Mathematics 1 2019-20

COURSE

Lecture Schedule

Term 1 (September – December)

Weeks Lectures	Section(s) of Liebeck	Section(s) of Stewart	Topic(s)	Notes
Week 1 Lectures 1–4	1	1.1 1.2, 1.3 6.2, 6.3	Sets and proofs (Liebeck) Functions (Stewart) Exponentials and logarithms (Stewart)	Sept 23–27
Week 2 Lectures 5–8	2 3 4	1.4, 1.5 1.6	Number systems and decimals (Liebeck) n^{th} roots and rational powers (Liebeck) Tangents, limits and limit laws (Stewart)	Sept 30–Oct 4
Week 3 Lectures 9–12	5	2.1 2.2, 2.3	Inequalities (Liebeck) Derivatives (Stewart)	Oct 7–11
Week 4 Lectures 13–16	6	2.3 2.4 6.2, 6.4	Complex numbers (Liebeck) Differentiation formulas (Stewart) Derivatives of trig, exp, log functions (Stewart)	Oct 14–18
Week 5 Lectures 17–20	7	2.5	Polynomial equations (Liebeck) Chain rule (Stewart)	Oct 21–25
Week 6 Lectures 21–24	8	2.6 11.10	Mathematical induction (Liebeck) Implicit differentiation (Stewart) Taylor series (Stewart)	Oct 28–Nov 1
Week 7 Lectures 25–28	9	6.1 6.6 6.7	Applications of induction (Liebeck) Inverse functions and their derivatives (Stewart) Hyperbolic functions (Stewart)	Nov 4–8
Week 8 Lectures 29–32	10 11	3.1	The integers (Liebeck) Prime factorisation (Liebeck) Applications of differentiation (Stewart)	Nov 11–15
Week 9 Lectures 33–36	11 12	12.2 12.3	More on prime numbers (Liebeck) Vectors (Stewart) The vector (dot) product (Stewart)	Nov 18–22
Week 10 Lectures 37–40	13 14	12.4 12.5	Congruence of integers (Liebeck) The crossed product (Stewart) Equations of lines and Planes (Stewart)	Nov 25–29
Week 11 Lectures 41–44	14 15	5.1, 5.2 5.3, 8.1 8.2	More on Congruence (Liebeck) Secret codes (Liebeck) Applications of scalar and vector products (Stewart)	Dec 2–6

Term 2 (January – March)

Lecture(s)	Section(s) of Liebeck	Section(s) of Stewart	Topic(s)	Notes
Week 1 Lectures 45–48	Lect. Notes	Lect. Notes	An introduction to linear equations (lecture notes provided)	Jan 13–17
Week 2 Lectures 49–52	16	Lect. Notes	Counting and choosing (Liebeck) Matrix algebras (lecture notes provided)	Jan 20–24
Week 3 Lectures 53–56	17	4.1, 4.2 4.4, 7.7	More on sets (Liebeck) Intro to integration (Stewart) Approximate integration (Stewart)	Jan 27–31
Week 4 Lectures 57–60	18	3.9, 4.3 6.1, 6.5 6.7	Equivalence relations (Liebeck) Fundamental Theorem of Calculus (Stewart) Inverse, Exp, hyperbolic functions (Stewart)	Feb 3–7
Week 5 Lectures 61–64	19	4.5, 7.1 7.2, 7.3 7.4, 7.5, 7.8	Functions (Liebeck) Techniques of integration (Poole) Improper integrals (Stewart)	Feb 10–14
Week 6 Lectures 65–68	20	5.1,5.2 5.3, 8.1 8.2	Permutations (Liebeck) Area and Volume (Stewart) Arc length and surfaces (Stewart)	Feb 17–21
Week 7 Lectures 69–72	21	13.1, 13.2 13.3, 10.1 10.2	Infinity and countability (Liebeck) Vector functions (Stewart) Parametric equations (Stewart)	Feb 24–28
Week 8 Lectures 73–76	25 26	9.1 9.3	Groups (Liebeck) Intro to differential equations (Stewart) Separable diff. eq'ns (Stewart)	Mar 22-6
Week 9 Lectures 26 77–80	25	9.5	More on groups (Liebeck) Linear diff. eq'ns (Stewart)	Mar 9–13
Week 10 Lectures 81–84	26	17.1 17.2 17.3	Even more on groups (Liebeck) Second order diff. eq'ns (Stewart) Inhomogeneous diff. eq'ns (Stewart)	Mar 16–20
Week 11 Lectures 85–88			Review	Mar 23–27