COMPUTER AIDED AIRCRAFT ENGINEERING DRAWING

V Semester: AE

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
AAE106	Core	-	-	3	2	30	70	100

Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 36	Total Classes: 36

I. COURSE OVERVIEW:

This course will also provide the Computer aided design laboratory provides a strong foundations of computer aided designing tool and students will learn the implementation of solid modeling using CATIA. It enables students to master the fundamentals of advanced modeling techniques, sketcher tools, base features, drafting, sheet metal and surface design workbenches. This course focuses on giving the foundations of engineering design and making it very useful for getting the student ready for product manufacturing industry.

II. OBJECTIVES:

The course should enable the students to:

1. Understand the concepts and various tools used in design module
2. Understand the design of typical structural components.
3. Understand the design of typical aircraft components.
4. Understand the design of three view diagram of a typical aircraft.

III. COURSE OUTCOMES:

After successful completion of the course, students should be able to:

CO 1	**Choose** appropriate tools and profiles for developing the required sketch using the Sketcher workbench.	Apply
CO 2	**Make use of** wireframe elements, surfaces, trim elements and power copies for constructing the complex surfaces.	Apply
CO 3	**Utilize** different geometric and dimensioning symbols and industry standards for the preparation of technical mechanical drawings.	Apply
CO 4	**Select** appropriate tools available in assembly workbench for creating three-dimensional assemblies incorporating multiple solid models.	Evaluate
CO 5	**Build** components using sketch Based features, perform sheet metal operations and correctly organize the tree for having maximum compatibility for editing or modifying the model.	Create
CO 6	**Develop** a model from drawing provided and draw conclusions for designing various aircraft components by utilizing different workbenches.	Create

IV. SYLLABUS:

LIST OF EXPERIMENTS

Week-l	SKETCHER

Interface, Sketch Tools, View Tool bar, Profile Tool bar, Operation Tool bar, Tools , Constrain tool bar, Transformation Tool bar, User Selection Filter, Standards, Visualizations.

Week-2	PART DESIGN

Sketch Based Features, Dress up Features, Transformation Features, Reference Elements, Measure, Thickness, Boolean Operations.

Week-3	SHEET METAL DESIGN

Walls, Cutting and Stamping, Bending, Rolled Walls,

Week-4	**SURFACE DESIGN**
Surfacer, Operations, Wireframe, Replication.	
Week-5	**ASSEMBLY**
Product Structure Tools, Constrains.	
Week-6	**GD&T**
Introduction to Geometric Dimensioning and Tolerance, Weld Symbols, GD&T Symbols, Types of Tolerances, Types of views, Roughness Symbols.	
Week-7	**DRAFTING**
Views, Annotations, Sheet Background.	
Week-8	**DESIGN OF AIRCRAFT WING**
Design of any two types of Aircraft structures	
Week-9	**DESIGN OF FUSELAGE**
Design of fuselage with internal components	
Week-10	**DESIGN OF NOSE CONE**
Design of Nose cone structures	
Week-11	**DESIGN OF LANDING GEAR**
Design of Main landing gear and nose landing gear	
Week-12	**REVISION**
Revision	

Reference Books:

1. http://www.ehu.eus/asignaturasKO/DibujoInd/Manuales/R12_manual_catia_v5.pdf
2. http://www.engr.psu.edu/xinli/edsgn497k/TeaPotAssignment.pdf
3. http://file1.engineering.com/pdf/PartDesign.pdf
4. https://www.3ds.com/fileadmin/general/Terms/Licensed-Program Specifications /CATIA /CATIA_ V5R18.pdf

Web Reference:
1. http://www.iare.ac.in

SOFTWARE AND HARDWARE REQUIREMENTS FOR A BATCH OF 30 STUDENTS:

SOFTWARE: CATIA V5

HARDWARE: 30 numbers of Desktop Computers with 4 GB RAM