



COURSE TITLE: AIRCRAFT QUALITY CONTROL, QUALITY ASSURANCE AND CERTIFICATION

Credit Units: 03

L	T	P/S	SW/ FW	TOTAL CREDIT UNITS
3	-	-	-	3

Course Code: AERO303

Course Level: UG

Course Objectives

In aerospace engineering and manufacturing, quality control and quality assurance is a set of measures taken to ensure that defective airborne / ground aviation products or services are not produced and that the aviation design meets airplane performance requirements. Course includes the regulation of the quality of raw materials, assemblies, products and components; services related to production; and management, production, and inspection processes as per international standards.

Pre-requisites: Elements of Aerospace Engineering

Course Contents/Syllabus:

	Weightage (%)
Module I : Introduction	15
Descriptors/Topics Meaning of Quality and quality improvement, need of automobile & Aviation Quality, Introduction to Statistical methods for quality control, Process Capability for aerospace applications.	
Module II : Quality Control	15
Descriptors/Topics : Statistical Quality Control, Ishikawa diagram, control charts, Control charts for attributes & variables, Moving average chart for aviation Quality systems.	
Module III : Production Control	15
Descriptors/Topics : Acceptance Sampling, OC curve, Sampling Plan, Producer's risk, Consumer's risk, Average Quality Level, AOQL, Design of Single & double sampling plan.	

Module IV : Quality Assurance	35
Descriptors/Topics : Need of Aerospace Quality Assurance, Quality Audit, total quality management, ISO, Concept of Zero defect, ISO-9000 quality systems, IAQG, AS-9100 Aerospace Standards.	
Module V : Aerospace Certification	20
Descriptors/Topics : DoD, FAA, DGCA, CEMILAC, Aerospace Quality manuals, aircraft airworthiness, documentation, Safety practices & standards.	

Student Learning Outcomes:

- Apply QC / QA techniques for testing and certification of aircraft and its component.
- Define ISO-9001 & AS-9100 Aero Standards.
- Evaluate the requirements of aircraft components for certification.
- Validate requirements of FAA, DoD, DGCA & CEMILAC.
- Prepare Quality manuals and documents for certification of airborne vehicles both civil and military.

Pedagogy for Course Delivery: Session Plan / course-material uploading, Class-room teaching associated with assignments, quiz, viva-voce and evaluation.

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	Total
100	NA	100

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment – 30					End Term Examination
Components (Drop down)	A	CT	S/V/Q	HA	70
Weightage (%)	5	10	8	7	70

Text & References:

Text:

- EL Grant & RS Leavenworth, “Statistical Quality Control”, McGraw Hill Co. M. Mahajan, “Statistical Quality Control”, Dhanpat Rai & Co.
- Kanishka Bedi “Quality Management”, Oxford University Press
- Total Quality Management, “Besterfield DH et al.” Pearson Education.
- O.P. Khanna, “Statistical Quality Control”, Dhanpat Rai & Co. R.C. Gupta, “Statistical Quality Control”, Khanna Publishers

References:

- Amitav Mitra, “Fundamentals of Quality Control”, Pearson Education
- Feigenbaum, “Total Quality Control”, McGraw Hill & Co.
- Suresh Dalela, “Quality Systems”, Standard Publishers & Distributors
- Montgomery DC, “Introduction to Statistical Quality Control”, John Wiley & Sons Inc.
- Stephan B. Vardeman, J Marcus Jobe, “Statistical QA Methods for Engineers”, John Wiley & Sons Inc. Taylor J.R., “Quality Control systems”, McGraw Hill Int. Education
- K.C. Arora, “Total Quality Management”, S.K. Kataria & Sons.
- Modern Methods of Quality Control & Improvement, “ Wadsworth HM et al.” John Wiley & Sons Inc.

Any other Study Material:

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