

UNIVERSITY OF SOUTHAMPTON ENGINEERING FOUNDATION YEAR

PRE-COURSE MATHEMATICS SKILLS

PRIMARY SKILLS

These skills are assumed and are not covered as part of the Foundation Year syllabus

NUMERACY

Decimal numbers;

- Size of decimals, rounding to a specified number of decimal places
- Definition of positive powers

Directed Number:

- Multiplication, division, addition and subtraction of negative and positive numbers
- Factors of an integer

Fractions

- Addition, subtraction, multiplication and division of proper and improper fractions, cancelling fractions
- Estimating answers to numerical problems
- Precedence rules including rules for squares and square roots
- Simple use of percentages
- SI units for mass, length and time and conversion from e.g. cm to m

ALGEBRA

Algebraic Fractions

- Addition, subtraction, multiplication and division of algebraic fractions, cancelling algebraic fractions
- Collecting terms
- Evaluating simple expressions and formulae
- Expanding two brackets
- Simple factorisation of algebraic expressions
- Evaluating a formula
- Solution of linear inequalities
- Solving linear equations expressed algebraically or in words
- Transposition of formulae including those with squares and square roots

GEOMETRY

- Area and circumference of a circle
- Area of a triangle
- Area of shapes made up from combinations of simple shapes
- Co-ordinates
- Equation of a straight line
- Pythagoras' theorem
- Similar triangles
- Volume and surface area of a cylinder
- Relationships between volume, surface area and length

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PRE-COURSE MATHEMATICS SKILLS

EXTENSION SKILLS

These skills are required early in the Foundation Year. Applicants with good understanding of the primary skills may benefit from some work in these areas.

NUMERACY

- Scientific Notation

ALGEBRA

- Definition and rules of logarithms
- Definition of negative, zero and fractional powers
- Linear simultaneous equations
- Rules for powers

Quadratic Equations

- Factorising quadratic expressions, relationship between roots and factors, solving by factorisation and by formula

GEOMETRY

- Definition and simple use of sin, cos and tan
- Definition of radians
- Equation of a circle

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BOOKS FOR SELF-STUDY

Foundation Maths (Fifth Edition) Anthony Croft and Robert Davison; published by Prentice Hall (familiarity with at least chapters 1 to 11)

ISBN 0273730762 Price £29.90

Or:

Teach yourself Algebra P Abbott & H Neil; published by Teach Yourself

ISBN 1444191063 Price £8.00