# Purpose

## This *Statement of Work* (SOW) specifies the tasking and grading for AE460A/B.

## This is not intended to be a text on technical report writing or English composition. It is only requirements for Format of the report. Further guidance may be found in Writing for Science and Engineering – Papers, Presentations and Reports, Second Edition, by Silyn-Roberts, Heather or ENGINEERING REPORT WRITING, Third Edition, by John F. Brown. Both are available from the SDSU Library.

# Assignments

## Design Reports

The *Interim Design Repor*t (AE 460A) and the *Final Design Report* (AE 460B) documents the design IAW the assigned *System Requirements Document (SRD)* and shall be submitted per the class schedule.

## Design Reviews

Design Reviews and team meetings will be conducted throughout the year.

## Technical Memorandums

### Technical Memorandums (TM) shall be submitted to the instructor for review and approval.

### Each team member is required to author a minimum of one TM.

### After the approval of the TM, no changes may occur to its technical content, without Configuration Change Board (CCB) approval.

## System Requirements Review

### Teams will present the system requirements during the review, showing the allocation and the results of each requirement.

## Peer Design Review

### Peer Design Review occur during the fall and shall be performed IAW the *Presentation Requirements.*

## Preliminary Design Review

### Preliminary Design Review (PDR), with aerospace industry professionals, occurs during the spring and shall be performed IAW the *Presentation Requirements*.

# Team Organization



# Configuration Change Board

Configuration Change Board (CCB) shall be held whenever a Technical Memorandum, and its technical contents, need to be revised.

## CCB will be chaired by the Project Manager and the Instructor.

## All team members shall be in attendance to review and concur with the change.

## Revised Technical Memorandums shall be disseminated to the team as agreed upon in the CCB.

# Work Breakdown Structure

## Work Breakdown Structure (WBS) spreadsheet will be provided by the Instructor in order to permit the assignment of grades for individual work on team projects. The Percent Participation is entered for each line item for each team member, with each line item adding to 100%. **Do not change the WBS spreadsheet format.**

## The Project Manager is responsible for completing and submitting the WBS to the Instructor for approval.

## All team members shall sign the WBS worksheet next to their name to acknowledge their tasking on the team, as shown in Figure 5‑1.



Figure 5‑1 Signature and Point Summary

## A WBS hardcopy shall be submitted early in the semester; due date to be specified by the Instructor.

## The WBS may be modified during the semester, but it shall be signed by all members acknowledging the change and a hardcopy shall be submitted to the instructor.

## A final signed hardcopy shall be included in the Interim and Final Report.

## When the report is submitted at the end of each semester, the WBS shall be submitted electronically (in Excel) to the Instructor with the following requirements **(Do not change the WBS spreadsheet format)**:

### File name shall be “X-WBS-MM-DD-YYYY.xlsx” where X = team number and MM-DD-YYYY is the date of submittal.

# Grading

## Scoring is based on a 0 to 10 scale as shown in Figure 6‑1. This same scale is used for all evaluations during the course, with a final grade determined at the end of the semester. Note that the spring grades are harder to achieve than the fall. This takes into account the expectation that the student improves during the second semester with his/her knowledge and experience.



Figure 6‑1 Grade Scale

# General Content Requirements

## All assumptions and approximations should be clearly stated and supporting rationale should be stated with each assumption and approximation.

## Sample Calculations

### Sample calculations shall be shown in the body of the report when specified.

### One complete example of each calculation shall be shown when specified.

### Each sample calculation shall be shown with all input values and output values.

### Each sample calculation shall show all units, including any necessary unit conversions.

### The procedure of moving from one step to the next must be described and all intermediate values, which are the outputs of steps of the procedure, must be shown.

### Graphs or tables used to obtain values for calculations shall be copied from the original source or may be recreated to match the report format.

### Even though the two procedures are similar for drag, a sample calculation shall appear for each subsonic, transonic and supersonic (if applicable) drag calculation.

### Only one example calculation is required for each type of drag. For example, there should be at least wing drag, body drag, empennage drag, nacelle drag, flap drag, landing gear drag, canopy drag, store drag, trim drag.

### Only one sample calculation needs be provided for performance analysis for a given configuration, i.e. only show one set of examples for one design mission/configuration. Example shall be documented in the first section that it is used.

# General Format Requirements

## Paper: Use white, 24 lb paper (minimum) for the report.

## Report binder shall be a **three-D-ring** type. Front cover of the binder shall have a clear pocket to insert the report cover.

## Report Cover: Shall include the following content: Team/Aircraft name and team number. Author names, academic affiliation, city, and state should follow on separate lines below the title. Author names are centered, and affiliations are centered and in italic type. Paper color, type, font type and font size not specified. No extra credit for nice artwork.

## Title Page: Duplicate of the report cover, but placed before the front matter.

## Use tabs for chapters, references, and each appendix, plus any others that would help the reader.

## Footer: Shall include a minimum of team name and team number.

## Front Matter shall consist of Table of Contents (TOC), including Table of Figures, Table of Tables and a Table of Symbols. TOC shall show details to the third level, i.e. X, X.X, X.X.X.

## Page numbers

### Report cover and title page shall not have page numbers

### Front Matter shall use lower case Roman numeral at the page bottom, center justified.

### Page numbers shall be formatted with X of XX, at the page bottom.

## Font

### Major headings shall be bold 12-point Arial font.

### Subheadings are 11-point Arial font, flush left.

### Body Text: Report body text shall be formatted with black, Arial 11 pt. font.

## Spacing: Report Body Text shall use 1.5 spacing. Tables and graphs do not require 1.5 spacing, but they shall be a readable font and adequate spacing.

## Margins: Use 1” margins on all sides

## Figures, Tables and Equations (see examples provided by the instructor)

### All figures, tables and equations of the report shall be identified by the chapter number and a serial number; i.e., the fifth figure of Chapter 3 would be Figure 3-5.

### Tables shall have the caption above the table, Figures and Equations shall be below.

### Table that span more than page, shall have the headers repeated at the top of each page.

### Figures and Tables shall be placed in the report so that the bottom is on the right edge or the bottom of the report.

### Final format of the figures, tables and equations shall have readable font as opposed to inserting a graph and scaling it down to fit in the report.

### Graphs shall be titled and show the configuration, the altitude, the weight, and the quantities graphed; i.e. \_\_\_\_\_\_\_\_\_ vs.\_\_\_\_\_\_\_\_. Altitude and/or weight may be omitted if they appear as parameters on the graph itself.

### Graphs shall have vertical and horizontal grid lines so that they can be easily read.

### Scales for cartesian graphs should be chosen so that each division on the paper represents 1, 2 or 5 times, or some power of 10.

### Scales shall show the units of the quantities graphed.

### Omit points on graphs, unless calling out a specific point resulting from analysis.

## Symbols should be consistent throughout and limited to the English and Greek alphabets, upper and lower case.

## If material is copied from other sources, symbols should be altered as necessary to conform to your report.

## Word abbreviations are acceptable IAW ASME 14.38. When it doubt, spell it out!

## References shall be cited throughout the report and listed at the end of the report and numbered. Use IEEE Format – recommend using Word bibliography tool with IEEE format to easily cite the references.

# Correspondence

## E-Mail - for simple and short questions only please

### Subject line shall begin with “TEAM X: (insert rest of subject)”. Emails are filtered by team via the subject line.

### Extensive detailed email questions, especially with large attachments, will most likely be deferred to in-class or after-class discussions.

### All attached file shall have the team number on the beginning of the file name, i.e. X-(insert rest of file name), where X is the team number.

## Miscellaneous Submitted information design questions for instructor to review

###  Shall contain the same information as the Technical Memo format to easily identify the team and author. Stapling your team’s “personalized” memo as a coversheet to hand written papers is acceptable.

### All sheet shall be stapled or paper-clipped, or other professional binding method.