

SENIOR DESIGN

**Syllabus and Guide
for
AV 3610, 4610, 4620**

Instructor: Nolan Clifford

**Aviation Technology - Maintenance Management
Engineering Technology and Education Department
College of Engineering
Utah State University
Logan, UT**

TABLE OF CONTENTS

COURSE SYLLABUS	3
Course Description	
Course Objectives	
Organization	
Grading	
Budget	
Philosophy	
Course Goals	
How the Course is Conducted	
Why Your Senior Project Should Receive Special Attention	
 RULES FOR THE PREPARATION OF THE PROJECT RFP, PROPOSAL, REPORTS, PAPER, POSTER PRESENTATION AND ORAL PRESENTATION	 7
 GENERAL - SECTION A	
Introduction	
Scope	
Use of Technical Terms, Abbreviations, and Symbols	
Units of Measurement	
Typing Instructions	
Stapling	
Submitting Work	
Publishing	
 REQUEST FOR PROPOSAL OR REQUEST FOR PROJECT APPROVAL - SECTION B	 9
Introduction	
Format/Content	
 PROPOSAL - SECTION C	 10
Introduction	
Organization	
 LOGBOOK/LABORATORY NOTEBOOK - SECTION D	 13
Introduction	
Submittal of Logbook	
 REPORTS - SECTION E	 14
Introduction	
Progress Reports	
Final Report	
 PAPER - SECTION F	 16
Introduction	
Organization	
 POSTER PRESENTATION - SECTION G	 17
 ORAL PRESENTATION - SECTION H	 18
 APPENDIX A - TITLE PAGE FOR PROPOSAL	 19
 APPENDIX B - TITLE PAGE OF FINAL REPORT	 21
 APPENDIX C - TITLE PAGE FOR THE PAPER	 23

Aviation Technology - Maintenance Management

COURSE SYLLABUS

Senior Design - AV 3610 (1Sp), 4610 (3F), 4620 (3Sp)

Instructor: Nolan Clifford

Course Description

AV 3610 **AeroTechnology Design I** Students select and plan a senior project. Requires a written proposal, including technical description of the project and management plans.

AV 4610 **AeroTechnology Design II** Execution and completion of individual or team project. Requires design reviews, oral and written progress reports. Prerequisite: AV 3610

AV 4620 **AeroTechnology Design III** Preparation and presentation of the project. Writing and speaking skills emphasized through technical reports and presentations. Prerequisite: AV 4610

Course Objectives

1. To plan, propose, and complete a Senior Design Project in AeroTechnology
2. To give experience in writing proposals, test plans, progress reports, final reports and paper
3. To gain experience in giving a poster presentation and an oral presentation

Organization

The students are to select an Aviation related Senior Design Project with the approval of the course instructor. The student shall write a proposal and test plan for the project. After the proposal and test plan are approved, the student is expected to arrange lab time to work on the project. The student should coordinate with the supervising faculty member, but should not expect the faculty member to spend much time and effort on the student's project. The project should be something that the student is totally capable of completing. Each student is expected to keep a logbook that details all work done on his or her project and to prepare periodic progress reports as per the schedule. The final report and presentation for the project will be during the spring semester in AV 4620.

Grading

Each semester will be graded separately and will be based on the following:

1. Writing skills based on the proposal, test plan, progress reports, final report and paper
(Technical content - 25%, Organization - 15%, English Usage - 15%, Completeness - 15%, Clarity - 15%, Promptness - 15%)
2. Research quality
3. Research logbook (Detail, Completeness, and Clarity)
4. Professionalism
5. Completion of the project (Promptness of each aspect)
6. Poster presentation
7. Oral presentation
8. NOTE: Procrastination will cost you dearly

NOTE: This is a job! Treat it as though a special promotion and your raise depend on it. You want more than the average employee who will only get a "C".

Budget

The total cost of any Senior Design Project is the responsibility of each individual or group of individuals working on the respective project. This includes the cost of all supplies and materials that are used for the project.

Philosophy

The Senior Design Project is intended to be a major educational experience as well as a rewarding experience for the student. It goes without saying it will also be a source of frustration and irritation. It will be a great deal of work. Many hours must be invested over the three semesters in order to successfully complete the project (a minimum of 300 hours per student over the three semesters is usually required to complete a better-than-average project). The goal is a product that provides an excellent learning experience, one that the student can be proud of and in many cases, one that will improve the employment opportunities of the student. It is hopeful that the experience will be close to a real-world experience.

Course Goals

It is hoped that the completion of the project will accomplish the following goals:

1. To give the student a “quasi-real world” experience in planning and carrying out a project with the frustrations and sense of accomplishment that accompany such an undertaking. This gives the student added confidence in his or her own ability to tackle a real problem.
2. To emphasize the use of fundamental concepts learned during the student’s ongoing course work and the use of texts and other references rather than relying on faculty for answers.
3. To enhance the student’s ability to present technical material using logbooks, written reports, drawings, and oral presentations.
4. To encourage the student to make a commitment to a specific problem that may have multiple solutions and to help the student develop the ability to critically evaluate his/her own work and make decisions that will lead to the best solution.
5. To help the student develop self-discipline--a most important attribute.

How the Course is to be Conducted

The course will be conducted in the following manner:

1. The course extends over three semesters. The student should register Spring Semester of the junior year for 1 credit, and 3 credits each for the Fall and Spring Semesters of the Senior year. The grades will be given for each respective semester.
2. Students are expected to attend each of the scheduled classes. The shop time shall be scheduled with the Senior Design Instructor.
3. Selection of a project:
 - a. Each student should choose a project and write RFPA (Request for Proposal Approval) for the chosen project. The RFPA should be presented to the course instructor for project approval.
 - b. Two or more students may work together as a team and come up with a combined project that is of interest to the group. Team projects should be organized using TQM principles. The team must meet with the advisor, present a RFPA (Request for Proposal Approval) prepared in accordance with Section B, and receive approval for the project.
 - c. The project must be chosen and approved by the fifth class period of the Spring Semester.

4. Reporting and Documentation:
 - a. Documentation and reporting are the means by which information about your project (progress, problems, successes, etc.) are communicated to your advisor. In a real job situation, they are the means by which you communicate to your management, colleagues, fabricators, and users. Your performance to a large extent is judged on how well you communicate with others.
 - b. In this course, your grade will depend to a very large extent on how well you communicate orally and in writing. Take each report and presentation very seriously. Take advantage of this chance to improve your skills. It will pay great dividends in your job after graduation as well as in your course grades.
 - c. The report due dates are given in the Three Semester Schedule, and the instructions for report preparation are given in various parts of Section D. The due dates are fixed and should be met.
 - d. All Drawings should be prepared using AutoCAD, which is available in the ETE Computer-Aided Drafting lab (008) in the IS building.

Why Your Senior Project Should Receive Special Attention

1. Your course grade depends on it.
2. This is an opportunity for you to produce an excellent example of your work and build your self-confidence; both will aid you as you interview for a job.
3. Company recruiters are usually very interested in your senior design project and how well you completed the project.

Three Semester Schedule

ITEM	SEMESTER	DUE DATE	COMMENTS
AV 3610			
Class Mtg.	Spring	1 each week	Class attendance is mandatory-NO make-up. PROFESSIONALISM!! 20 points/Class
RFP Approval	Spring	5 th class of semester	Each student is going to have to do some serious work in order to complete this part of the project. It sets the focus for the rest of the year. Worth a possible 100 points. If it's late, it will cost you 20 points per day.
Preliminary Proposal	Spring	At the beginning of the 10 th week of the Semester	This is a rough draft of your proposal for review so that you can complete an acceptable Final Proposal. Worth a possible 100 points. If it's late, it will cost you 20 points per day.
Final Proposal	Spring	At the beginning of the 13 th week of the Semester	Worth a possible 200 points. If it's late, it will cost you 40 points per day.
Oral Presentation	Spring	14 th & 15 th weeks	Worth a possible 100 points. If the scheduled time is missed, all 100 points are lost.
		Semester Total	780 points
AV 4610			
Oral and Written Progress Report with Specific Goals for the Next Week's Work	Fall	Each week of the Semester	Each week is worth a possible 60 points. If the report is late, it will cost you 20 points per day. NOTE: Lack of progress (procrastination) could reduce your 60 points to 0 (Zero)
		Semester Total	900 points
AV 4620			
Oral and Written Progress Report with Specific Goals for the Next Week's Work	Spring	Each week of the Semester	Each week is worth a possible 60 points. If the report is late, it will cost you 20 points per day.
Final Report	Spring	The Final Report is due the last class period of March	Worth a possible 200 points. If it's late, it will cost you 40 points per day.
Paper	Spring	The Paper is due the first class period of April	Worth a possible 200 points. If it's late, it will cost you 40 points per day.
Poster	Spring	The Poster is due the first class period of April	Worth a possible 200 points. If it's late, it will cost you 40 points per day.
Journal/Log	Spring	The Log Book is due with the final report	Worth a possible 200 points. If it's late, it will cost you 40 points per day.
Oral Presentation	Spring	The Presentation of the Paper will be scheduled the 13 th , 14 th , & 15 th weeks of the Semester	Worth a possible 200 points. If you miss the scheduled time, it will cost you 200 points. The Presentation is formal--suit, white shirt, tie, and dress shoes.
		Semester Total	1200 points

Senior Design--AeroTechnology Project
RULES FOR THE PREPARATION OF THE PROJECT
RFP, RFPA, PROPOSAL, REPORTS, PAPER, POSTER PRESENTATION
AND ORAL PRESENTATIONS

General - Section A

Introduction

Each student studying Aviation Technology - Maintenance Management at Utah State University is expected to prepare a proposal, several reports, a paper, a poster presentation, and an oral report for their Senior Design Project Experience. Because there is an inherent difference between proposals, reports, papers, poster presentations, and oral presentations and because of a need for uniformity, this document has been prepared to help the students meet the format and organizational requirements of specific assignments for AV 3610, 4610, and 4620.

Scope

This document establishes the rules for preparation of RFPs/RFPA, proposals, reports, papers, posters, and oral presentations for the AV 3610, 4610, and 4620 (AeroTechnology Design I, II, and III) courses. It is not intended to apply to courses, tests, and assignments for which the respective instructor indicates otherwise.

Use of Technical Terms, Abbreviations, and Symbols

Proper use of terms, abbreviations, and symbols, which are part of the language of technical writing, is an important consideration in preparing a manuscript.

Units of Measurement

All proposals, reports, or papers should facilitate the transition from U.S. customary units of measurement to the International System of Units (SI) by listing first the actual measurement in the units which it was made in and then listing in parentheses the converted units. If a large number of measurements and their conversions appear together in a text, the conversions for each unit should be omitted. The objective is to avoid impairing the readability of the article.

This rule also applies to drawings, graphs, and tables.

Typing Instructions

The following instructions for typing format should be followed exactly.

Title Page: The title page should be center justified and should follow the spacing and margin format shown in appendix A, B, C, as applicable.

Table of Contents: The title, "TABLE OF CONTENTS", should be in all capital letters and should be center justified. The chapters should be listed with a double space between chapters. As in the rest of the paper, the top margin should be 2 inches, the left 1-inch, right $\frac{3}{4}$ inch, and bottom margins should be 1 inch.

Main Body: Each chapter should start **on a new page** with a top margin of 2 inches. The top margin on additional pages within the chapter should have a top margin of 1 inch. The left margin should be 1 inch and the right margin should be $\frac{3}{4}$ inch. All left and right margins should be the same unless specifically specified otherwise. The bottom margin of the text should also be 1 inch with the page number below the text and center justified. The typing shall be **single-spaced**.

References: The left 1 inch, right $\frac{3}{4}$ inch, and bottom margin 1 inch. The top margin of the first page is 2 inches with the title center justified and in all capital letters. The top margin of successive pages is 1 inch. Each listing should be single-spaced with a double space between listings.

Appendices: Appendices should be assigned a unique letter and title. The letter and title should be on a separate page and should be center justified with a top margin of 2 inches.

Stapling

The paper may be stapled (without a folder) in the upper-left corner with the staple starting $\frac{1}{2}$ -inch from the left edge and $\frac{1}{2}$ inch from the top edge. The staple should be parallel with the top of the paper. The paper may also be spiral bound on the left side. If it is spiral bound, it shall have a colored heavy paper cover front and back with the cover page printed on the front cover.

Submitting Work

One copy is to be submitted to the course instructor for evaluation. A copy will be placed in the student's file for further reference by faculty and students. The copy will not be returned to the student.

Publishing

All papers should be of a quality that they could be submitted for publication in one of the major journals. If they are submitted, they will be submitted with the student and instructor(s) as co-authors.

Request for Proposal (RFP) or Request for Project Approval (RFPA) - Section B

Introduction

The format given on the following page describes the type of information that will come to the student on the Request for Proposal (RFP) or the type of information that the student will put into a Request for Project Approval (RFPA). The preliminary and final proposals must respond completely to the RFP or RFPA. The RFP or the RFPA, whichever is applicable, becomes the approved guide about which the student or group of students write their proposal and complete their project.

Format/Content

Students Name:

Title of the Proposal:

Date:

TITLE

I. OPPORTUNITY DESCRIPTION

Briefly introduces the project and describes the background, need, and application of this project. If part of a larger project, define where this fits into the large project. It should be 2-3 paragraphs in length.

II. PROJECT OBJECTIVE

State the specific objective of the project. Include specific sub objectives that may clearly identify what the purpose of this project is and what is to be accomplished by the project. It should be 1-2 paragraphs in length.

III. PROJECT DESCRIPTION

This section outlines the specifications that must be met by the design. These may include technical, management, cost, and schedule constraints/requirements. It should be 6-8 paragraphs in length.

IV. DATA REQUIREMENTS

Clearly itemize and describe the type of data that must be obtainable from the design and what types of data need to be obtained from the testing and included in the final report. It should be 3-4 paragraphs in length.

V. EQUIPMENT

Identify the equipment necessary to gather the data and complete the project. It should be 2-3 paragraphs in length.

VI. BUDGET

Identify the cost of materials and supplies needed to complete the project. It should be in Table format.

REFERENCES

Some sources of information that the student or group of student can use to being their study.

Proposal - Section C

Introduction

A proposal identifies something that you would like to do. The purpose of writing a proposal is to gain approval from the supervisor for a particular project or to present the project to someone in such a way that they would want to help fund the project. It must be specific and well organized. It is important that any person reading it will know exactly what and how you wish to accomplish the thing you want to do. Two proposals are required for AV 3610; the Preliminary Proposal and the Final Proposal. The course instructor will review and correct the Preliminary Proposal. The student will make the changes and improvements suggested in the Preliminary Proposal and resubmit it as the Final Proposal.

Organization

The proposal should be organized as follows:

TITLE PAGE (Appendix "A" should be followed exactly in regard to format, spacing, and content)

TABLE OF CONTENTS

The Table of Contents lists the components of the proposal along with the page numbers and titles, appendices and references. Subheadings with the headings can be included; however, they should not be assigned page numbers. The format used for the table of contents in this document should serve as a guide. It should be on a separate sheet.

GENERAL SUMMARY

The General Summary must introduce the project by giving relevant background information and a description of what the student intends to accomplish at the completion of the project. It should define the end product of the project and what it will do for the student or department, or both. The General Summary must contain a basic description of the student's proposed concept(s) (i.e., A brief description of what you are planning to deliver). If the product does something, what does it do, and how? The student should point out any features of the proposed end product he/she believes are unique to his/her concept(s). Cost estimates and anticipated problem areas should be explained. The General Summary should prepare the reader to continue to the next section of the proposal with a basic knowledge of what is being proposed.

OBJECTIVE STATEMENT

In general terms, the "General Summary" of the proposal states the objective(s) of the project; however, in this section, the objective(s) for the project must be stated in very specific terms. After reading the "General Summary", the reader has a good but general understanding of what you are trying to accomplish. The "Objective State" should very clearly state what is going to be done.

TECHNICAL DISCUSSION

This is the main body of the proposal. The project was introduced in the General Summary, the Objective stated specifically what would be accomplished, and the Technical Discussion should set forth the general procedure that will be used to do the research. The purpose of the Technical portion of the Proposal is to demonstrate the student's understanding of the technical problems associated with the project and to present his/her proposed solution to each problem. It should be comprehensive and detailed. Anyone reading this discussion should be able to undertake and accomplish the project as effectively as the person writing the proposal should.

The Technical Proposal must provide a detailed technical description of how the student will perform all technical tasks required to complete the project. The description of each task should encompass the analysis, simulation, testing, and design the student feels are required to take his/her concepts to proposed reality.

In order to accomplish the above, the student must:

1. Show a logical and systematic approach to the total technical problem.
2. Present a clear description of the requirements and criteria.
3. Provide a general description of the total conceptual design.
4. Present alternative concepts, which the student intends to pursue.
5. Include a summary of the performance expected from the proposed concept.
6. Describe procedures, techniques, and/or approaches to be used in performing each technical task.
7. Show an understanding of the analysis, design, fabrication, and testing processes required to successfully complete the project.
8. Ensure that all-technical requirements and tasks have been included in this proposal.
9. Clearly state what the student intends to deliver to the conclusion of the project.

PROJECT MANAGEMENT

The purpose of the Management section of the proposal is to explain precisely how the student intends to manage the project.

The student or group of students must:

1. Provide organization structure, with a single point of contact, for each program phase. This identifies who is responsible.
2. Demonstrate that the proposed organization allows for rapid identification, reporting of, and response to problems that arise.
3. Include comprehensive program schedule and a complete flowchart, which can be used throughout the project for monitoring progress.
4. Provide a management task chart, which demonstrates the project can be effectively controlled and completed.
5. Present a manpower plan, which shows the planned workload distribution of personnel in the group/team project.
6. Include plan(s) to implement all management tasks required.

PROCEDURE/TEST PLAN

The procedure or test plan sets forth the plan that will be followed to complete the research. It should define specific test goals, test methods, test conditions, event sequencing, tasks, data to be recorded, pass/fail criteria, and contingency plans for failures which may occur at critical points during the test. It should include enough detail so that someone else could do the same research. The purposes of procedures/test plans are to (a) allow the advisor to evaluate the student's test program and (b) to provide a working document for conducting the test(s).

BUDGET SECTION

This section should list in a table the detailed cost of all equipment, materials, supplies, services that will be related to the project. It should not include any estimate for wages.

REFERENCES

As a student starts a project, he/she should review all the literature that may add meaning or validity to the proposal. Knowing what others have done establishes a baseline to work from. Some of the references should be cited in the body of the proposal if they will add to the proposal. Usually direct quotes are not desirable. The student should, for the most part, summarize in his own words and appropriately reference the source. References should be listed using standard practices.

APPENDIX

All items that are not included in the above section of the proposal that would add to the completeness of the proposal can and should be added as appendices.

The proposal should be single spaced

JOURNAL/LOG - SECTION D

Introduction

Most people don't have good detail memory. The accepted method of recording what is accomplished during any time frame of a project is to keep a journal or log that clearly and completely outlines what is done during the accomplishment of a project. It must include the details of thought, brainstorming, experiments, data, problems, solutions, calculations, failures, successes, everything that in any way relates to the project. It should include dates and times.

Someone reading your log should be able to tell when you did something, what you did, how much time it took, and what was determined. It should include enough detail that someone could write your final report from the details in the log and prepare an oral presentation with all the answers related to your project.

Submittal of Logbook

1. A copy of the pages of the log that cover the time period of each respective progress report should be turned in with each progress report.
2. A copy of the journal/log must be turned in with the final report.
3. You may use the "three ring binder notebook paper."

REPORTS - SECTION E

Introduction

Communication is the key to the student's success on this project. Section E deals only with written communication in the form of (a) Progress Reports and (b) the Final Report. The following format and instructions should be followed when preparing the respective reports.

Progress Reports

The format to be used for a progress report is given below. The report should be honest, accurate, and complete. It should also be specific and to the point, not lengthy.

PROGRESS REPORT

PROJECT TITLE:

TO: Advisor(s)

FROM: Student(s) working on the project

DATE: Date the progress report is submitted

SUBJECT: Progress report for week # /total # of weeks

SUMMARY OF PROJECT

PROGRESS SINCE LAST REPORT

This is a summary of the progress made since the last progress report. If you have sample calculations or preliminary results, you should discuss them here and place the actual calculations, graphs, tables, etc., in this section.

PROBLEMS

Any problems you have encountered that have not been resolved as of this report should be described in this section of the report. Briefly describe the impact on the project and the proposed solution(s) to the problem. The impact on the rest of the schedule should also be discussed. Problems that came up during the reporting period but were already solved should be part of the Progress Section of the report.

PLANS

What you plan to accomplish during the next reporting period should be listed in detail here. Be very specific.

ATTACHMENTS

1. Copy of the reporting period's portion of the Logbook
2. An up-to-date management chart and flowchart that show current status of the project.
3. A report showing the effort of each participant (number of hours) and any other pertinent management information

Final Report

Introduction

The final report follows the completion of the project. It gives specific details of what has been done, how it was done, and what the findings are. The report should be written in a manner that evokes positive conclusions as to the usefulness of the project. The basic outline of the final report is listed below:

TITLE PAGE

Appendix B should be followed exactly in regard to format, spacing, and content. The title should be very similar to the title of the proposal.

ABSTRACT

Present an overview of the work. An abstract is a concise summary of the major elements of the report. It helps the reader decide if the information is for him. It should not exceed 100 words. It should be on a separate sheet.

INTRODUCTION

The introduction tells the reader what the subject matter involves and what will be learned from the paper. It may contain much of the information from the proposal "General Summary and Objective Statement" written from a different perspective. Remember the project has been completed; it was only a concept when the "General Summary and Objective Statement" were written.

PURPOSE

Tell why you did the work and what you hoped to accomplish.

DEVELOPMENT

Discuss the procedure/test plan that was used to complete the work. The reader wants to know how the work was done and how the data was acquired. Do not include the data or results. They go in the next section. The Development and Results part of the report establish the foundation of the report.

RESULTS

The findings generated are presented in this section of the report.

CONCLUSIONS

Explain what the reader should learn from the data and findings. You are presenting what you know happened and what you want people to know from the things you did.

SUMMARY

Restate in very precise and concise terms a review of the major points of the report. It is really a condensed version of the total report.

REFERENCES

Cite only references used in the text of the report. Use consistent standard format for listing the references.

APPENDIX

Appendices contain experimental data, extended mathematical derivations, etc. If a piece of equipment is produced or a test is developed, an appendix must be included that gives detailed, easy-to-follow operating instructions.

PAPER - SECTION F

Introduction

A paper is a document that resembles any article published in a trade journal. They will incorporate most of the sections that are included in a report; however, the information is integrated to form a readable document.

Organization

The paper should be organized as follows:

TITLE PAGE

Appendix C should be followed exactly in regard to format, spacing, and content

ABSTRACT

An abstract is a concise summary of the major elements of the paper. It should be organized to fit the paper's style. It should not exceed 100 words.

BODY OF THE PAPER

The body of the paper should start with the title center justified on the first page 2 inches from the top. It is not broken into subheadings, but should include an introduction, discussion, summary/conclusion, and recommendations for future work. The body of the paper should be easy to read and not stuffy. It would be a good idea to read several professional journal articles as examples of how to write a good article. The line spacing should be single space.

REFERENCES

A list of all papers, documents, books, reports, or publications used, whether cited or not, that could be used to add meaning or validity to the paper should be listed. It should include those things that the author actually read or used to develop the paper (study).

POSTER PRESENTATION - SECTION G

When a project has been accomplished, it is common to do what is called a “Poster Presentation.” The presenter prepares a poster using photographs, charts, graphs, illustrations, and text that presents his or her study and findings. Each student taking AV 3610, 4610, and 4620 **is required to prepare a poster.** The poster should be attractive and easy to understand. It should interest the reader so that he/she will want to know more.

ORAL PRESENTATION - SECTION H

Description/Purpose

Each student or group of students is/are required to make a formal/professional oral presentation about the senior project. It is an opportunity to tell others what you discovered and how you discovered it. It is also an opportunity for each student to stand before an audience and speak in public.

Application/Interrelationship

1. If the project was a group project, make every effort to distribute responsibilities so that each student gets an equal opportunity.
2. All overheads, charts, etc. will either be typed or “professionally” drawn.

Preparation Instructions

1. There should be a consistency of format and style in the presentation. A dry run to ensure this is advised. Use your best skills as a presenter.
2. The presentation content must be geared to an audience who is unfamiliar with your project. You must take them from requirements through to a detailed discussion of what you have accomplished and concluded.
3. As with formal reviews, the heart of all formal presentations is the technical accomplishment. Management presentations should form a background picture for staging the discussion of detailed technical results.

Dress

The dress for this part of the Senior Project is formal business dress for all presenters and attendees.

APPENDIX A - TITLE PAGE FOR PROPOSAL

**DIGITALFORCE READOUT
FOR
AEROTECHNOLOGY WIND TUNNEL**

by

Chris Grenda

Approved by Project Advisor _____ Date _____

Proposal
Senior Design
AeroTechnology

Submitted in Partial Fulfillment of the Requirements of AV 3610, 4610, and 4620

Department of Engineering and Technology Education
College of Engineering
Utah State University
Logan, Utah
September 1997

APPENDIX B - TITLE PAGE OF FINAL REPORT

**DIGITAL FORCE READOUT
FOR
AEROTECHNOLOGY WIND TUNNEL**

by

Chris Grenda

Report
Senior Design
Aero Technology

Submitted in Partial Fulfillment of the Requirements of AV 3610, 4610, and 4620

Department of Engineering and Technology Education
College of Engineering
Utah State University
Logan, Utah
September, 1997

APPENDIX C - TITLE PAGE FOR A PAPER

**WIND TUNNEL APPLICATIONS
IN AEROTECHNOLOGY**

by

Tom Calvert

Paper
Senior Design
AeroTechnology

Submitted in Partial Fulfillment of the Requirements of AV 3610, 4610, 4620

Department of Engineering and Technology Education
College of Engineering
Utah State University
Logan, Utah
September 1997