



Ministry of Defence

Air Command Secretariat
Spitfire Block
Headquarters Air Command
Royal Air Force
High Wycombe
Buckinghamshire
HP14 4UE

Ref: 2016/11362

[REDACTED]

28 November 2016

Dear [REDACTED],

Thank you for your original email of 8 September 2016 requesting the following information:

'I attended RAF Cosford between 1/5/2001 and 22/5/2002 and completed the Propulsion SAC (Technician) course...I require a list of all the subjects that were covered on the course and how many hours were allocated for each subject'

I am treating your correspondence as a request for information under the Freedom of Information Act 2000.

A search for the information requested has now been completed within the Ministry of Defence (MOD), and I can confirm that information in scope of your request is held. The information you have requested can be found enclosed at Annex A.

Please note that, when published, this information is protected by Crown Copyright and there is no automatic right of re-use. You are free to use it for your own personal, private purposes outlined as exceptions to infringement under the Copyright, Designs and Patents Act. Any other form of re-use requires permission in the form of a licence from the MOD, and any request for re-use of the source information must be made to the MOD's Directorate of Intellectual Property Rights (DIPR). Such a request should be made by emailing DIPR-CC@mod.uk.

I apologise that you did not receive the syllabus and hours for the total SAC(T) Propulsion course at DCAE Cosford in the response to FOI 2016/10496. This was due to an administrative error. I have subsequently endeavoured to provide you with a prompt reply.

If you are not satisfied with this response or wish to complain about any aspect of the handling of your request, then you should contact me in the first instance. If informal resolution is not possible and you are still dissatisfied then you may apply for an independent internal review by contacting the Information Rights Compliance Team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail CIO-FOI-IR@mod.uk). Please note that any

request for an internal review must be made within 40 working days of the date on which the attempt to reach informal resolution has come to an end.

If you remain dissatisfied following an internal review, you may take your complaint to the Information Commissioner under the provisions of Section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not investigate your case until the MOD internal review process has been completed. Further details of the role and powers of the Information Commissioner can be found on the Commissioner's website, <http://www.ico.org.uk>.

Yours sincerely,

[Original Signed]

Air Director Resources Secretariat 2B1

SUMMARY OF COURSE CONTENT – TRADE TRAINING

SECTION P1: MATHEMATICS FOR ENGINEERS (14166H, Unit value 1.0).

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
1.1	Use appropriate electronic aids to solve problems.	BTEC 14166HH 1.1 & 1.2	3.00	0.00	3.00	1	3.00
1.2	Solve problems using formulae and also check answers by numerical substitution.	BTEC 14166HH 5.1, 5.2, & 6.1	14.00	0.00	14.00	1	14.00
1.3	Evaluate problems relating to areas, perimeters and mass.	BTEC 14166HH 11	5.00	0.00	5.00	1	5.00
1.4	Draw graphs from given data and read values by interpolation and determine linear laws.	BTEC 14166HH 7 Only up to quadratics, not including exponentials nor logarithms	4.00	0.00	4.00	1	4.00
1.5	Solve problems expressed algebraically selecting the appropriate formulae using linear, simultaneous and quadratic Equations.	BTEC 14166HH 5.1 & 6.2	6.00	0.00	6.00	1	6.00
1.6	Use trigonometrical relationship in an engineering context.	BTEC 14166HH 10	9.00	0.00	9.00	1	9.00
1.7	Represent physical quantities as vectors and undertake addition and subtraction of vector quantities.	BTEC 14166HH	6.00	0.00	6.00	1	6.00
1.8	Solve problems involving decimals, indices and percentages which relate to engineering subjects.	BTEC 14166HH 2.1, 2.3 & 2.4 Logarithms not included	3.00	0.00	3.00	1	3.00
1.9	Evaluate and use tables and charts.	BTEC 14166HH 3.1 & 3.2	1.00	0.00	1.00	1	1.00

SECTION P1: MATHEMATICS FOR ENGINEERS (14166H, Unit value 1.0).

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
1.10	Perform calculations in various numbering and measuring systems.	BTEC 14166HH 2.1, 2.2. 4.1 & 4.2	2.00	0.00	2.00	1	2.00
1.11	Obtain a satisfactory result in an examination.		2.00	0.00	2.00	1	2.00
TOTAL HOURS			55.00	0.00	55.00		55.00

SECTION P3: ENGINEERING SCIENCE (14567F, Unit value 2.0).

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
3.1	Identify and explain internal and external systems	A1	2.00	0.00	2.00	1	2.00
3.2	Produce and interpret block diagrams of systems referred to in the Aircraft Technology modules.	A2	2.00	0.00	2.00	1	2.00
3.3	Produce and interpret practical measuring systems in a block diagram form, identifying the functional elements.	F 3	2.00	0.00	2.00	1	2.00
3.4	Explain the concept of force.	B5	4.00	4.00	8.00	1/2	12.00
3.5	Explain the principles of co-planar forces.	B6	6.00	2.00	8.00	1/2	10.00
3.6	Determine a resultant turning moment as torque.	B8	4.00	0.00	4.00	1	4.00
3.7	Explain the principle of moments and system equilibrium.	B9	2.00	2.00	4.00	1/2	6.00
3.8	Investigate the relationship between displacement, velocity and acceleration for linear and angular motion.	C12	4.00	2.00	6.00	1/2	8.00
3.9	Explain the principle of conservation of momentum for linear motion.	C13	4.00	4.00	8.00	1/2	12.00
3.10	Explain the effects of centripetal acceleration.	C14	2.00	2.00	4.00	1/2	6.00
3.11	Explain processes involving energy transfer.	D15	2.00	2.00	4.00	1/2	6.00
3.12	Explain the steady flow energy equation.	D16	2.00	0.00	2.00	1	2.00
3.13	Explain the principles of work done, potential energy and linear kinetic energy.	D17	4.00	0.00	4.00	1	4.00
3.14	Explain the basic gas laws.	E18	2.00	0.00	2.00	1	2.00
3.15	Explain continuity and Bernoulli's equation.	E19, 14574F E5	2.00	0.00	2.00	1	2.00
3.16	Apply continuity and Bernoulli's equation.	E20, 14574F E5	1.00	1.00	2.00	1/2	3.00
3.17	Explain the principles of incompressible fluid flow.	E21, 14574F E5	1.00	1.00	2.00	1/2	3.00
3.18	Explain the basic thermodynamic relationships.	F22	6.00	0.00	6.00	1	6.00
3.19	Determine engine power output and efficiencies.	F23	2.00	0.00	2.00	1	2.00

SECTION P3: ENGINEERING SCIENCE (14567F, Unit value 2.0).

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
3.20	Explain the relationship between Indicated, Equivalent, Rectified and True airspeed.	G24	2.00	0.00	2.00	1	2.00
3.21	Explain the lift and drag equations relating to an aerofoil section.	G25, 14574F	1.00	1.00	2.00	1/2	3.00
3.22	Explain the effects of angle of attack and airspeed on aerofoil performance.	G26, 14574F	1.00	1.00	2.00	1/2	3.00
3.23	Analyse boundary layer and boundary layer control.	G27, 14574F	1.00	1.00	2.00	1/2	3.00
3.24	Explain the concepts of transonic/supersonic flight.	G28	1.00	1.00	2.00	1/2	3.00
3.25	Complete an assignment covering any topic within P3.		0.00	4.00	4.00	2	8.00
3.26	Complete a mid phase examination covering up to TO 3.13.		4.00	0.00	4.00	1	4.00
3.27	Complete an end of phase examination covering TOs 3.14 to 3.24 inclusive.		4.00	0.00	4.00	1	4.00
P3 TOTAL HOURS			68.00	28.00	96.00		124.00

SECTION P4: ELECTRICAL PRINCIPLES (14575F, Unit value 1.0).

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
4.1	Explain the characteristics of a simple electrical circuit.	A1	2.00	1.00	3.00	1/2	4.00
4.2	Identify selected values of resistors.	A1	1.00	0.00	1.00	1	1.00
4.3	Explain the difference between direct current and alternating current systems.	A1	1.00	0.00	1.00	1	1.00
4.4	Explain the nature of a magnetic field and the behaviour and applications of electromagnetic circuits.	A1	2.00	2.00	4.00	1/2	6.00
4.5	Explain the principles of electromagnetic induction and relate them to practical applications.	A1	2.00	2.00	4.00	1/2	6.00
4.6	Identify and explain the functions of selected electronic devices.	E5	3.00	3.00	6.00	1/2	9.00
4.7	Explain the behaviour and applications of capacitors.	E5	2.00	4.00	6.00	1/2	10.00
4.8	Describe the construction of elementary printed circuit boards.	E5	1.00	0.00	1.00	1	1.00
4.9	Describe the basic principles of operation of a VHF radio system.	G7	2.00	0.00	2.00	1	2.00
4.10	Obtain a satisfactory result in an examination of P4 Electrical Principles.		2.00	0.00	2.00	1	2.00
P4 TOTAL HOURS			18.00	12.00	30.00		42.00

SECTION P21: ENGINEERING SKILLS (4921, Unit value 1.0).

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
21.1	State the precautions to be observed to safeguard personnel in a workshop and hanger environment.	F1	1.00	0.00	1.00	1	1.00
21.2	Interpret information contained in approved engineering drawings.		5.00	0.00	5.00	1	5.00
21.3	Interpret the limit systems used in the maintenance of engineering components.		1.00	0.00	1.00	1	1.00
21.4	State the effects and causes of corrosion.	14578F C3	4.00	0.00	4.00	1	4.00
21.5	Examine methods of protection for material used in aircraft structures.	14578F C3	3.00	1.00	4.00	1	4.00
21.6	Explain the methods of preventing corrosion in aircraft.	F3, 14578F C3	3.00	1.00	4.00	1	4.00
21.7	Explain the procedures for detecting and neutralising spillage's of corrosive fluids.	F3, 14578F A1	2.00	0.00	2.00	1	2.00
21.8	State the nature of and identify common forms of aircraft corrosion.	F3, 14578F C3	2.00	0.00	2.00	1	2.00
21.9	Describe the procedures for preparation and carry out application of approved cleaning and de-greasing agents.		2.00	2.00	4.00	1/2	6.00
21.10	Examine materials for corrosion.		1.00	2.00	3.00	1/2	5.00
21.11	Carry out the removal of corrosion using hand, mechanical, and chemical methods.	F3	4.00	2.00	6.00	1/2	8.00
21.12	Identify metals and alloys and explain the effect of heat treatment on metal specifications.	F2, 14578F A1	1.00	0.00	1.00	1	1.00
21.13	State the characteristics, composition, and uses for fibre reinforced plastic materials, in aircraft and aircraft engine components.	14578F A1	2.00	0.00	2.00	1	2.00
21.14	Measure, mark, cut and shape steel to broad tolerances to within $\pm 0.4\text{mm}$ ($1/64''$) ($0.016''$) of stated measurements and $\pm 1\text{deg}$ of stated angles.		6.00	18.00	24.00	1/2	42.00
21.15	Apply identification markings to metals.		0.50	0.50	1.00	1/2	1.50
21.16	Check round work for distortion.	F6	2.00	0.00	2.00	1	2.00

SECTION P21: ENGINEERING SKILLS (4921, Unit value 1.0).

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
21.17	Identify selected screw thread systems.		2.00	0.00	2.00	1	2.00
21.18	Identify and use metric and imperial precision measuring instruments.	F6	8.00	4.00	12.00	1/4	24.00
21.19	Select and use non adjustable gauges.	14578F D4	1.00	1.00	2.00	1/2	3.00
21.20	Drill and countersink holes using a hand brace and a vertical floor mounted electrical drilling machine and the universal countersink tool.		2.00	4.00	6.00	1/2	10.00
21.21	Identify, state the purpose of, and carry out the assembly and dismantling of aircraft threaded fasteners using the correct tools.	14578F D4	4.00	3.00	7.00	1/2	10.00
21.22	Select and use locking devices.	14578F D4	2.00	2.00	4.00	1/2	6.00
21.23	Carry out wire locking tasks.	14578F D4	1.00	3.50	4.50	1/2	8.00
21.24	Lock nut and bolt assemblies by Peening.	14578F D4	0.50	0.50	1.00	1/2	1.50
21.25	State the hazards associated with, describe the use of and the methods of mixing and applying typical adhesives.		2.00	0.00	2.00	1	2.00
21.26	Select and use reamers.	F7	1.00	1.00	2.00	1/2	3.00
21.27	State the procedures for, and carry out the fitting and removal of taper pins.	F7	0.50	1.00	1.50	1/2	2.50
21.28	Repair internal and external screw threads.		2.00	2.00	4.00	1/2	6.00
21.29	Select, set and use torque tools.	F8	2.00	3.00	5.00	1/2	8.00
21.30	Remove broken or damaged studs.	F7, F8	0.50	1.50	2.00	1/2	3.50
21.31	Fit and remove wire thread inserts.	F7	2.00	2.00	4.00	1/2	6.00
21.36	Carry out a practical task to consolidate the skills taught in P21.		0.00	16.00	16.00	2	32.00

SECTION P21: ENGINEERING SKILLS (4921, Unit value 1.0).

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
21.37	Obtain a pass mark in an exam.		2.00	0.00	2.00	1	2.00
21.38	Attend an end of phase de-brief on content and assessment.		2.00	0.00	2.00	1	2.00
P21 TOTAL HOURS			74.00	71.00	145.00		222.00

SECTION P22: TRADE ELECTRICS .

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
22.1	State the safety precautions necessary to safeguard personnel and equipment in an electrical workshop.	14574 (A1)	1.00	0.00	1.00	1	1.00
22.2	Interpret simple aircraft wiring diagrams.	14575 (A1)	2.00	0.00	2.00	1	2.00
22.3	Identify and recognise selected fuses and circuit breakers in both modes of operation.		0.50	0.00	0.50	1	0.50
22.4	State the actions to be taken in the event of a failure being identified.		0.50	0.00	0.50	1	0.50
22.5	Identify and state the uses of cables and connectors and relate them to their area of application.		4.00	0.00	4.00	1	4.00
22.6	Identify the main types of connector. Connect and disconnect electrical connectors.		4.00	4.00	8.00	1/4	20.00
22.7	Explain the need for electrical systems.		1.00	0.00	1.00	1	1.00
22.8	Explain the purpose of electrical systems fitted to aircraft.		1.00	0.00	1.00	1	1.00
22.9	Recognise and explain the purpose and principle of operation of selected switches, indicators and lamps.		2.00	1.00	3.00	1/4	6.00
22.10	Describe the uses, construction and basic operation of micro-switches and the trade responsibilities for their adjustment.		1.00	0.00	1.00	1	1.00
22.11	Identify and describe the basic functions of the major components of an aircraft power supply system.	14575 (B2, C3)	6.00	0.00	6.00	1	6.00
22.12	Describe the uses, construction and basic operation of electrical solenoids and relays in aircraft.		1.00	0.00	1.00	1	1.00
22.13	Describe the uses, construction and basic operation of actuators in aircraft systems.		2.00	0.00	2.00	1	2.00
22.14	Describe the basic construction and operation of contents gauging systems.	14575 (D4)	2.00	0.00	2.00	1	2.00
22.15	Describe the basic construction and operation of pressure gauging systems.	14575 (D4)	2.00	0.00	2.00	1	2.00
22.16	Describe the basic construction and operation of temperature gauging systems.	14575 (D4)	2.00	0.00	2.00	1	2.00
22.17	Describe the basic construction and operation of engine speed indicators.	14575 (D4)	2.00	0.00	2.00	1	2.00

SECTION P22: TRADE ELECTRICS .

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
22.18	Describe the basic construction and operation of position indicators.	14575 (D4)	2.00	0.00	2.00	1	2.00
22.19	Recognise and state the principle of operation of a Centralised Warning System.		1.00	0.00	1.00	1	1.00
22.23	Describe the basic construction and operation of engine ignition systems and explain the safety precautions to be observed.		2.00	0.00	2.00	1	2.00
22.24	State the need for the correct husbandry of all aircraft wiring and fibre-optic cable and explain how this is achieved.		1.00	0.00	1.00	1	1.00
22.25	State the precautions to be observed when working with or in the vicinity of aircraft wiring.		0.50	0.00	0.50	1	0.50
22.26	State the actions to be taken on discovering damage to aircraft wiring.		0.50	0.00	0.50	1	0.50
22.27	Recognise and state the purpose and operation of selected test equipment.		2.00	0.00	2.00	1	2.00
22.28	Carry out fault diagnosis on selected electrical circuits to measure/check/test voltage, resistance, current, continuity and resistance.		1.00	16.00	17.00	1/4	65.00
22.29	Obtain a pass mark in an examination.		2.00	0.00	2.00	1	2.00
22.30	Carry out a debrief on phase content and assessment.		2.00	0.00	2.00	1	2.00
P22 TOTAL HOURS			48.00	21.00	69.00		132.00

SECTION: P20 INTRODUCTION TO MAINTENANCE.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
20.1	State the precautions to be observed to safeguard personnel in a workshop and hangar environment.	JPS C.14, C.15, C.16	1.00	0.00	1.00	1	1.00
20.2	Describe the aircraft maintenance organisation within the RAF and the need for recording.		1.00	0.00	1.00	1	1.00
20.3	Describe the engineering Air Publication system..		2.00	0.00	2.00	1	2.00
20.4	Describe the overall concept of servicing/ maintenance documentation in the RAF.		4.00	0.00	4.00	1	4.00
20.5	Identify, state the purpose of and use documentation to maintain aircraft and aircraft engines.	JPS C.25, C.26	10.00	2.00	12.00	1	12.00
20.6	Explain the function of a supply organisation and identify an item of equipment.		3.00	3.00	6.00	1/2	9.00
20.7	Explain the role of typical engineering support facilities.		1.00	0.00	1.00	1	1.00
20.8	Explain the need for Non-Destructive Testing (NDT) and describe the different types available.	BTEC 14578F/E5	2.00	0.00	2.00	1	2.00
20.9	Interpret and apply the maintenance policy for GSE.		2.00	0.00	2.00	1	2.00
20.10	Operate selected Ground Support Equipment.	JPS C.29	3.00	4.00	7.00	1/2	11.00
20.11	Operate inspection lamps, torches and flood lights.	JPS C.29	1.00	1.00	2.00	1/2	3.00
20.12	Operate aircraft screw or hydraulic jacks to lift a load.	JPS C.29	2.00	4.00	6.00	1	6.00

SECTION: P20 INTRODUCTION TO MAINTENANCE.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
20.13	Recognise, assemble and position aircraft trestles to support light aircraft/aircraft structure during maintenance.	JPS C.29	1.00	2.00	3.00	1/3	7.00
20.14	Describe Hi-way staging and its applications.		1.00	0.00	1.00	1	1.00
20.15	State the purpose of STIs, Sis, PWIs, LEIs, Modification Leaflets and STF Instructions.	JPS C.31	2.00	0.00	2.00	1	2.00
20.16	Interpret information in STIs, SIs PWIs, LEIs, Modification Leaflets and STF Instructions.	JPS C.31	2.00	0.00	2.00	1	2.00
20.17	Satisfy an STI, SI, PWI, LEI, Modification Leaflets or STF and record compliance.	JPS C.31	0.00	2.00	2.00	4	8.00
20.18	State the regulations pertaining to aircraft zonal survey.	JPS C.35 BTEC 14578F A1	2.00	0.00	2.00	1	2.00
20.19	Obtain a pass mark in an examination.		2.00	0.00	2.00	1	2.00
20.20	Participate in a debrief of P20.		2.00	0.00	2.00	1	2.00
P20 TOTAL HOURS			44.00	18.00	62.00		80.00

SECTION P23: AIRCRAFT CONTROLS.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
23.1	State the safety precautions necessary to safeguard personnel, aircraft and equipment on an airfield.	JPS C.14, C.15, C.16 BTEC 14574F A1	1.00	0.00	1.00	1	1.00
23.2	State the purpose and construction of aircraft remote control systems.	JPS P.7	4.00	0.00	4.00	1	4.00
23.3	State the purpose of documentation used during control system maintenance, the purpose of independent control system inspections and tests and the methods of recording them.		4.00	0.00	4.00	1	4.00
23.4	State the purpose and describe the construction of fork-ends, shackle pins and turnbuckles in a remote control system.		2.00	0.00	2.00	1	2.00
23.5	a. Describe the construction and explain the principles of operation of a Teleflex control system. b. Describe the general maintenance requirements for Teleflex control systems.	JPS P.7	4.00	0.00	4.00	1	4.00
23.6	a. Describe the construction and explain the principles of operation of a chain control system. b. Describe the general maintenance requirements for chain control systems.	JPS P.7	2.00	0.00	2.00	1	2.00
23.7	a. Describe the construction and explain the principles of operation of a push rod and lever control system. b. Describe the general maintenance requirements for push rod and lever control systems.	JPS P.7	2.00	0.00	2.00	1	2.00

SECTION P23: AIRCRAFT CONTROLS.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
23.8	State the purpose and explain the principles of operation of Electrical and Electronic Remote Control Systems.	JPS P.7	3.00	0.00	3.00	1	3.00
23.9	a. Describe the construction and explain the principles of operation of a wire cable control system. b. Describe the general maintenance requirements for wire cable control systems.	JPS P.7	2.00	0.00	2.00	1	2.00
23.10	Carry out maintenance on the following control systems:- a. Teleflex. b. Push rod and lever. c. Chain. d. Wire cable.	JPS P.7	0.00	16.00	16.00	4	64.00
P23 TOTAL HOURS			24.00	16.00	40.00		80.00

SECTION: P27 AIRCRAFT SYSTEMS.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
27.1	State the purpose of an aircraft fuel system and describe the methods of fuel storage.	BTEC 1757R/4 JPS P.9	6.00	0.00	6.00	1	6.00
27.2	Describe the operation and construction of an aircraft fuel supply and transfer system.	BTEC 1757R/4 JPS P.9	4.00	0.00	4.00	1	4.00
27.3	Describe the operation and construction of an aircraft refuel/defuel system.	JPS P.9	6.00	0.00	6.00	1	6.00
27.4	Describe the operation and construction of an aircraft fuel pressurisation and venting system.	JPS P.9	4.00	0.00	4.00	1	4.00
27.5	Describe the operation and construction of an aircraft fuel contents gauging system.	BTEC 1757R/4 JPS P.9	2.00	0.00	2.00	1	2.00
27.6	Describe the methods and indications used in an aircraft fuel management system.	JPS P.9	2.00	0.00	2.00	1	2.00
27.7	State the purpose of flight refuelling and identify the associated equipment and components.		2.00	0.00	2.00	1	2.00
27.8	Describe the fitting and removal of aircraft pylon assemblies.		2.00	0.00	2.00	1	2.00
27.9	Describe the construction of common types of pipeline and connector / coupling.	BTEC 1757R/4	6.00	0.00	6.00	1	6.00
27.10	Identify, remove and refit V-band clamps.		2.00	1.00	3.00	1	3.00
27.11	Carry out fault rectification on an aircraft fuel system.	JPS P.9	0.00	16.00	16.00	4	64.00
27.12	Describe the method of examining fuel tanks and methods of testing for leaks.	BTEC 1757R/4 JPS P.9	2.00	0.00	2.00	1	2.00

SECTION: P27 AIRCRAFT SYSTEMS.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
27.13	State the procedure for removing fuel vapour from fuel tanks.	BTEC 1757R/4, JPS P.9	1.00	0.00	1.00	1	1.00
27.14	State the procedures for packing and storing aircraft flexible fuel tanks.		1.00	0.00	1.00	1	1.00
27.15	State the procedures for carrying out pre-use checks on aircraft fuel tanks.	BTEC 1757R/4, JPS P.9	1.00	0.00	1.00	1	1.00
27.16	Identify, remove and fit aircraft fuel tanks and fuel system components.	JPS P.9	4.00	20.00	24.00	1/4	84.00
27.17	Describe how to repair integral fuel tanks using approved sealing compounds.	JPS P.9	2.00	0.00	2.00	1	2.00
27.18	Carry out fault diagnosis to identify faults in an aircraft fuel system.	JPS P.9	14.00	20.00	34.00	1/4	94.00
27.19	Describe the construction and operation of aircraft fire detection and extinguishing systems.	BTEC 1757R/4 JPS P.23	6.00	0.00	6.00	1	6.00
27.20	Obtain a pass mark in an examination of P23 and P27.		2.00	0.00	2.00	1	2.00
27.21	Participate in a debrief of P23 and P27.		2.00	0.00	2.00	1	2.00
P27 TOTAL HOURS			71.00	57.00	128.00		296.00

SECTION: P25A GAS TURBINES.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
25.1	Explain the reasons for the introduction of the gas turbine engine as a means of providing propulsive force for aircraft.	BTEC 14574F B2	2.00	1.00	3.00	1/2	4.00
25.2	Explain the general principles of operation of a gas turbine engine.	BTEC 1757R/1, JPS P.1	8.00	0.00	8.00	1	8.00
25.3	Explain how airflow is affected by different types of intake.	BTEC 1757R/1, JPS P.3	2.00	1.00	3.00	1	3.00
25.4	Explain the purpose, principles of operation and aerodynamic airflow in gas turbine engine compressors.	BTEC 1757R/1 JPS P.1	3.00	0.00	3.00	1	3.00
25.5	Explain the purpose, principles of operation and aerodynamic airflow in gas turbine engine combustion chambers.	BTEC 1757R/1 JPS P.1	2.00	0.00	2.00	1	2.00
25.6	Explain the purpose, principles of operation and aerodynamic airflow through turbine assemblies.	BTEC 1757R/1 JPS P.1	3.00	0.00	3.00	1	3.00
25.7	Explain the purpose, principles of operation and aerodynamic airflow through exhaust assemblies. a. Without afterburner. b. With afterburner. c. Convergent / divergent.	BTEC 1757R/1, BTEC 1757R/5 JPS P.1	2.00	0.00	2.00	1	2.00
25.8	Explain the operating characteristics and describe the aerodynamic airflow through a gas turbine .	BTEC 1757R/1 JPS P.1	4.00	0.00	4.00	1	4.00
25.9	Explain the factors affecting thrust and how gas turbine performance is measured.	BTEC 1757R/1,	4.00	2.00	6.00	1	6.00
25.10	Explain gas turbine efficiency and how it has improved with engine development.	BTEC 1757R/1,	3.00	0.00	3.00	1	3.00

SECTION: P25A GAS TURBINES.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
25.11	Define International Standard Atmosphere and carry out corrections to performance figures.	BTEC 1757R/1,	2.00	0.00	2.00	1	2.00
25.12	State the reasons for non-dimensional analysis.	BTEC 1757R/1,	1.00	0.00	1.00	1	1.00
25.13	Describe the construction of the main sections and assembly components of: a. Turbo jet engines. b. Turbo-prop engines. c. Turbo-fan engines. d. Turbo-shaft engines.	BTEC 1757R/2 JPS P.1	16.00	0.00	16.00	1	16.00
25.14	Explain the purpose of the airflows that are used for cooling, sealing and anti-icing systems on gas turbine engines and the methods of controlling internal airflows.	BTEC 1757R/3 JPS P.2, P.7	4.00	0.00	4.00	1	4.00
25.15	State the purpose and describe the construction of internal and external gearboxes, accessory drives and the need for engine driven accessories.	BTEC 1757R/2 JPS P.10	4.00	0.00	4.00	1	4.00
25.16	Identify and state the purpose of engine instrumentation.	JPS P.7	2.00	0.00	2.00	1	2.00
25.17	Identify, locate and examine the modules and assemblies of a gas turbine engine.	BTEC 1757R/2 JPS P.1	0.00	4.00	4.00	2	8.00
25.18	Identify and state the purpose of documentation required to maintain engines.	JPS C.25, C.26	2.00	0.00	2.00	1	2.00
25.19	Consolidate the principles and construction of gas turbine engines with reasoning and practical exercises.	JPS P.1, P.17	0.00	18.00	18.00	4	72.00
25.20	Explain the transmission of loads through engine mountings to the airframe.	BTEC 1757R/3					

SECTION: P25A GAS TURBINES.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
		JPS P.15	1.00	0.00	1.00	1	1.00
25.21	Explain the effects and influences of fluid control systems.	JPS P.7	4.00	0.00	4.00	1	4.00
25.22	Explain the basic principles of a gas turbine engine starting system.	BTEC 1757R/3, JPS P.8	2.00	0.00	2.00	1	2.00
25.23	Describe the principles of operation and construction of starting system components and assemblies.	JPS P.4, P.5, P.8	6.00	0.00	6.00	1	6.00
25.24	Describe the composition and operation of a typical engine starting system.	BTEC 1757R/3, JPS P.4, P.5,	4.00	0.00	4.00	1	4.00
25.25	State the purpose of auxiliary airborne power plants.	BTEC 1757R/3, JPS P.8	2.00	0.00	2.00	1	2.00
25.26	Consolidate the principles of gas turbine engine starting systems with reasoning and practical exercises.	JPS P.4, P.5, P.8, P.17	1.00	8.00	9.00	1/2	17.00
25.27	Explain the need for lubrication and identify the types of engine oil and their properties.	BTEC 1757R/3 JPS P.6	2.00	0.00	2.00	1	2.00
25.28	Describe the principles of operation and construction of gas turbine engine oil system components.	BTEC 1757R/3 JPS P.6	8.00	0.00	8.00	1	8.00
25.29	Describe the principles of operation and the construction of gas turbine lubrication systems with regard to:- a. Turbo-jet engines. b. Turbo-prop engines. c. Turbo-fan engines. d. Turbo-shaft engines.	JPS P.6	10.00	0.00	10.00	1	10.00

SECTION: P25A GAS TURBINES.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
25.30	Consolidate gas turbine engine oil systems with reasoning and practical exercises.	JPS P.6, P.17	0.00	16.00	16.00	4	64.00
25.31	State the reason for, the principles of and the methods of health monitoring on gas turbine engines.	BTEC 14574F E5 BTEC 1757R/3	2.00	2.00	4.00	1/2	6.00
25.32	State the requirements of and the types of fuel used in a gas turbine engine.	BTEC 1757R/4 JPS P.11	2.00	0.00	2.00	1	2.00
25.33	State the purpose of and the requirements of a gas turbine engine fuel system.	BTEC 1757R/3 JPS P.11	4.00	0.00	4.00	1	4.00
25.34	Describe the construction and basic principles of operation of the components and flow control features of a gas turbine engine fuel system.	BTEC 1757R/3 JPS P.11	8.00	0.00	8.00	1	8.00
25.35	State the purpose, construction and principles of operation of a basic engine fuel flow control system.	BTEC 1757R/3 JPS P.7, P.11	12.00	0.00	12.00	1	12.00
25.36	State the purpose and basic principles of operation of electronic fuel control systems.	BTEC 1757R/3 JPS P.7, P.11	2.00	0.00	2.00	1	2.00
25.37	Consolidate gas turbine engine fuel system training with reasoning and practical tasks.	JPS P.7, P.11, P.17	0.00	16.00	16.00	4	64.00
25.38	Describe the construction and principles of operation of the main components of a gas turbine airflow control system.	BTEC 1757R/3 JPS P.3, P.7	4.00	0.00	4.00	1	4.00

SECTION: P25A GAS TURBINES.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
25.39	Explain the principles of operation and the methods used to operate the following airflow control systems:- a. Variable inlet guide vanes. b. Bleed valves. c. Nozzle controlled bleed.	BTEC 1757R/3 JPS P.3	6.00	0.00	6.00	1	6.00
25.40	Consolidate gas turbine engine airflow control systems training with reasoning and practical exercises.	JPS P.3, P.17	0.00	4.00	4.00	2	8.00
25.41	Explain the basic principles and requirements of a reheat system.	BTEC 1757R/5, JPS P.12	4.00	0.00	4.00	1	4.00
25.42	State the purpose and describe the construction of the components of a basic reheat system.	BTEC 1757R/5 JPS P.12	2.00	2.00	4.00	1/2	6.00
25.43	Explain the methods of reheat ignition.	BTEC 1757R/5, JPS P.12	2.00	0.00	2.00	1	2.00

SECTION: P25A GAS TURBINES.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
25.44	Describe the operation of the components of a reheat system and how the requirements of the system are met.	BTEC 1757R/5 JPS P.12	4.00	0.00	4.00	1	4.00
25.45	Consolidate gas turbine thrust augmentation (Reheat) training with reasoning and practical exercises.	BTEC 1757R/5 JPS P.12, P.17	0.00	8.00	8.00	4	32.00
25.46	Explain the principles of operation of water injection thrust augmentation systems.	BTEC 1757R/3 JPS P.12	2.00	0.00	2.00	1	2.00
25.47	Enhance gas turbine engine training with reasoning and practical exercises.	JPS P.1, P.17	0.00	8.00	8.00	4	32.00
25.48	Obtain a pass in an examination.		4.00	0.00	4.00	1	4.00
P25A TOTAL HOURS			162.00	90.00	252.00		471.00

SECTION: P25B GAS TURBINES GENERIC AIRCRAFT MODEL SYSTEMS.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
25.49	Recognise and operate the training equipment of the GAM.		4.00	4.00	8.00	2/4	24.00
25.50	State the purpose of engine monitoring systems and the type of data used.		2.00	0.00	2.00	1	2.00
25.51	State the purpose and explain the operation of a secondary power system.	JPS P.8	4.00	0.00	4.00	1	4.00
25.52	Carry out fault diagnosis on secondary power systems.	JPS P.8, P.13	0.00	8.00	8.00	4	32.00
25.53	Carry out fault diagnosis on the GAM engine lubrication system and complete all relevant documentation.	JPS P.6, P.13	0.00	4.00	4.00	4	16.00
25.54	Explain the operation of the GAM electronically controlled main engine fuel system.	JPS P.7, P.11	6.00	0.00	6.00	1	6.00
25.55	Carry out fault diagnosis on a digitally controlled main engine fuel system and complete all relevant documentation.	JPS P.7, P.11, P.13	0.00	8.00	8.00	4	32.00
25.56	Explain the operation and control of the GAM reheat system.	JPS P.12	6.00	0.00	6.00	1	6.00
25.57	Carry out fault diagnosis on a digitally controlled reheat system and complete all relevant documentation.	JPS P.12, P.13	0.00	8.00	8.00	4	3 2.00
25.58	Carry out consolidation exercise.	JPS P.13	0.00	8.00	8.00	4	32.00
25.59	Obtain a pass in an examination.		2.00	0.00	2.00	1	2.00
25.60	Participate in a debrief of P25A and P25B.		2.00	0.00	2.00	1	2.00
P25B TOTAL HOURS			26.00	40.00	66.00		190.00

SECTION: P26 MODULAR ENGINE BAY MAINTENANCE.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
26.1	Complete all relevant documentation related to modular engine maintenance.	JPS C.33	8.00	0.00	8.00	1	8.00
26.2	Identify the danger areas and hazardous operations in an engine maintenance bay.	BTEC 1757R/3 JPS C.14, C.16	1.00	1.00	2.00	1	2.00
26.3	Operate remote controlled overhead and mobile cranes using standard and specialised lifting tackle.	JPS C.29	1.00	2.00	3.00	1/4	9.00
26.4	Explain the principles of preservation and packing.	BTEC 1757R/3	2.00	1.00	3.00	1	3.00
26.5	Unpack a modular engine, install it in a lay-by stand and carry out a pre-strip examination.		0.00	10.00	10.00	4	40.00
26.6	Clean and examine a WVR bag.		2.00	4.00	6.00	1/4	18.00
26.7	Remove and fit modules of a modular engine.	JPS P.17, P.19, C.6, C.11	0.00	88.00	88.00	4	352.00
26.8	Clean, inspect, preserve and pack engine modules and components.	JPS C.27, C.28	3.00	3.00	6.00	1/4	15.00
26.9	Examine, blend and dress a damaged LP compressor blade.	JPS P.18	1.00	7.00	8.00	1/4	29.00
26.10	Set-up and adjust engine controls.	JPS P.20	1.00	12.00	13.00	1/4	49.00
26.11	Inhibit a modular engine and pack into a WVR bag.		0.00	4.00	4.00	4	16.00
26.12	Obtain a pass mark in an examination.		2.00	0.00	2.00	1	2.00
26.13	Participate in a debrief of P26.		2.00	0.00	2.00	1	2.00
P26 TOTAL HOURS			23.00	132.00	155.00		545.00

SECTION: P40 SECOND LINE MAINTENANCE.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
40.1	Examine an AAES for correct fitment of safety devices.		2.00	2.00	4.00	1/4	10.00
40.2	Apply external electrical power to a specific aircraft.		1.00	2.00	3.00	1/2	5.00
40.3	Carry out cockpit checks prior to moving an aircraft.		1.00	2.00	3.00	1/4	9.00
40.4	Demonstrate the ability to carry out aircraft maintenance.	BTEC 1757R/3 JPS P.1, C.7	2.00	22.00	24.00	1/4	90.00
40.5	Carry out removal and fitment of an engine change unit.	JPS C.7	0.00	14.00	14.00	4	56.00
40.6	Carry out a ground test of an aircraft engine.	JPS P.22	10.00	8.00	18.00	1/4	42.00
40.7	Debrief students on their performance in P40 second line maintenance.		2.00	0.00	2.00	1	2.00
P40 TOTAL HOURS			18.00	50.00	68.00		214.00

SECTION: EXAMINATIONS.

T.O. No. (a)	TRAINING OBJECTIVE (b)	REFERENCES/ REMARKS (c)	SYLLABUS HOURS			No of CELLS (i)	INSTR. HOURS (j)
			Class (f)	Pract (g)	Total (h)		
1.1	Complete an MCOQ intermediate examination paper on training sections P3 to P22 to achieve a pass mark.		4.00	0.00	4.00	2	8.00
1.2	Complete an MCOQ intermediate examination paper on training sections P23 to P25b to achieve a pass mark.		4.00	0.00	4.00	2	8.00
1.3	Demonstrate skills and knowledge gained in P21 by carrying out a practical task.	Skill of Hand	0.00	20.00	20.00	1	20.00
1.4	Complete an MCOQ examination on the contents of the training course to achieve a pass mark.		4.00	0.00	4.00	2	8.00
1.5	Complete a debrief of the course.		2.00	0.00	2.00	1	2.00
TOTAL HOURS			14.00	20.00	34.00		46.00