please see <http://wlv.ac.uk/mature> for further information.

Those who do not meet the entry requirements may be offered an alternative course.

### Distinctive Features of the Course:

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BSc (Hons) Mathematics aims to develop your theoretical understanding of the subject. This course will teach you advanced problem solving skills which you will be able to employ in many different ways across a wide choice of potential careers.

This course focusses on the pure aspects of mathematics, including algebra, calculus and analysis. The concept of mathematical proof is of particular emphasis in all these related mathematical subjects. In addition, optional modules can be taken from the areas of business mathematics, statistics and mathematical modelling where you will use your skills to solve real world problems.

You will have the option to undertake a paid placement year, where you will gain invaluable experience in the workplace before returning to complete your final year. Many of the mathematics related placements are very prestigious, and recent placements have included: The Office of National Statistics, Sheffield University research centres and Air Traffic Control amongst many others.

This course is appropriate for those who want to advance their knowledge of mathematics, perhaps with a view to undertaking postgraduate study in mathematics. A mathematics degree is the starting point for many careers especially within the finance industry. A mathematics degree is essential for a career in code breaking and cryptography.

The Mathematics Department includes staff who achieved a very high rating in the last Research Assessment Exercise. The team includes a professor who is internationally recognised as a leading authority in the field of Statistical Cybermetrics.

We pride ourselves on the academic support and guidance given by our friendly and approachable staff. Students have shown their appreciation for this by the exceptionally high ratings they have given us in the National Student Survey.

Following the changing demand in recent mathematical research and applications, this course has evolved to provide a modern outlook on the subject and the important role it plays in the ever-changing world of commerce, industry and education. Students on the course have the option to do a year-long placement in industry between their second and final years. Students are helped to find suitable placements by the experienced staff in our Placements Unit, who will also liaise with students while on placement and provide support throughout the placement year.

A placement can be undertaken anywhere; local, national or even, in some instances, international. During a placement, you will be doing similar work to a normal employee of the organisation giving you a unique insight into your chosen profession or sector, the opportunity to acquire crucial personal skills and also the opportunity to build a network of useful contacts. Many companies that employ graduates use placement programmes as a method of recruitment so you could be fast tracked into employment or onto one of their graduate schemes if you impress them.

The team at [The Workplace](#) constantly search for new placement opportunities but if you find an opportunity that interests you or you have been successful in securing one yourself, contact them for further information and support.

#### Educational Aims of the Course:

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The BSc course in Mathematics aims to develop your theoretical understanding of the subject. Emphasis is placed on pure mathematics, where you will enhance your techniques in algebra and calculus, by studying subjects such as group theory, geometry and mathematical modelling.

The course will teach you advanced problem-solving skills. These are skills which are highly sought after by many graduate employers. Mathematicians are warmly welcomed in industry, business and commerce for their analytical ability and logical approach to unravelling complex issues.

#### Intakes:

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September

#### Major Source of Funding:

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Office for Students (OFS)

#### Tuition Fees:

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Tuition fees are reviewed on an annual basis. The fees applicable to a particular academic year will be published on the University website.

Year	Status	Mode	Amount
2020/1	H	Full Time / Sandwich	£9250.00
2020/1	Overseas	Full Time / Sandwich	£12250.00

#### PSRB:

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MM002K23UV (Sandwich)

Professional Accreditation Body:  
Institute of Mathematics and its Applications (IMA)

Accrediting Body:  
Institute of Mathematics and its Applications (IMA)

Accreditation Statement:

"This programme will meet the educational requirements of the Chartered Mathematician designation, awarded by the Institute of Mathematics and its Applications, when it is followed by subsequent training and experience in employment to obtain equivalent competences to those specified by the Quality Assurance Agency (QAA) for taught masters degrees."

Approved	Start	Expected End	Renewal
27/Aug/2019	01/Sep/2019	31/Aug/2025	31/Aug/2025

Course Structure:

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## September (Sandwich)

### Year 1

Module	Title	Credits	Period	Type
4MM018	Core Techniques in Mathematics	20	SEM1	Core
4MM023	Mathematics Foundations	20	SEM1	Core
4MM024	Mechanics	20	SEM1	Core
4MM025	Probability & Statistics	20	SEM2	Core
4MM020	Introduction to Operational Research	20	SEM2	Core
4MM027	Calculus and Linear Algebra	20	SEM2	Core

## September (Sandwich)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

### Year 2

Module	Title	Credits	Period	Type
5MM022	Group Theory & Differential Equations	20	SEM1	Core
5MM002	Mathematical Analysis	20	SEM1	Core
5MM024	Discrete Mathematics & Numerical Analysis	20	SEM2	Core
5MM021	Further Techniques in Operational Research	20	SEM2	Core
5MM025	Statistical Modelling & Survey Design	20	SEM1	Core
5MM023	Mathematical Modelling	20	SEM2	Core

## September (Sandwich)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

### Year 3

Module	Title	Credits	Period	Type
5MM006	Industrial Placement	40	CRYRA	Core

## September (Sandwich)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

### Year 4

Module	Title	Credits	Period	Type
6MM032	Professional Project Management and Practice	20	SEM1	Core
6MM024	Mathematics Project	20	SEM2	Core

**For this option group you must choose a minimum of 40 credits and a maximum of 40 credits**

6MM026	Financial Mathematics and Data Analysis	20	SEM1	
6MM029	Multivariate Statistics with Cybermetrics	20	SEM1	
6MM030	Coding Theory & Cryptography	20	SEM1	

**For this option group you must choose a minimum of 40 credits and a maximum of 40 credits**

6MM023	Advanced Techniques in Operational Research	20	SEM2	
6MM027	Rings, Fields & Galois Theory	20	SEM2	
6MM028	Partial Differential Equations & Fluid Dynamics	20	SEM2	

Please note: Optional modules might not run every year, the course team will decide on an annual basis which options will be running, based on student demand and academic factors, to create the best learning experience.

## Learning, Teaching and Assessment

Academic Regulations Exemption:

None

## Reference Points:

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- Framework for Higher Education Qualifications
- QAA Subject Benchmark for Mathematics, Statistics and Operational Research
- HEA Employability Profiles for Mathematics, Statistics and Operational Research
- Skills Framework for the Information Age
- e-Skills
- Institute for Mathematics and its Applications
- Equality Act 2010
- University Documents
- Faculty documents.

## Learning Outcomes:

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### CertHE Course Learning Outcome 1 (CHECLO1)

"Apply an understanding, knowledge and experience of the principles of mathematics (e.g. core techniques, calculus and linear algebra, mathematical analysis, statistics) to the analysis of solutions to problems which require mathematics for their resolution."

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### CertHE Course Learning Outcome 2 (CHECLO2)

"Demonstrate and apply knowledge of mathematics with particular reference to real world problems (e.g. cryptography, knot theory)"

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### CertHE Course Learning Outcome 3 (CHECLO3)

"Apply appropriate theory, tools and techniques (e.g. software tools in mathematical modelling and statistics) to the design of solutions to problems in the domain of mathematics."

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### CertHE Course Learning Outcome 4 (CHECLO4)

Demonstrate a range of transferable skills in: problem solving; communication; working individually and in teams; self-management.

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### CertHE Course Learning Outcome 5 (CHECLO5)

Demonstrate the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility

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### DipHE Course Learning Outcome 1 (DHECLO1)

"Apply a full understanding, knowledge and experience of the principles of mathematics (e.g. core techniques, calculus and linear algebra, mathematical analysis, statistics) to the analysis and design of solutions to problems which require mathematics for their resolution."

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### DipHE Course Learning Outcome 2 (DHECLO2)

"Demonstrate and apply knowledge of mathematics with particular reference to real world problems (e.g. cryptography, knot theory)."

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### DipHE Course Learning Outcome 3 (DHECLO3)

"Apply appropriate theory, tools and techniques (e.g. software tools in mathematical modelling and statistics) to the design of solutions to problems in the domain of mathematics."

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DipHE Course Learning Outcome 4 (DHECLO4)

"Demonstrate competence in the essential concepts, principles, theories and practices enabling graduate employment in applications of mathematics (e.g. mathematics and statistics theory)."

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DipHE Course Learning Outcome 5 (DHECLO5)

Demonstrate a range of transferable skills in: problem solving; communication; working individually and in teams; self-management.

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DipHE Course Learning Outcome 6 (DHECLO6)

Demonstrate the qualities and transferable skills necessary for employment, requiring the exercise of personal responsibility and decision-making and undertake further training, developing existing skills and acquire new competences that will enable them to assume significant responsibility within organisations.

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Ordinary Degree Course Learning Outcome 1 (ORDCLO1)

"Apply a full understanding, knowledge and experience of the principles of mathematics (e.g. core techniques, calculus and linear algebra, mathematical analysis, statistics) to the analysis, design and synthesis of solutions to problems which require mathematics for their resolution."

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Ordinary Degree Course Learning Outcome 2 (ORDCLO2)

"Demonstrate and apply knowledge of mathematics with particular reference to real world problems (eg cryptography, knot theory)."

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Ordinary Degree Course Learning Outcome 3 (ORDCLO3)

" Apply appropriate theory, tools and techniques (e.g. software tools in mathematical modelling and statistics) to the design and synthesis of solutions to problems in the domain of mathematics."

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Ordinary Degree Course Learning Outcome 4 (ORDCLO4)

"Demonstrate competence in the essential concepts, principles, theories and practices enabling graduate employment in applications of mathematics (e.g. mathematics and statistics theory)."

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Ordinary Degree Course Learning Outcome 5 (ORDCLO5)

Demonstrate a range of transferable skills in: problem solving; communication; project management; working individually and in teams; self-management.

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Honours Degree Course Learning Outcome 1 (DEGCLO1)

"Apply a full understanding, knowledge and experience of the principles of mathematics (e.g. core techniques, calculus and linear algebra, mathematical analysis, statistics) to the analysis, design and synthesis of solutions to problems which require mathematics for their resolution."

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Honours Degree Course Learning Outcome 2 (DEGCLO2)

"Demonstrate and apply knowledge of mathematics with particular reference to real world problems (eg cryptography, knot theory)."

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Honours Degree Course Learning Outcome 3 (DEGCLO3)

"Apply appropriate theory, tools and techniques (e.g. software tools in mathematical modelling and statistics) to the design and synthesis of solutions to problems in the domain of mathematics."

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Honours Degree Course Learning Outcome 4 (DEGCLO4)

"Demonstrate competence in the essential concepts, principles, theories and practices enabling graduate employment in applications of mathematics (e.g. mathematics and statistics theory)."

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Honours Degree Course Learning Outcome 5 (DEGCLO5)

Demonstrate a range of transferable skills in: problem solving; communication; project management; working individually and in teams; self-management.

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Honours Degree Course Learning Outcome 6 (DEGCLO6)

"The ability to gather, evaluate and reflect on information from relevant sources and solutions to problems in the domain of mathematics."

Overview of Assessment:

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Module	Title	Course Learning Outcomes
4MM018	Core Techniques in Mathematics	CHECLO1, CHECLO2
4MM020	Introduction to Operational Research	CHECLO2, CHECLO4
4MM023	Mathematics Foundations	CHECLO1, CHECLO5
4MM024	Mechanics	CHECLO3, CHECLO4
4MM025	Probability & Statistics	CHECLO2, CHECLO5
4MM027	Calculus and Linear Algebra	CHECLO3, CHECLO4
5MM002	Mathematical Analysis	DHECLO1, DHECLO2
5MM006	Industrial Placement	DHECLO1, DHECLO2, DHECLO3, DHECLO4, DHECLO5, DHECLO6
5MM021	Further Techniques in Operational Research	DHECLO4, DHECLO5
5MM022	Group Theory & Differential Equations	DHECLO1, DHECLO3
5MM023	Mathematical Modelling	DHECLO1, DHECLO2, DHECLO6
5MM024	Discrete Mathematics & Numerical Analysis	DHECLO2, DHECLO3
5MM025	Statistical Modelling & Survey Design	DHECLO4, DHECLO5, DHECLO6
6MM023	Advanced Techniques in Operational Research	DEGCLO1, DEGCLO3, DEGCLO4, ORDCLO1, ORDCLO3, ORDCLO4
6MM024	Mathematics Project	DEGCLO1, DEGCLO4, DEGCLO6, ORDCLO1, ORDCLO4
6MM026	Financial Mathematics and Data Analysis	DEGCLO1, DEGCLO3, ORDCLO1, ORDCLO3, ORDCLO4
6MM027	Rings, Fields & Galois Theory	DEGCLO1, DEGCLO2, DEGCLO4, ORDCLO1, ORDCLO2, ORDCLO4
6MM028	Partial Differential Equations & Fluid Dynamics	DEGCLO1, DEGCLO2, DEGCLO3, DEGCLO4, ORDCLO1, ORDCLO2, ORDCLO3
6MM029	Multivariate Statistics with Cybermetrics	DEGCLO1, DEGCLO2, DEGCLO3, DEGCLO4, ORDCLO1, ORDCLO2, ORDCLO3
6MM030	Coding Theory & Cryptography	DEGCLO1, DEGCLO2, DEGCLO4, ORDCLO1, ORDCLO2, ORDCLO4
6MM032	Professional Project Management and Practice	DEGCLO1, DEGCLO4, DEGCLO5, ORDCLO1, ORDCLO4, ORDCLO5

## Teaching, Learning and Assessment:

The learning activities on your course will develop distinctive graduate attributes that will make you stand out and enhance your employability. These skills will be embedded into the curriculum throughout your course. Examples include:

**Digitally Literacy:** All Mathematics graduates will surely be users of advanced technologies. However, on your course you will develop your skills to encompass literacy more fully such as learning how to find information and how to take best advantage of digital resources and the Internet to make you effective in the Information Age.

**Global Citizenship:** On each level of your course you will learn about the social aspects of Mathematics, which will broaden your understanding of the way the world works and how communication and collaboration are evolving.

**Knowledgeable and Enterprising:** Throughout your course you will build up your professional and employability skills and learn to apply the knowledge you have acquired in an enterprising way. You will constantly nurture your own intellectual curiosity. The tools, methodologies and techniques that you will learn have been carefully selected to prepare you with the skills that employers demand and the opportunities

for work based learning and placements will allow you to gain the vital experience that they often expect.

## Assessment Methods:

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At the University of Wolverhampton, a variety of modes of assessment will be used to support and test your learning and progress and to help you develop capabilities that are valued beyond your University studies and into your working life. Your course may include a variety of assessment activities:

Written examinations (including online examinations, open and closed book examinations and quizzes)  
Coursework (for example, essays, reports, portfolios, project proposals and briefs, CVs, poster presentation)  
Practical (for example, oral and video presentations, laboratory work, performances, practical skills assessment)

In the final year of your undergraduate degree, and at the end of your postgraduate degree, you are likely to be expected to write an extended piece of work or research, such as a dissertation or a practice-based piece of research.

## Student Support:

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University provided support:

As well as providing general counselling support the University Counselling Service provides short courses on topics such as "Self Confidence", "Stress Management and Relaxation" and "Life Skills".

They also provide study skills and academic support, providing short courses such as provide help in areas such as "Writing and Assignment Skills", "Exam Techniques", "Enhancing Professional Skills", "Personal Development Planning" and "Making Choices for the Future.

University Learning Centres provide general academic skills support to all students. You can make an appointment with a study skills advisor for advice on areas such as academic writing, assignment planning, exam preparation, and time management. In addition, there is a regular timetable of drop-in and bookable workshops covering information and digital literacy skills, including academic referencing. Faculty of Science and Engineering students are supported by a designated subject librarian who is available to support research and project work.

The Student Enabling Centre provides support for students with disabilities.

The Student "Gateway @ The George" provides help and advice to students on such issues as careers and student finance.

The Faculty of Science and Engineering has a Student Office where students can obtain advice on all activities related to the official aspect of their academic life, such as submission of assignments, registration for modules and progression on their course.

Course support:

At the start of each year of your course you will be assigned a Personal Tutor who will guide you through the induction process and provide support and academic counselling throughout the year on an appointment basis. They should be able to offer you advice and guidance to help you liaise with other staff and support facilities in the School and University. You should meet your Personal Tutor at least 3 times a year, which must include meetings that you are invited to at critical points in your course.

The Academic Programme Advisor (APA) provides academic counselling and will be accessible throughout the week on a drop-in or appointment basis to discuss timetables, requests for extensions, requests for extenuating circumstances, general concerns about study and student life and general programme planning. The APA will act as a first point of contact in relation to leave of absence (including returning after leave), withdrawal, transferring to another course (internal and external) and changes to mode of attendance. Your Course Leader will be available thereafter for meetings by appointment to discuss leave of absence, withdrawal, transferring to another course (internal and external), changes to mode of attendance, returning

after leave of absence and direct entrants.

#### Subject support:

Tutorials, workshops, seminars and meetings - provide the primary opportunities for students to interact with staff on topics relating to modules. All modules provide at least one of these forms of face-to-face support.

Formative feedback - tutors provide personalised written feedback on most summative assessments. The mechanism for feedback from purely formative tasks varies between assessments, but will always be provided in some form. Online formative tasks often provide feedback straight away. On occasions tutors may provide generalised verbal feedback to the whole class on points relating to an assessment

Assessment and subject-based surgeries provide additional student support for subjects that students often need extra help with. They are often concentrated around the times when assessments take place. Revision sessions are provided for many modules that have exam-like tests and enable you to interact with tutors to review parts of the course. Mock exams and tests may provide opportunities to experience an examination environment before the final summative test and give you feedback on your understanding.

General Mathematical advice is provided by the drop-in service at the Mathematics Support Centre (located in the Harrison Learning Centre at City Campus), open three days a week during term-time. This support is provided by lecturers from the Mathematics team and by postgraduate Mathematics students.

#### Employability in the Curriculum:

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Mathematics graduates may aspire to a wide variety of careers, such as accountancy, actuarial work, operational research, engineering, computing, cryptography and statistics. The shortage of mathematics graduates within the UK economy is widely reported, hence mathematics graduates are highly employable and your graduate employment prospects upon successful completion of this course are very high.

With an appropriate education qualification you could pursue a career in Mathematics teaching as there is a current shortage of mathematics teachers nationally. Graduates may also have the opportunity to proceed to a masters course or research degree in Mathematics or a related subject.

The completion of a Sandwich Year will enable you to gain valuable hands on experience in a relevant work environment. This will not only provide additional practical subject skills but it will also develop personal transferable skills such as communication skills, problem solving skills and demonstrate competency in working with other people. This will increase your employability and assist you in gaining employment in the future.

