# Aerostructures Course No. 40620 Credit: 1.0

|  |  |  |  |
| --- | --- | --- | --- |
| **Student name:** |  | **Graduation Date:** |  |

Pathways and CIP Codes:Aviation Production (15.0000) - Production Strand

Course Description: An **application level** course designed to teach students a general overview of assembly techniques used in aviation.

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Aviation Assembly

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Demonstrate how to safely use hand tools used in aerospace manufacturing. |  |
| 1.2 | Identify and define Foreign Object Damage (FOD) and the impact on finished product. |  |
| 1.3 | Apply all shop safety standards – breaking sharp edges, eye/hearing protection, unplug air hose when changing drill bits/rivet sets. |  |
| 1.4 | Utilize industry specific tools and aerospace specific materials. |  |
| 1.5 | Understand the use of blueprints and picture sheets used in the aerospace manufacturing. |  |
| 1.6 | Utilize precision measuring instruments. |  |
| 1.7 | Identify and select fasteners, sets and retainer springs used in aviation industry based on engineering drawings. |  |
| 1.8 | Identify most common materials used in aircraft manufacturing such as sheet metal. |  |
| 1.9 | Demonstrate layout techniques for sheet metal. |  |
| 1.10 | Apply layout techniques to industry specific project within tolerance of +/- .03”. |  |
| 1.11 | Calculate parts (angle, nutplates, fasteners) locations based on engineering drawings |  |
| 1.12 | Demonstrate net trim skills. |  |
| 1.13 | Demonstrate temporary assembly techniques. |  |
| 1.14 | Demonstrate drilling techniques. |  |
| 1.15 | Identify correct drill bit and motor. |  |
| 1.16 | Perform drilling a perpendicular hole. |  |
| 1.17 | Demonstrate de-burring techniques. |  |
| 1.18 | Employ and practice techniques used in fastener removal and installation |  |
| 1.19 | Demonstrate effective conventional rivet and blind fastener installation. |  |
| 1.20 | Install counter sunk rivet. |  |
| 1.21 | Describe and discuss the elements of assembly in terms of quality and inspection. |  |
| 1.22 | Utilize techniques used in application of non-conforming aspects. |  |
| 1.23 | Describe proper demonstration of documentation of FAA guidelines and related costing features. |  |

## Benchmark 2: Aerospace Mechanical assembly

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Describe the hazards and PPE associated with sealants |  |
| 2.2 | Identify the appropriate sealant for each project |  |
| 2.3 | Demonstrate the basic concepts associate with aerospace sealant processes |  |
| 2.4 | Identify guidelines for proper application of sealant including issues of surface temperature, sealant expiration, and sealant consistency |  |
| 2.5 | Install and properly seal a direct ground stud installation |  |
| 2.6 | Understand principles and application of torque |  |
| 2.7 | Install and remove close to tolerance specialty fasteners |  |
| 2.8 | Demonstrate special techniques for drilling and countersinking on a curved surface |  |
| 2.9 | Practice fastener installation on a curved surface |  |
| 2.10 | Produce close tolerance holes in composite materials and materials harder than aluminum |  |
| 2.11 | Demonstrate various types of patch repairs |  |
| 2.12 | Perform teamwork skills to Layout and produce project |  |
| 2.13 | Conduct Team Bucking Skills |  |
| 2.14 | Install stringers and hat sections |  |
| 2.15 | Describe and discuss the elements of assembly in terms of quality and inspection |  |
| 2.16 | Utilize techniques used in application of non-conforming aspects |  |
| 2.17 | Describe proper demonstration of documentation of FAA guidelines and related costing features |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

(785) 296-4908

[pathwayshelpdesk@ksde.org](mailto:pathwayshelpdesk@ksde.org)



900 S.W. Jackson Street, Suite 102

Topeka, Kansas 66612-1212

[https://www.ksde.org](https://www.ksde.org/)

The Kansas State Department of Education does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities and provides equal access to any group officially affiliated with the Boy Scouts of America and other designated youth groups. The following person has been designated to handle inquiries regarding the nondiscrimination policies: KSDE General Counsel, Office of General Counsel, KSDE, Landon State Office Building, 900 S.W. Jackson, Suite 102, Topeka, KS 66612, (785) 296-3201.