

Welcome 2021



BSc Engineering Top-up

Welcome to the University of Northampton

We would like to take this opportunity to welcome you to your studies at the University of Northampton. The purpose of this document is to help you prepare for coming to study with us and give you an opportunity to meet members of your programme team as well as other students who've chosen the same course. We want to make sure that you are inspired, anchored, prepared, and enabled to succeed.

Through engaging with our welcome and induction activities you will get to know your super-supportive tutors, have a chance to make new friends and be able to access what you need to know and do to start studying successfully. Ultimately, we want you to feel confident about how you will learn.

This Welcome Pack covers the following key areas:

- A welcome message from your Programme Leader
- Details of online induction sessions
- Technical information to make joining these sessions as easy as possible
- What happens during Welcome and Induction Week – meeting with your Personal Tutor and other University-wide events

Welcome - Your Programme Leader and Team

On behalf of the Engineering Team at The University of Northampton, welcome to your Engineering programme. We all hope that you'll enjoy your studies and that you'll get a lot of benefit from the new knowledge you will acquire.

We've been tutoring programmes in Engineering for many years, and most of us have worked at one time or another in the engineering industry, so we're confident that we can provide you with all the support you need. More than that, we're looking forward to working with you and learning with you as well about how industry is working today - what's new, what's improving and what's changing.

Through engaging with our welcome and induction activities you will get to know your super-supportive tutors, have a chance to make new friends and be able to access what you need to know and do to start studying successfully. Ultimately, we want you to feel confident about how you will learn.

We all look forward to meeting you.

Mr. Dan Bailey

Programme Leader in BSc Engineering Top-up

Dr. Jonathan Adams

Subject Leader: Engineering & Technology

Welcome and Induction Online Sessions

We would like to invite you to join members of your subject and programme team, and other students joining you at the University of Northampton this year for an online welcome and induction experience in the weeks leading up to the start of term. The details of your programme specific experience are as follows:

Getting to Know You Session 1	Date:	Wednesday 29 th September
	Time:	10:00
	Link:	https://eu.bbcollab.com/guest/e3122838078f41cab9b1e13084f526d9
Introduction to Learning and Teaching on your Programme Session 2	Date:	Wednesday 29 th September
	Time:	11:00
	Link:	https://eu.bbcollab.com/guest/bb21bb2d73914f9a8e9f2b087f7c97db
Supporting Your Success Session 3	Date:	Wednesday 29 th September
	Time:	12:00
	Link:	https://eu.bbcollab.com/guest/9214faf15b58434ba7166a6f0317e548

Preparing you for Learning and Teaching at Northampton

Learning and teaching at the University of Northampton is designed to help you take control of your own learning, using small group teaching, team-working and one-to-one tutorials that allow learning to take place in face-to-face environments and using carefully crafted digital experiences. To help you prepare for this personalised approach to learning, our welcome and induction activities are designed to introduce you to our learning technologies so that you are ready to go for the start of term. Through engaging in some preparatory work before our live sessions, you can think about some of the questions you might have and have opportunities to explore the many ways in which you are supported. You can also meet the other students on your programme.

INDICATIVE TIMETABLE

Year One

During your first year of study it is hoped that you will successfully complete all six 20 credit modules. In order to achieve this, you will be expected to attend University each

week and undertake significant independent learning.

COURSE STRUCTURE / AWARD MAP

In order to achieve the named award BSc Engineering Top-Up, Students must meet all the requirements of this map. To locate details of your award map and module specifications please use the link below and follow the single honours route, selecting BSc Top-up.

NOTE: [Link to Modules Specifications](#)

TEACHING INFORMATION

Blended Delivery - Each module is made up of appropriate blended learning components, this is a mix of methods, including both face-to-face activities and online learning e-tivities, which can be completed on or offsite and you will be given advice on when they are best to complete. Each module has a Coordinator and they meet on a regular basis with the Programme Leader to ensure that the highest quality teaching and learning activities are being provided.

Seminars and Seminar presentations — to allow students to test ideas against those of staff and other students as well as more formal presentations and to discuss contemporary and historical photography.

Practical demonstrations and Workshops — Workshop practices are a significant part of all the production modules. In addition to the transferring of technical skills and expertise, they offer hands-on instruction to students and guidance to complete specific technical or production tasks.

Projects — The project is essential in teaching and learning in that it encourages the definition of problems and their appropriate solution and evaluation. All projects have clearly defined learning outcomes and assessment criteria, related to content, which provide the framework for exploration, experiment, research, development, presentation and communication. As students progress through the course, they are expected to take a more active role in directing their own work and ideas and designing their own project briefs through negotiation with staff.

Tutorials — Each student will be allocated a tutor. The tutorial system enables exploration through discussion of issues such as current work, progress, including new ideas and possibilities, providing analysis and exchange, through increasingly negotiated development to support progressively independent and student-centered learning. An open and direct approach to discussion of work is encouraged.

Industrial Visits and Activities — These aim to foster group dynamics, peer group learning and broadening of student experience of the industrial world.

Visiting speakers — carefully selected speakers with relevance to the course contribute through presentations on their practice and specialism, key events include Autumn and Spring seminars.

INDUSTRIAL ENGAGEMENT

A key part of the course is ensuring that students have an appreciation of and as far as possible, are prepared for employment. Our industrial partners through the Northampton Engineering Training Partnership (NETP) support the Course. The NETP provides optional placements industrial engagement opportunities and other information sharing and engagement opportunities such as the Autumn and Spring Seminars and Annual Awards evening. Please check out the NETP activities via the following link: <http://www.netpengineering.co.uk/>

EQUIPMENT REQUIREMENTS

During the course you'll be using a wider range of specialist equipment and software to support practical elements of your course. This is provided and supported as part of your fees. The only element of equipment you will have to purchase is a scientific calculator. This can be purchased during the course following advice from the relevant module leader.

READING LIST

Key texts will be identified on a Module by Module basis and will be suggested by your tutor. Please note there is no requirement for you to purchase these books, as copies are available. However, should you wish to have your own copy then these would be of use throughout the course. For your mathematics and science-based subjects the books below are recommended.

Engineering Mathematics: A Foundation for Electronic, Electrical, Communications and Systems Engineers by [Dr Anthony Croft](#) (Author), [Robert Davison](#) (Author), [Martin Hargreaves](#) (Author), [James Flint](#)

Publisher: Pearson; 4 edition (2 Aug. 2012)

ISBN-10: 0273719777, ISBN-13: 978-0273719779

Engineering Mathematics by K.A. Stroud, Dexter Booth

Publisher: Palgrave; 7th Edition (March 2013)

ISBN-13: 9781137031204

Physics for Scientists & Engineers with Modern Physics: Pearson New International Edition, 4/E

By Doug Giancoli

Publisher: Pearson; 4 edition (29 Jul. 2013)

ISBN-10: 1292020768 • ISBN-13: 9781292020761

Prior Knowledge

The following is indicative understanding prior to undertaking this course:

In terms of maths:

- Fundamental Algebra: one variable linear equations, one variable linear inequalities, two-variable linear equations, functions, linear equations and functions word problems, sequences, systems of linear equations, two-variable linear inequalities, absolute value and piecewise functions., expressions with rational exponents and radicals, introduction to exponential functions, polynomials, polynomial factorization, quadratic equations, rational and irrational numbers
- Matrix manipulation. Representing linear systems of equations with augmented matrices. Adding and subtracting, multiplying matrices, Matrix inverse, solving equations with inverse matrices.
- Basic Trigonometry. The unit circle definition of basic trigonometric functions. Graphs of trigonometric function.
- Trigonometry with general triangles
- Trigonometric equations and identities
- Integration and differentiation. Integration by parts, u-substitution, integration using trigonometric identities. Basic differentiation rules, power rule, differentiating linear functions, polynomial function differentiation, radical functions differentiation, exponential and natural logarithms differentiation.

In terms of electrical and electronic concepts:

- Kirchhoff's Laws, Circuit Analysis - Nodal and Mesh
- Linearity and Superposition, Source Transformations, Thévenin and Norton Equivalents
- RC,RL, RLC circuits.
- Frequency response.
- Semiconductors, diodes and bipolar transistors.
- OPAMPS.
- Boolean algebra rules, logic gates and logic simplification using Karnaugh Map.
- Basic Arduino Programming.

PREPARATION PRIOR TO STARTING THE COURSE

The following is indicative understanding prior undertaking this course:

In terms of maths:

- Fundamental Algebra: one variable linear equations, one variable linear inequalities, two-variable linear equations, functions, linear equations and functions word problems, sequences, systems of linear equations, two-variable linear inequalities, absolute value and piecewise functions., expressions with rational exponents and radicals, introduction to exponential functions, polynomials, polynomial factorization, quadratic equations, rational and irrational numbers
- Matrix manipulation. Representing linear systems of equations with augmented matrices. Adding and subtracting, multiplying matrices, Matrix inverse, solving equations with inverse matrices.
- Basic Trigonometry. The unit circle definition of basic trigonometric functions. Graphs of trigonometric function.
- Trigonometry with general triangles
- Trigonometric equations and identities
- Integration and differentiation. Integration by parts, u-substitution, integration using trigonometric identities. Basic differentiation rules, power rule, differentiating linear functions, polynomial function differentiation, radical functions differentiation, exponential and natural logarithms differentiation.

In terms of electrical and electronic concepts:

- Kirchhoff's Laws, Circuit Analysis - Nodal and Mesh
- Linearity and Superposition, Source Transformations, Thévenin and Norton Equivalents
- RC,RL, RLC circuits.
- Frequency response.
- Semiconductors, diodes and bipolar transistors.
- OPAMPS.
- Boolean algebra rules, logic gates and logic simplification using Karnaugh Map.
- Basic Arduino Programming.

Preparation to the programme – support materials

We find that if some students have been out of learning for some time they may find some topics with mathematical content challenging. The following links will provide useful information, which will prepare you prior to and during the course.

The following Khan Academy links cover the Engineering Math requirements.

- <https://www.khanacademy.org/math/trigonometry>
- <https://www.khanacademy.org/math/algebra>
- <https://www.khanacademy.org/math/precalculus/prec-calc-matrices>
- <https://www.khanacademy.org/math/algebra-home/alg-matrices>
- <https://www.khanacademy.org/math/integral-calculus/definite-integral-evaluation-ic>
- <https://www.khanacademy.org/math/integral-calculus/integration-techniques>
- <https://www.khanacademy.org/math/differential-calculus/basic-differentiation-dc>

The following Khan Academy links cover the Engineering Physics requirements.

- <https://www.khanacademy.org/science/physics>
- <https://www.khanacademy.org/science/physics/one-dimensional-motion>
- <https://www.khanacademy.org/science/physics/two-dimensional-motion>
- <https://www.khanacademy.org/science/physics/forces-newtons-laws>
- <https://www.khanacademy.org/science/physics/centripetal-force-and-gravitation>
- <https://www.khanacademy.org/science/physics/work-and-energy>
- <https://www.khanacademy.org/science/physics/linear-momentum>
- <https://www.khanacademy.org/science/physics/torque-angular-momentum>
- <https://www.khanacademy.org/science/physics/mechanical-waves-and-sound>
- <https://www.khanacademy.org/science/physics/fluids>

The following links are useful to get used to Arduino and electronics.

- Intro to Arduino (easy to follow). It helps grasping the basic syntax of Arduino programming.

<http://www.ladyada.net/learn/arduino/>

The information above is only a guide and you will not be expected to have learned everything before you start the Programme. In preparation for your starting University we

will be running three online, informal sessions via Collaborate, where you can meet some of your first year Module Tutors and Programme Leader. You will be offered attendance at these sessions which will be themed as listed above. The sessions will be before Welcome Week where we aim to meet you on Campus.

Technical Support

As part of our welcome and induction, we would like you to engage with us using our online tool, Blackboard Collaborate. It is broadly similar to using Skype or Zoom, which you may have come across before. You will be able to join your Welcome and Induction sessions as a guest, meaning that you do not need to create an account in order to participate.

Using Collaborate

- 1) [Test whether your browser will work with Collaborate](#)
- 2) Review the [student guide to using Collaborate](#)
- 3) Test Collaborate by visiting our test 'classroom' to address any technological challenges. This classroom will be available 24/7 from now until the end of September. You can [join the classroom now](#) and follow the instructions to test your audio and video functions.

If you are still experiencing difficulties, please call our on-site team for further help: +44 (0)1604 893333.

LinkedIn Learning

Once you become a student at the University of Northampton, you will also have access to a wealth of online technical support through [LinkedIn Learning](#) so you can improve your digital skills any time, any place.



What Happens in Welcome Week?

The first week of the semester is devoted to a range of activities that will help you to meet the rest of the students on your course, the people who will teach you and allow you to familiarise yourself with what you will be studying and the facilities you will use.

A separate timetable of events is provided for this week which will tell you where you need to be and at what time. There will also be plenty of other staff and student ambassadors around to make sure that you find your way to the right things.

Each student is allocated to a [Personal Tutor](#) (PT) and you will have an opportunity to meet with them during the first week. If you are a Joint Honours student, you will be in a tutor group with other students who share one of your subject areas. The PT meeting would be a good opportunity for you to discuss any questions you may have about personalised support if you haven't already contacted those teams directly. Please know that you can also get in touch with your Personal Tutor directly should you need to. Your PT will tell you more about how to do this.

At the University of Northampton, our Personal Tutors meet regularly and frequently with their tutees, both in group and in 1-to-1 sessions. They will help you to reflect on how your studies are going and explore actions you can take to maximise your chances of success.

BSc Engineering Top Up

Welcome Week Timetable 27th September to 1st October 2021

(Subject to change. Please check programme NILE site after enrolment for the latest version)

Time	Monday 27 th September	Tuesday 28 th September	Wednesday 29 th September	Thursday 30 th September	Friday 1 st October
			Welcome to your Programme Meet the Subject Team		
			Tour of Facilities Laboratory and Workshop Safety Briefing		
			Getting to Know Each Other Icebreaker		
			Personal Tutorials		