

Procedural knowledge

- a Relating Calculus to Engineering contexts
- b Using Differentiation as gradient
- c Using Differentiation as rate-of-change
- d Algebraic skills
- e Using Integration as area
- f Using Integration as inverse of Differentiation
- g Problem-Solving to choose between Integration and Differentiation
- h Writing a report
- i Writing a Proposal
- j

Week	Wednesday Date	Calendar constraints	Disciplinary Knowledge area	Disciplinary Knowledge Content	Disciplinary knowledge, that this interleaves with	Procedural knowledge progression
			Learning Aim A	laws of indices EX 10		d
1	06/09/2023		Learning Aim A	Graphical gradients; differentiation of polynomials;	Laws of Indices Quadratics	a,b,d
2	13/09/2023		Learning Aim A	evaluating gradients; increasing and decreasing functions	Graphical gradients; differentiation of polynomials;	a,b,d
3	20/09/2023		Learning Aim A	differentiating logs, exponentials and trig functions	Differentiation of polynomials Laws of Indices Quadratics unit 1 exponentials and trigonometry	a,c,d
4	27/09/2023		Learning Aim A	inverse sin and cos in radians	unit 1 trigonometry	d
5	04/10/2023		Learning Aim A	Turning Points	Rearranging (unit1) All Differentiation skills All types of functions (polynomial, Trigonometric, Exponential, Logarithmic)	a,d
6	11/10/2023		Learning Aim A	instantaneous rest and applications to mechanics and optimisation	All Differentiation skills All types of functions (polynomial, Trigonometric, Exponential, Logarithmic)	a,b,c,d
7	18/10/2023					
8	25/10/2023	HT				
9	01/11/2023		Learning Aim A	2nd derivatives; further optimisation	Rearranging (unit1) All Differentiation skills All types of functions (polynomial, Trigonometric, Exponential, Logarithmic)	a,c,d
10	08/11/2023		Learning Aim A	simple chain rules; harder chain rules	All Unit 7A plus Unit 1 rearranging/algebra/trigonometry/expon	a,b,c,d,
11	15/11/2023		Learning Aim A	product rule and quotient rule	All Unit 7A plus Unit 1 rearranging/algebra/trigonometry/expon	a,b,c,d
12	22/11/2023		Learning Aim A	Differentiation in-context (which letters are variables, which are constants, dependent and independent variables); first principles	Non-routine Differentiation skills All Differentiation skills All types of functions (polynomial, Trigonometric, Exponential, Logarithmic)	a,c,d
13	29/11/2023		Learning Aim A	Ass A - initial		a,b,c,d,h

		Learning Aim A	Ass A - initial		a,b,c,d,h
14	06/12/2023				
		Learning Aim B	Indefinite Integration as anti-differentiation for polynomials,	All routine differentiation skills Indices	a,d,f
15	13/12/2023				
		Learning Aim B	Indefinite Integration as anti-differentiation for logs, exponentials and trig	All routine differentiation skills Indices	a,d,f
16	20/12/2023				
17	27/12/2023	Xmas			
18	03/01/2024	Xmas			
		Learning Aim B	Linear Reverse Chain Rule,	All routine Integration skills All routine and non-routine differentiation skills	d,f
19	10/01/2024				
		Learning Aim B	Substitution and by Parts	All routine Integration skills All routine and non-routine differentiation skills	d,f
20	17/01/2024				
		Learning Aim B	Integrating by Trig Identities	All routine Integration skills All routine and non-routine differentiation skills	d,f
21	24/01/2024				
		Learning Aim A	Ass A - resub		a,b,c,d,h
22	31/01/2024				
		Learning Aim B	Rearranging exponentials	Unit 1 exponentials	d
23	07/02/2024				
24	14/02/2024	HT			
		Learning Aim B	Application to mechanics s-v-a; solving differential equations	Application of Differentiation to mechanics All routine and non-routine Integration skills	d,f,g
25	21/02/2024				
		Learning Aim B	Definite integrals and finding areas	All routine and non-routine Integration skills	a,d,e
26	28/02/2024				
		Learning Aim B	Mean value and RMS value	All routine and non-routine Integration skills Unit 1 Trigonometry	a,d,e
27	06/03/2024				
		Learning Aim B	Numerical Integration		a,d,e
28	13/03/2024				
		Learning Aim B	Ass B - initial	All routine and non-routine Integration skills All routine differentiation skills Numerical Integration Definite Integration	a,d,e,f,h

29	20/03/2024				Applications of Integration to Mechanics	
		Learning Aim B	Ass B - initial		All routine and non-routine Integration skills All routine differentiation skills Numerical Integration Definite Integration Applications of Integration to Mechanics	a,d,e,f,h
30	27/03/2024					
31	03/04/2024	Easter				
32	10/04/2024	Easter				
		Learning Aim C	Choosing between Integration and Differentiation		All routine and non-routine Integration skills All routine and non-routine differentiation skills Applications of Integration to Mechanics	a,c,e,f,g
33	17/04/2024		Interpreting constants and choosing methods		All routine and non-routine Integration skills All routine and non-routine differentiation skills Applications of Integration to Mechanics	a,d,g
34	24/04/2024		Making a proposal		All routine and non-routine Integration skills All routine and non-routine differentiation skills Applications of Integration to Mechanics	i
35	01/05/2024		Ass C - initial		All routine and non-routine Integration skills All routine and non-routine differentiation skills Applications of Integration to Mechanics	a,c,d,f,g,h,i
36	08/05/2024		Ass C - initial		All routine and non-routine Integration skills All routine and non-routine differentiation skills Applications of Integration to Mechanics	a,c,d,f,g,h,i
37	15/05/2024		study leave/revision/slack/supporting Unit1			
38	22/05/2024					
39	29/05/2024	Half Term				
		Learning Aim B	Ass B Resubmission Begins		All routine and non-routine Integration skills All routine differentiation skills Numerical Integration Definite Integration Applications of Integration to Mechanics	a,d,e,f,h
40	05/06/2024		Ass C - resub		All routine and non-routine Integration skills All routine and non-routine differentiation skills Applications of Integration to Mechanics	a,c,d,f,g,h,i
41	12/06/2024		study leave/revision/slack/supporting Unit1			
42	19/06/2024					
43	26/06/2024	y12 mocks				
44	03/07/2024	post-18 day	study leave/revision/slack/supporting Unit1			

45	10/07/2024
46	17/07/2024 work exp