



US-INDIA AVIATION COOPERATION PROGRAM



HI-TEC SYSTEMS, INC.

Aviation Standards and Processes Technical Training

Proposed Courses

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Proposed Courses

Pre-requisites: All participants must have technical education: BE or 3 year Diploma or equivalent experience will be considered in some cases. Besides that, the person must be currently employed in a role in the departments as given for each course.

Course No.	1
Course Name:	Standards
Provider:	Purdue University
Duration:	2 days
Target Audience:	Industry
Prerequisite	Engineering/Manufacturing/Quality/Purchasing/Certification/Repair
Objective:	Understand the basics of various standards used in the Aerospace Industry
Content:	Introduction to standards, their need and application SAE, Aerospace council and their standards AMS and AS MilSpec Role of other industry generic standards such as ASTM, UNS Qualification standards such as RTCA Hierarchy of requirement, PO, Drawing, Specific standards, General standards
Course No.	2
Course Name:	Design
Provider:	GE
Duration:	4 days
Target Audience:	Industry
Prerequisite	Engineering/Manufacturing/Quality/Certification/Repair
Objective:	Geometric Dimensioning and Tolerancing
Content:	Background to this subject; Concept of dimensioning, linear/geometrical tolerances; Geometrical tolerances-concentricity, parallelism, circularity, Datums-Primary, Secondary and Tertiary;

Interpretation of tolerances, Examples, Geometrical Tolerances in Design and Engineering, Geometrical Tolerances in Manufacturing, Quality Control and Assurance, Continuous Improvements, DFM using GD&T.

Course No.	3
Course Name:	Metallurgy
Provider:	Qualease
Duration:	4 days
Target Audience:	Industry
Prerequisite	Engineering/Quality/Purchasing/Certification/Repair
Objective:	Composition, shapes, properties, testing, certification of Steel, Nickel based, Aluminum based and Titanium based alloys
Content:	i. Metals: A History, ii. Extractive Metallurgy, iii. Solidification of Metals, iv. Metal Forming; v. Mechanical Properties and Their Measurement; vi. Steels and Cast Irons: Applications and Metallurgy, vii. Heat Treatment of Steel; viii. Case Hardening of Steel; ix. Strengthening Mechanisms, x. Nonferrous Metals: Industrial Applications and Properties; xi. Joining, xii. Corrosion and Corrosion Prevention, xiii. Quality control and Failure Analysis, xiv. Materials characterization and the selection process Glossary, xv. Specific examples of AMS specs, composition, properties, qualifications, xvi. Testing and documentation necessary to get local material certified, xvii. Concept of heat lot, xviii. Importance of other specifications called out in the document.

Course No.	4
Course Name:	Lean Manufacturing – Six Sigma
Provider:	GE
Duration:	3 days
Target Audience:	Industry
Prerequisite	Engineering/Manufacturing/Quality/Purchasing/Repair
Objective:	Provide an understanding of the concepts and processes of Six Sigma and its advantages for manufacturers.

Content: Evolution of change process: What is Six Sigma ?, What is Lean ?, What is Lean Six Sigma ?, Benefits of Lean Six Sigma, Transactional and Manufacturing Lean, Process of Lean, Lean tools- overview, 5S and 7 Wastes, Lean as a culture (perfection)- CEO to workman engagement, Lean in Manufacturing world, Case Study, Simulation Exercise (Teams), Report outs by mini teams from the audience

Course No. 5

Course Name: Fasteners

Provider: Purdue University

Duration: 4 days

Target Audience: Industry

Prerequisite Engineering/Manufacturing/Quality

Objective: Familiarization of various fastener procedures

Content: **Fasteners – Aero structure assembly:** Upon completion of this course, the student will be familiar with the following fastener drilling, countersinking, installation, inspection and removal procedures for:

- a. Solid rivets
- b. Blind rivets.
- c. Lockbolts.
- d. Hi-loks.
- e. Blind bolts.
- f. Nut plates.

Course No. 6

Course Name: Composite Manufacturing

Provider: Purdue University

Duration: 4 days

Target Audience: Industry

Prerequisite Engineering/Manufacturing/Quality

Objective: Provide an overview of composite materials and their applications in aircraft manufacturing.

Content: An in-depth study on mechanical behavior of composite materials as well as an introduction to various disciplines in aircraft composites. Topics covered include: Material Properties; Tooling and Manufacturing; Micromechanics; Anisotropic elasticity; Clas

Course No. 7

Course Name: **First Article Inspection**

Provider: **Qualease**

Duration: **4 days**

Target Audience: **DGCA /Industry**

Prerequisite **Engineering/Manufacturing/Quality/Purchasing/Certification/Repair**

Objective: Provide an understanding of FAI requirements

Content: AS9102 Aerospace First Article Inspection Requirement
Overview
Part Requirements
Assemblies
Sub Assemblies
Details
Characteristic Accountability
Forms and Flow
Specifications and sub documents
Inspection Methods
Partial and Recurrent FAI
Planning & Examples

Course No. 8

Course Name: **Inspection of Welding Process**

Provider: **Honeywell**

Duration: **2 days**

Target Audience: **DGCA /Industry**

Prerequisite **Manufacturing/Quality/Certification/Repair**

Objective: Provide and understanding of how to detect defects in visual weld inspections.

Content: Training Material and guidance for Visual Weld inspectors to perform visual inspection on all type of weld in Aerospace. It helps the trainees to have a better understanding of Surface Discontinuities, Surface Defects, Welding Terms, Welding symbols, and Visual Inspection Requirements. The training also covers the significance of weld discontinuities and Defect Detection techniques.

Course No. 9

Course Name: NADCAP

Provider: Honeywell

Duration: 1 day

Target Audience: DGCA /Industry

Prerequisite Manufacturing/Quality/Purchasing/Certification/Repair

Objective: Provide an understanding of NADCAP certification and processes.

Content: Background f Nadcap: Who, what, why?

- Nadcap and Honeywell
- Nadcap accreditation process
- Nadcap audit criteria
- Nadcap audit process
- Supplier responsibilities
- Nadcap resources that can help new suppliers

Course No. 10

Course Name: Approval – Code Compliance

Provider: Honeywell

Duration: 2 days

Target Audience: DGCA/Industry

Prerequisite Certification/Repair

Objective: Code Compliance – India, US and Global

Content: *To be provided*

Course No. 11

Course Name: Compliance Certification - Part Manufacturer Approval

Provider: University of Kansas

Duration: 4 days

Target Audience: DGCA/Industry

Prerequisite Engineering/Manufacturing/Quality/Purchasing/Certification/Repair

Objective: Familiarization of Parts Manufacturer Approval (PMA) manufacturing process

Content: This course will introduce the aerospace parts manufacturer suppliers to the PMA application process and the strategic roadmap for obtaining the approval. Upon completion of this course, students will be able to learn the details of PMA process, the difference between STC and PMA, the administrative procedures, how to fill in the forms and where to submit, and post approval process.

Course No. 12

Course Name: FAR 145

Provider: University of Kansas

Duration: 4 days

Target Audience: DGCA/Industry

Prerequisite Engineering/Manufacturing/Quality/Purchasing/Certification/Repair

Objective: Familiarization and application of FAR 145

Content: This course will introduce the students to the details of FAR 145, its application process. Upon completion of this course, students will be able to learn the needs for aerospace standards, standard forming bodies and the application of standards.

Course No. 13

Course Name: Compliance Certification - FAA Requirements

Provider: Honeywell

Duration: Unique FAA requirements – 2 days

Target Audience: DGCA/Industry

Prerequisite Manufacturing/Quality/Purchasing/Certification

Objective: Familiarization of Unique FAA requirements for new product manufacturing

Content: Overview of FAA regulatory authority and hierarchy; Key compliance elements: control of: product, process, people, nonconforming material/scrap, fidelity of documents, etc. Impact of noncompliance: falsification of records, civil penalty, criminal penalty, SUP investigation.

Course No. 14

Course Name: EH and S

Provider: Pratt & Whitney

Duration: 2 days

Target Audience: DGCA/Industry

Prerequisite Engineering/Manufacturing/Quality/Purchasing/Certification/Repair

Objective: Environment, Health and Safety training

Content: *To be provided*

Course No. 15

Course Name: Heat Treatment

Provider: PRI

Duration: 3 days

Target Audience: Industry

Prerequisite Engineering/Manufacturing/Quality/Purchasing/Certification/Repair

Objective: To understand the requirements of heat treatment processes and
To identify the additional requirements of the Aerospace Industry.

Content: Machinery and equipment Calibration, installation Process steps, parameters, inert gases, vacuum Critical issues to keep in mind Testing and qualification. Temperature time graphs AMS, AS, ASTM and Mil standards that apply For the processes "Solution, precipitation and age hardening, austenitizing, annealing and quenching Carburizing, Nitriding"

Course No. 16

Course Name: **Standards 101**

Provider: **University of Kansas**

Duration: **1 day**

Target Audience: **DGCA/Industry**

Prerequisite **Engineering/Manufacturing/Quality/Purchasing/Certification/Repair**

Objective: A general introduction to the standards, standard bodies, application of standards..

Content: Introduction to Aerospace Standards, Standard Bodies and Application of Standards This course will introduce the students to aerospace standards, their applications and significances to manufacturers, OEMS, suppliers and airlines, and standards developing international organizations. Upon completion of this course, students will be able to learn the needs for aerospace standards, standard forming bodies and the application of standards.

Course No. 17

Course Name: **AS9102**

Provider: **PRI**

Duration: **3 days**

Target Audience: **DGCA/Industry**

Prerequisite **Manufacturing/Quality/Purchasing/Certification**

Objective: Quality for Aviation - AS9102 Corrective Preventive Action

Traceability

Content: This course covers the roles and responsibilities of the technical project manager, with an emphasis on Type certification Project Management. Topics will include partnerships for safety plan, project specific plans, project notification, overseeing project activity and status, and project reporting.

Course No. 18

Course Name: Flow Down Requirements

Provider: PRI

Duration: 1 day

Target Audience: Industry
Prerequisite Manufacturing/Quality/Purchasing/Certification

Objective: Flow down the requirements down to the shop floor, manufacturing process from raw material receiving to shipment in cell structure

Content: The manufacturing process from raw material receiving to shipment in cell structure including elements of an effective planning system, flow down requirements down to shop floor, manufacturing process from raw material, receiving to shipment in cell structure, specification verification, common pitfalls, risk assessment, purchase order, periodic testing requirement, process capability.

Course No. 19

Course Name: Aircraft Certification Systems Evaluation Program (ACSEP)

Provider: University of Kansas

Duration: 2 days

Target Audience: DGCA

Prerequisite Engineering/Manufacturing/Quality/Purchasing/Certification/Repair

Objective: Upon completion of the course, the participants of the part suppliers will be able to identify the ASCEP process requirements in order to comply with 14 CFR and establish routine maintenance and operational processes through recurring evaluations of a facility's quality management system.

Content: Purpose of ACSEP, Order 8100.7, ACSEP scheduling, evaluation processes, six-system elements, system elements for delegated facilities, evaluation notes, non-compliance types. Freedom of Information Act, daily conduct of evaluation methods, database for further information

Course No. 20

Course Name: Technical Project Management

Provider: Hi-Tec

Duration: 2 days

Target Audience: DGCA

Prerequisite Engineering/Manufacturing/Quality/Purchasing/Certification/Repair

Objective: Provide an understanding of the roles and responsibilities of the technical project manager.

Content: This course covers the roles and responsibilities of the technical project manager, with an emphasis on Type certification Project Management. Topics will include partnerships for safety plan, project specific plans, project notification, overseeing project activity and status, and project reporting.

Course No. 21

Course Name Electronic Documentation

Provider To be decided

Duration To be decided

Target Audience DGCA

Content To be Provided