P.G. Diploma (Aerospace Technical Publication): NSQF Level -8

Type	No. of hrs. per sem.	Credit
Theory	15	1
Practical	30	1
On-the-Job Training (OJT)	45	1

TEACHING SCHEME FOR FIRST SEMESTER

Code	Subject Name	Credits			Marks							Total hrs. per course			NSQF L8
					Theory			Practical			Total				
		Th.	Pr.	To.	Int.	Ext.	To.	Int.	Ext.	To.		Th.	Pr.	To.	
AE806	Aircraft Inspection and Maintenance	4	-	4	30	70	100	-	-	-	100	60	0	60	
AE804 AE804L	Aircrafts Basics and Systems	3	1	4	15	35	50	35	15	50	100	45	30	75	
AE807 AE807L	Arbortext Epic Editor	1	3	4	15	35	50	35	15	50	100	15	90	105	
AE808 AE808L	Arbortext IsoDraw	1	3	4	15	35	50	35	15	50	100	15	90	105	
ME803	Engineering Graphics	3	1	4	15	35	50	35	15	50	100	45	30	75	
AE809	Technical Publications Manual	4	-	4	30	70	100	-	-	-	100	60	0	60	
AE810	Technical Publications Standards	3	-	3	30	70	100	-	-	-	100	45	0	45	
Grand Total		19	8	27	150	350	500	140	60	200	700	285	240	525	

TEACHING SCHEME FOR SECOND SEMESTER															
Code	**Subject Name**	**Credits**			**Marks**							**Total hrs. per course**			**NSQF L8**
					Theory			**Practical**			**Total**				
		Th.	**Pr.**	**To.**	**Int.**	**Ext.**	**To.**	**Int.**	**Ext.**	**To.**		**Th.**	**Pr.**	**To.**	
OMS802	Entrepreneurship (MOOC)/Online Course-I *	2	-	2	30	70	100	-	-	-	100	30	-	30	
	MOOC/Online Course-II*	2	-	2	30	70	100	-	-	-	100	30	-	30	
OJT801	NSQF- On the Job Training	-	24	24	-	-	-	490	210	700	700	-	1080	1080	
ETP801	Project	-	5	5	-	-	-	70	30	100	100	-	120	120	
Grand Total		4	29	33	60	140	200	560	240	800	1000	60	1200	1260	

***MOOC/Online Courses will be floated as per the university guidelines**

Course Title: Aircraft Inspection and Maintenance

Course Credit: 04 (4-0-0)

Course code AE806 **Max. Marks: 100 (30I+70E)**

Objectives

The purpose of the course is to provide basic knowledge and exposure to the concepts of aircraft maintenance tasks necessary to ensure the airworthiness of an aircraft or its part, which includes overhaul, inspection, replacement, defect rectification, and the embodiment of modifications, compliance with airworthiness directives and repair. It aims to familiarize the participants with aircraft maintenance and inspection. To ensure that all participants have the technical skills needed to perform the job efficiently and smoothly.

Learning Outcomes

- Able to understand aircraft maintenance (Theory)
- Able to know aircraft inspections. (Theory)
- Able to learn the writing process (Theory)
- Able to explain technical creation of publication (Theory)
- Able to obey the safety rules related to ground operations (Theory)

Unit	Topic	Key Learning	Hours
I - Aircraft Maintenance	Aircraft maintenance definition, types of maintenance, line maintenance, regulations, maintenance organizations, preventive maintenance, scheduled maintenance, unscheduled maintenance, Aircraft hangar maintenance	• Identify the maintenance activities	15
II - Aircraft Inspections	Aircraft inspection definition, types of inspections, occasions of inspections, Definition of checks, Check A, Check B, Check C, hazards, actual and potential hazards	• Differentiate between maintenance and inspection	15
III – Technical Writing	Technical writing definition, Difference between technical and academic writing, steps of technical writing, use of articles, parts of speech, characteristic of effective technical writing, know your audience, writers' traits, writing styles	• Learn the process of technical writing	10
IV – Overview of Technical Publications	Types of technical publications, the process of writing technical publications, challenges, backgrounds, standardization	• Understand the creation of technical publications	10
V - Safety Operation, Regulations	Overview - code of federal regulations, Maintenance-related regulations, Airworthiness standards, safety ground operations, and servicing	• Explore the safety situation related to ground operations of the aircraft	10

Books Recommended

Text Books

1. Aviation Maintenance handbook volume 1: FAA-H-8083-31
2. Aviation Maintenance handbook volume 2: FAA-H-8083-31
3. Aviation Maintenance Technician Handbook: FAA-H-8083-30
4. Microsoft manual for style guide: Microsoft

Reference Books

1. ATA Specification 2200 (iSpec 2200)
2. Aviation instructor's handbook
3. Reading of Technical English: Peter G Riddel

Web Links

Course Title: Aircraft Basics and Systems

Course Credit: 03 (3-0-0)

Course code : AE804 **Max. Marks: 50 (15I+35E)**

Objectives

The purpose of the course is to provide fundamental knowledge and exposure to the concepts, theories, and practices followed in the field of aviation. To ensure that all participants have the technical skills needed to perform the job efficiently and smoothly. It aims to understand the aviation industry and aircraft systems.

Learning Outcomes

- Able to understand aviation as an industry (Theory)
- Able to know publication and standards. (Theory)
- Able to describe types of aircraft structures (Theory)
- Able to explain the importance of the flight control system (Theory)
- Able to evaluate aircraft mechanical systems (Theory)
- Able to learn aircraft electrical and avionics systems (Theory)

Unit	Topic	Key Learning	Hours
I - Aircraft Orientation	Evolution of aircraft, aviation as an industry, globalization, future of aviation, opportunities in aviation, human factors	• Identify aviation as an industry for various opportunities.	8
II - Introduction to Aircraft Structures	Aircraft classification, lighter than air aircraft, heavier than air aircraft, fixed-wing aircraft, rotary-wing aircraft, aircraft structural components, monocoque design, semi-monocoque, structural components of wing and fuselage.	• Differentiate the aerospace and aircraft structures and components	8
III – Basic Aircraft Systems	Flight control system, mechanical flight control system, hydro-mechanical flight control system, fly by wire system, aircraft hydraulic system, aircraft fuel system, air-conditioning system.	• Understand basic aircraft mechanical systems' functions	8
IV – Advanced Aircraft System	Aircraft powerplants, Different types of engines like reciprocating engine, jet engine, turboprop, turbofan, turbojet, turboshaft, scramjet, ramjet, rocket engine, Engine control system, landing gear system, aircraft fire protection system, Equipment furnishing.	• Learn the advance functions of aircraft systems	10
V – Electrical and avionics systems	Introduction to basic electrical systems, Aircraft electrical systems, aircraft lighting systems, ice, and rain protection system. Introduction to avionics, communication, navigation, Display system, flight management system, GPS, Autopilot system, Weather radar system, Collision avoidance, Flight data recorder, Aircraft Instruments, Instrument landing system, aircraft oxygen system	• Able to explain aircraft electrical and avionics system	11

Books Recommended

Text Books

1. Analysis and design of flight vehicle structures: Bruhn. E. F
2. Aircraft Structures for Engineering Students: Megson T. H. G.
3. Airframe Structural Design: Practical Design Information and Data on Aircraft Structures: Michael Chun-Yung Niu
4. Flight Without Formulae: A. C Kermode
5. Aircraft Systems: Ian Moir & Allan Seabridge
6. Aircraft Propulsion and Gas Turbine Engines: Ahmed F. El-Sayed
7. Avionics Training: Len Buckwalter

Reference Books

8. Aviation maintenance technician handbook
9. Aero engines.

Web Links

Course Title: Aircraft Basics and Systems Lab

Course Credit: 01 (0-1-0)

Course code : AE804L **Max. Marks : 50 (35I+15E)**

Objectives: Exposure to the aircraft components, system and maintenance.

Learning Outcomes:

1. Able to understand the terminology used in aircraft maintenance
2. Identify the different aircraft components
3. Learn about the different systems on aircraft
4. Appreciate the functions of the aircraft systems
5. Recognize the ground support equipment used in maintenance
6. Appreciate the procedures involved in aircraft maintenance
7. Learn the use of different manuals on the aircraft
8. To identify parts of aircraft piston engine
9. To understand and identify aircraft jet engine parts

List of Practical's

1. Identification of different aircraft mechanical components
2. Identification of different aircraft electrical and avionics components
3. Identification of different electrical harness
4. Identification of different flying controls
5. Identification of ground support equipment
6. Use of maintenance manual for maintenance activities
7. Observation of safety precautions during maintenance
8. Study of an aircraft piston engine. (includes study of assembly of sub systems, various components, their functions and operating principles)
9. Study of an aircraft jet engine (includes study of assembly of sub systems, various components, their functions and operating principles)

Course Title: Arbortext Epic Editor

Course Credit: 04 (1-3-0)

Course code : AE807 **Max. Marks(T) : 50(15I+35E)**

AE807L **Max. Marks(P) : 50 (35I+15E)**

Objectives

The purpose of the course is to provide basic knowledge and exposure to the concepts of Arbortext Editor for basic and advanced editing operations. It emphasizes hands-on experience and a foundation in the fundamental skills and commands of the structured authoring tool. It aims to familiarize the participants with Arbortext Editor to ensure that they have the technical skills needed to create the publication smoothly.

Learning Outcomes

- Able to use Arbortext editor
- Able to edit text
- Able to insert and edit mark-up
- Able to assign attributes
- Able to insert special mark-up
- Able to create tables
- Able to author and edit management tools
- Able to preview and print documents

Unit	Topic	Key Learning
I - Arbortext Editor Environment	Introduction to Arbortext editor environment, authorized tag analysis, Arbortext editor window components, tag introduction, adding and deleting tags and content, expanding and collapsing tag content, drag and drop, detailed analysis of tag	• Learn to follow the rules of the DTD and to insert and edit the mark-up,
II- Arbortext Editor Inserting	Creating a new task, inserting tags and content, adding structure to content.	• Recognize the menu to insert mark-up and using the quick tag to insert mark-up
III- Arbortext Editor Editing mark up	Modifying attributes, inserting links, and multiple task reference to one task, inserting graphics.	• Demonstrate the application toolbar to insert mark-up
IV- Authoring with Arbortext Editor	inserting symbols, adding a warning, caution, and note, various tags used in different page blocks, creating tables, modifying, attributes, checking complex error, saving your document as SGML, XML, and HTML, Publishing the output.	• Learn to Arbortext editor and document structure
V- Epic Editor Practical	Removal of the LE Access Panels, Removal /Installation of the business class seat, Removal /Installation of Antenna, APU Bleed-Air Duct-Removal /Installation, Outflow Valve (OFV) from the Outside of the Aircraft- Removal /Installation	• Creating various manuals

Books Recommended

1. PTC Arbortext Epic Editor 7.2
2. Arbortext 101: Best Practices for Configuring, Authoring, Styling, and Publishing with Arbortext
3. Arbortext 102: Best Practices for Creating Arbortext Styler Stylesheets
4. Arbortext 103: Best Practices for Configuring, Managing, and Publishing Arbortext Content with the PTC Server

Reference Books

1. **Arbortext** Books

Web Links

1. Adapters @ Twitter
2. Adapters Archive @ PTC Communities
3. Arbortext Training @ Vimeo

Course Title: Arbortext IsoDraw

Course Credit: 04 (1-3-0)

Course code :AE808 **Max. Marks(T) : 50(15I+35E)**

AE808L **Max. Marks(P) : 50(35I+15E)**

Objectives

The purpose of the course is to provide basic knowledge and exposure to the concepts of Arbortext IsoDraw to deliver 2D technical illustrations and intelligent graphics to optimize product and service information in the forms of assembly instructions, parts catalogs, operator and maintenance manuals, and other aviation documents. It enables participants to automate the process of creating and updating high-quality technical illustrations from scratch or original 2D and 3D CAD or models. It emphasizes hands-on experience and a foundation in the fundamental skills and commands of the Arbortext IsoDraw illustration tool. It aims to familiarize the participants with Arbortext IsoDraw to ensure that they have the technical skills needed to create illustrations for the publication smoothly.

Learning Outcomes

- Able to understand Arbortext IsoDraw basics and fundamental drawing skills
- Able to understand advanced drawing techniques
- Able to understand annotation, and callouts
- Able to customize the user environment.

Unit	Topic	Key Learning
I- IsoDraw Basic Illustration Process	Arbortext IsoDraw user interface, main menus, palette toolbar, and floating palettes, the status bar and the workspace configuring the status bar drawing basic shapes, drawing lines, drawing rectangles, drawing ellipses, drawing bezier paths, using delete functions.	• Learn the IsoDraw basic illustration process
II- Fundamental Drawing Skills	Applying transformations and manipulations, using the double arrow, deleting hidden lines, applying thick and thin pens, moving elements, creating concentric ellipses, manually modifying ellipse values, grouping elements, scaling elements, drawing polygons, drawing a hexagon head, converting ellipses to inner and outer threads.	• Understand the applying transformations and manipulations, using the double arrow, deleting hidden lines
III- Composition and Layout	Fitting elements, aligning elements, distributing elements, tangent to a pointed tool, tangent to an ellipse tool	• Learn the fitting elements, aligning elements, distributing elements
IV- Advanced Drawing Techniques	Advanced drawing techniques, practices for creating a compound path, configuring a complex compound path, joining polylines, applying advanced selection techniques, extruding a profile to match a custom grid	• Explore the advanced drawing techniques match a custom grid
V- Annotation and Callouts	Applying callouts manually, using the callout tool, renumbering callouts, connected callouts, modifying callout style, selecting elements based on criteria, generating callouts for groups and objects, options for generating callouts, applying dimensions to an illustration	• Explore the applying callouts manually, using the callout tool

Books Recommended

1. PTC Arbortext IsoDraw 7.2

Reference Books

2. Arbortext Books

Web Links

3. Arbortext IsoDraw eLearning Library

Course Title: Engineering Graphics

Course Credit: 03 (3-0-0)

Course code ME803 **Max. Marks : 50 (15I+35E)**

Objectives

The purpose of the course is to provide fundamental knowledge and exposure to the concepts of and use of drawing instruments, Introduction of theory of projection. Familiarize the students with different type of projections.

Learning Outcomes

The students should be able to:

- Develop Parametric design and the conventions of formal engineering drawing (Theory).
- Convert and interpret 2D to 3D drawings (Theory).
- Communicate a design idea/concept graphically (Theory).

Unit	Topic	Key Learning	Hours
I- Basics of engineering graphics	Importance of graphics Use of drawing instruments - BIS conventions and specifications - drawing sheet sizes, layout and folding - lettering - Dimensioning - Geometrical constructions - Scales. Construction of curves like ellipse, parabola, cycloids and involutes	• Understand the Basics of engineering graphics	8
II- Projection of points, lines and surfaces	General principles of presentation of technical drawings as per BIS - Introduction to Orthographic projection - Naming views as per BIS - First angle projection. Projection of points. Projection of straight lines located in first quadrant (using rotating line method only). Projection of plane surfaces like polygonal lamina and circular lamina. Drawing views when the surface of the lamina is inclined to one reference plane.	• Have a good knowledge of Basics of engineering graphics	8
III- Orthographic projections	Orthographic projections - Conversion of orthographic views from given pictorial views of objects, including dimensioning. Free hand sketching of Orthographic views from Pictorial views.	• Understand Conversion of Produce and interpret 2D & 3D drawings.	8
IV- Isometric projections	Isometric projection - Isometric scale - Isometric views of simple solids like prisms, pyramids, cylinders and cones. Introduction to perspective Projections.	• Understand Conversion of Produce and interpret 3D & 2D drawings	11
V- GD&T	Maximum Material Condition, Least Material Condition Datum control, Form tolerance, orientation tolerance, profile tolerance, location tolerance, runout tolerances, Surface roughness tolerance.	• Able to understand importance of MMC, LMC and various tolerance parameters.	10

Books Recommended

Text Books

1. Mechanical Measurements Beckwith Marangoni and Lienhard, John H. Lienhard V 6th Ed., 2006.
2. Engineering Metrology R.K. Jain Khanna Publishers 1994

3. Robert L. Norton “Machine Design- an integrated approach”, Pearson Education, 2nd edition.
4. Spotts M.F., Shoup T.E “Design and Machine Elements”, Pearson Education, 8th edition,2006

Reference Books

1. Engineering Metrology I.C.Gupta Dhanpat Rai Publications 2013
2. Industrial Instrumentation Alsutko, Jerry. D.Faulk Thompson Asia Pvt. Ltd 2002
3. Bhatt N.D and Panchal V.M, "Engineering Drawing: Plane and Solid Geometry", Charotar Publishing House, Anand-3001, 2007.
4. Thomas E. French, Charles J.Vierck and Robert J.Foster, "Engineering Drawing and Graphic Technology”, McGraw- Hill Book company 13th Edition.1987.
5. Venugopal K., "Engineering Graphics", New Age International (P) Limited, New Delhi, 2008.

Web Links

Course Title: Engineering Graphics Lab

Course Credit: 01 (0-1-0)

Course code ME803L **Max. Marks : 50 (35I+15E)**

Objectives: Exposure to develop graphic skills for communication of concepts, ideas and design of Engineering products.

Learning Outcomes:

1. To expose them to existing national standards related to technical drawings
2. Able to understand the terminology used in engineering drawings
3. Identify the different tools used in engineering drawings
4. Practically follow the procedure of converting 3d to 2d
5. Practically follow the procedure of converting 2d to 3d

List of Practical’s

1. Identification of different tools used in engineering drawings
2. Use of terminology used in technical drawings
3. Observation of national standards related to technical drawings
4. Development of solids surfaces to projections
5. Exercise of level-I conversion from Isometric projections to orthographic projections
6. Exercise of level-II conversion from Isometric projections to orthographic projections
7. Exercise of level-III conversion from Isometric projections to orthographic projections
8. Exercise of level-I conversion from orthographic projections to Isometric projections
9. Exercise of level-II conversion from orthographic projections to Isometric projections
10. Exercise of level-III conversion from orthographic projections to Isometric projections

Course Title: Technical Publications Manual

Course Credit: 04 (4-0-0)

Course code AE809 **Max. Marks: 100 (30I+70E)**

Objectives

The purpose of the course is to provide basic knowledge and exposure to the concepts of Technical Publications in the aerospace industry that deals with aircraft a complicated machine, have several mechanisms with several parts. When all parts together assembled out of which only one part is identified, so while assembling, disassembling, maintaining these parts huge confusion will be there, here the technical publication guide to maintenance engineer, provides a systematic procedure to do activities and uses pictorial views(illustrations) to explain various configuration to reduce content size. It aims to familiarize the participants with the Technical Publication to ensure that they have the technical skills needed to perform the job efficiently and smoothly.

Learning Outcomes

- Able to know different aircraft maintenance manuals (Theory)
- Able to understand aircraft illustrated parts Catalog (Theory)
- Able to learn the component maintenance manual (Theory)
- Able to explain structural repair manual (Theory)
- Able to recognize wiring manual and service bulletins (Theory)

Unit	Topic	Key Learning	Hours
I- Aircraft Maintenance Manual	Aircraft maintenance manual - definition, purpose, use, page blocks numbering, front matter, table of content, Part I of AMM - Systems Description Section, Part II of AMM- maintenance practices, maintenance practices, servicing, removal/installation, adjustment /test, inspection/check, cleaning/painting, repairs,	• Learn the maintenance aircraft maintenance manuals	10
II - Component Maintenance Manual	Component maintenance manual - definition, purpose, use, page blocks numbering, Structure, front matter information, description and operation, testing and fault isolation, schematics and wiring diagrams, disassembly, cleaning, check, repair, assembly, fits and clearances, special tools, fixtures, and equipment, illustrated parts list, special procedures, removal, installation, servicing, storage (including transportation), rework (service bulletin accomplishment), Maintenance Task-Oriented Support System (MTOSS)	• Differentiate between component and maintenance manuals	15
III – Structural Repair Manual	Structural repair manual - definition, purpose, use, page blocks numbering, structure, standard practices and structures, structural identification, allowable damage, repairs	• Learn the structural repair manual	10
IV – Aircraft Illustrated Parts Catalogue	Aircraft illustrated parts catalog - definition, purpose, uses, illustrations, catalog table of contents, chapter table of contents, numerical index, specification cross-reference	• Understand the use of aircraft illustrated parts catalog	10
V - Wiring Diagram Manual / Service Bulletins	Definition of wiring manual, wiring diagram manual, schematic manual, wiring list, service bulletin, types, purpose, service letter	• Explore the different wiring diagram and service bulletins	15

Books Recommended

Text Books

1. Aviation Maintenance Technician Handbook: FAA-H-8083-30
2. ATA Specification 2200 (iSpec 2200)
3. Aviation instructor's handbook

Reference Books

1. Aircraft Maintenance Manuals
2. Components Maintenance Manuals
3. Aircraft Illustrated Parts Catalog

Web Links

Course Title: Technical Publications Standards

Course Credit: 03 (3-0-0)

Course code AE810 **Max. Marks : 100 (30I+70E)**

Objectives

The purpose of the course is to provide basic knowledge and exposure to the concepts of Aerospace Technical Publication writing that includes creation, update, and publication of different types of user manuals that are used at the time of maintenance of an aircraft. It aims to familiarize the participants with the different types of publication standards used in the creation of technical publications. To ensure that they have the technical skills needed to create the technical publication efficiently and smoothly.

Learning Outcomes

- Able to understand publication standards (Theory)
- Able to know the scope of ATA (Theory)
- Able to learn the ATAiSpec2200 process (Theory)
- Able to explain S1000D documentation (Theory)
- Able to use the simplified technical dictionary (Theory)

Unit	Topic	Key Learning	Hours
I - Technical Publication Standards	Definition of standards, the purpose of the standard, types of standards, industry direction for standards, civil and military standards, an industry organization	• Recognize the different writing standards	8
II - Scope of ATA and Emerging Trends	ATA definition, the scope of the air transportation industry, aircraft maintenance requirements, functional areas of standards, Interactive Electronics Technical Manual (IETM), Augmented Reality (AR) and Virtual Reality (VR).	• Know the scope of ATA standard • Exploring the new trends in publication	8
III – ATA iSpec 2200	ATA100/ATA 2100, ATAiSpec2200, different types of manuals, page blocks, aircraft maintenance task-oriented support system, manual front matter data, table of contents, illustrations, cross-references links, revisions	• Learn the ATAiSpec standard for technical writing	8
IV – S1000D	Introduction to the specification, purpose, scope, how to use the specification, tailor for a specific project, documentation process, information generation, authoring, writing and illustration rules, warnings, cautions and notes, information management, standard numbering system, generation of publications	• Understand the use of S1000D in the creation of technical publications	11
V - Simplified Technical English	STE definition, history, purpose, generation of publications, writing rules, words, noun cluster, verb, sentences, procedural writing, descriptive writing, safety instructions, punctuation and word counts, writing practices, the process of using a dictionary	• Explore the use of STE dictionary	10

Books Recommended

Text Books

1. Aviation Maintenance Manuals

2. ASD-STE100
3. S100D Guide Book

Reference Books

1. ATA Specification 2200 (iSpec 2200)

Web Links