

Reading list for Engineering Students starting in Autumn 2020

Following the disruption around Coronavirus this year, we have prepared some suggestions for activities to bridge the gap from where you left off when lock down was imposed to starting University.

Computer Aided Engineering – try it at home!

We use Solidworks and Ansys software within the department and you can have a look through the tutorials online to get a feel for how the software works before you arrive at Sussex.

Ansys offer free trials during the COVID19 pandemic <https://www.ansys.com/en-gb/products/free-trials>.

For Solidworks, you may want to start with <https://my.solidworks.com/cadmodels> which has a library of models people have built with Solidworks and then move onto tutorials.

Online resources and videos

With Coronavirus affecting Industry as well as education, there are a lot of Webinars being presented. Many of which are available after the 'live' presentation.

Subject Area	Link	Comments
Automotive	https://www.automotiveworld.com/webinars/	Some webinars may seem a little advanced so try to aim for the more general presentations. E.g. about the future of mobility or how to meet zero emissions rather than some of the more niche topics.
Automotive	https://www.apcuk.co.uk/planning-future-automotive/	The Advanced Propulsion Centre coordinates research and development into propulsion technologies. This website has links to documents outlining future technologies (called roadmaps)
Core Scientific Concepts	https://www.microsoft.com/en-us/research/project/tuva-richard-feynman/	The Richard Feynman Messenger lectures are a classic series, rated by Bill Gates as the best lectures I've ever seen

Reading lists: Foundation year and a refresher for First Year

The following have been selected as text books during the Foundation Year of our Engineering course. We would encourage you to *either* look through the recommended chapters as a refresher over the summer *or* similar chapters from the books you have used in your A level studies.

Subject Area	Book	Chapters or Topics from within the book
Physics	Conceptual physics: P Hewitt	Part 1: Mechanics Part 3: Heat Part 5: Electricity and Magnetism
Mechanical Design	Mechanical design engineering handbook	Chapters 1-8, mostly introductory basics on mechanical components

Summary Reading list for First Year Engineering – to give you a taste of what you will be studying at University

The following books have been selected as fundamental text books during the First Year of our Engineering course. You may try to obtain one or two that are closest to your interests and make a start looking through the recommended chapters over the summer. They are quite challenging but will aid your understanding when the courses start.

Subject Area	Book	Chapters or Topics from within the book
Maths	Pure Mathematics 1: Bostock and Chandler	Exponentials and logarithms, Trigonometry, Partial fractions, Vectors, Complex numbers, Matrices, Differentiation and integration, Partial differentiation
Mechanics	Engineering mechanics : statics & dynamics, Bedford and Fowler	
Thermodynamics	Thermodynamics: An Engineering Approach by Y.A. Cengel, M. A. Boles and M. Kanoglu	Read through Chapters 1-7 for an introduction.
Electrical	Electrical engineering: principles and applications: Hambley et al	Chapters 1-9

Popular Science and General Engineering Books

These are for general background and interest about science and engineering, setting the scene for the deeper studies you will be carrying out at University.

Subject Area	Book	Comments
Automotive Engineering	Bosch Automotive Engineering Handbook	A broad overview of most systems within a car, key principles and explanations of how they work.
Philosophy of science	What is this Thing Called Science, by Alan Chalmers	Philosophy of science and the scientific method addressed in depth. Heavy but useful and thought provoking
Physics	Thinking Physics is Gedanken Physics, by Lewis Carroll Epstein	This book has a collection of problems that on the face of it appear intuitive but are not. Excellent selection of problems for any engineer to think of, with solutions and discussion.
Popular Science	Surely You're Joking Mr. Feynman, by R.P. Feynman	This is a popular science book. Highly readable, entertaining, and motivating, and linked to science, physics, and engineering.
Writing skills	Plain Words, by Sir Ernest Gowers	This book is all about writing concise and clear text.