AERO1400 Course Information

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Introduction

Welcome to the AERO1400 Aircraft Construction & Design course for Aerospace Engineers. This course is designed to educate and facilitate the learning of basic aircraft construction techniques, the operation of light aircraft and the registration and CASA legalities regarding light aircraft. The skills learnt during this course are not merely “hands on skills” on the construction phase but also knowledge and familiarity regarding aircraft aerodynamics, mechanics, structural aspects and design issues. Teamwork plays a very important role in this course, the ability to operate well with your peers and colleagues is an invaluable skill sought after by employers of engineers.

The workshop staff strive to provide a teaching environment that friendly, informal, educational and most of all enjoyable. Students are encouraged to develop a positive relationship with the workshop team and the premises. Please feel free to contact the workshop staff regarding questions and comments, we are always willing to help students.

Class times and Location

The AERO1400 Aircraft Construction & Design class timetable is shown in the table below. The classes have a maximum capacity of 20 students per day, this class is then split into two separate groups (A and B), usually a maximum of 10 per instructor. In most cases each group will again be broken into smaller groups depending on the tasks required for the day. Note: you are required to attend only one class session per week, please stay with your allocated timetable.

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Class Group</th>
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<tbody>
<tr>
<td>Monday</td>
<td>2pm-5pm</td>
<td>Monday Group A&amp;B</td>
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<tr>
<td>Tuesday</td>
<td>2pm-5pm</td>
<td>Tuesday Group A&amp;B</td>
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<tr>
<td>Thursday</td>
<td>9am-12</td>
<td>Thursday Group A&amp;B</td>
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The course is held in the GA Bird Laboratory at Level One of the Aeronautical Engineering Building.

No one is to change attendance sessions unless specifically approved by Dr KC Wong. Basically, unless you can find someone who is willing to swap sessions with you, you will be required to attend the session allocated to you in your personal timetable.

Student’s attendance is critical in this course, as with other practical course you will be failed if you do not attend a sufficient number of weeks during the semester. If for whatever reason, a student cannot attend a class due to illness or other circumstances notify Workshop (Duncan or Stuart) or Academic staff (KC Wong) responsible for student attendance (do this as soon as possible, the longer you leave it the less chance you will be granted an exception).

**Equipment**

What you need to bring.

There are a number of things required for this course, most of these items you should already have if you have completed the Workshop Technology Course (AERO1600) course (Semester 1). Common sense should prevail when choosing what to wear to these classes. Please refer to the safety handouts for more information regarding protective equipment.

**Safety Glasses:** Any pair of approved safety glasses are suitable for this course, they need to provide protection against dust, small airborne objects and chemical substances. These glasses can be purchased from the Wentworth building (Level 2) newsagent.

**Suitable footwear:** For this course it is not necessary to purchase safety boots, however it is required that footwear worn in the workshop must cover the foot (i.e. no thongs or sandals) this applies to women also. Keep in mind that the shoes may get soiled during the course of the class, hence it is recommended that students wear an old pair of shoes to class or if you already have safety boots, wear them.

**Suitable Clothing:** Again it is not required that students go out and purchase overalls or specific work clothes, nonetheless if students own safety clothes from previous courses it is recommended that they wear them. Students are advised that the work done during classes can soil clothing, so old clothes should be worn. When working with fibreglass it is recommended that students wear long pants and long sleeved shirts since fibreglass dust and parts can cause irritation to sensitive skin areas (inner arms etc).
Log Book:
During the course it is required that the students keep a log of the work that they perform each week, hence a notebook for this purpose needs to be brought every week.

What we supply.

Everything else that is needed for the course! We supply students with dust masks and disposable gloves for the duration of the semester. It is critical that these safety measures are used at times when dangerous materials or equipment are being used. (i.e. resin and hardener, fibreglass, alodine, araldite, etc)

Assessments

Students are graded on their performance through several methods:

1) Week to week logbook which is graded at the end of every session or at the end of semester, the students are graded for the work done, the quality of the work and group participation. This may seem ‘over the top’, but keep in mind you are working on a real aircraft which will be sold into the community where the future pilots trust that the aircraft has been constructed in good engineering standard.

2) Quizzes/Assignments, these may be set during the semester or at the end of semester. The quiz content will be dependent on handouts and important things learnt in class. (i.e. bonding process etc).

3) Class Attendance and Participation.

For more information regarding the assessment and the percentage break down, refer to the Assessment Guidelines Handout.
Aircraft Construction Laboratory Rules, Regulations and Procedures.

The Aircraft Construction Laboratory provides services, knowledge, skills, and equipment to students and staff of the Aerospace department. For the laboratory to function and operate efficiently and effectively there are guidelines for those using the facilities and resources. Students and staff are requested to follow these guidelines.

During the AERO1400 course students will require the use of many tools, simple and complex ones, it is essential that students treat these tools with respect and care. Students borrowing tools are only permitted to use them in the appropriate areas designated for the course or activity, the tools, materials and equipment are not to leave the Workshop for any reason. During class, students will require the use of basic tools (ruler, files, set square etc) these are supplied in sets and these are located on individual boards with the tools clearly marked. Other tools are located on boards/shelves and cupboards, these tools are ones that are not so commonly used. Each student is responsible for his/her tool set, he/she is responsible for returning that tool set complete to the correct place where they obtained the tools. If you are unsure whether you are permitted to use particular tools, ask first before performing any work or using the tools.

Cleaning-Up

This is continuous process throughout the session, though cleaning up is also performed at the end of the session. Those students who clean up after themselves during the session make the overall cleaning process less intensive!! There is time allocated at the end of each class for clean up to be performed. All students must participate in cleaning up, no excuses!! Staff will not clean up after you, if cleaning is not done it will affect you and other students indirectly due to more time being allocated to cleaning and replacing tools. There may be, if necessary a marking system incorporated with cleaning up- we have found this works exceptionally well but is not desirable!! Please see staff for the location of cleaning equipment.
Introduction Class (Week one)

The first class will involve a safety discussion, an introduction to the GA Bird Laboratory, an overview of the Jabiru Aircraft and its construction and several demonstrations on the procedures often used in the course. Some of these procedures students may already be familiar with, nonetheless students are advised to turn up and pay attention. Remember, to pass the course you must attend all the classes.

Demonstrations:

- Rivet Types and riveting
  - Countersunk/conventional, TLR, stem material choice, head material choice and size
  - Application

- AN Bolt and nut types
  - Bolt choice, application and identification
  - Nyloc application and identification

- Fibreglass bonding
  - Surface preparation
  - Epoxy preparation
  - Bonding metal and other materials to fibreglass

- Lock wire installation
- Electrical Wire installation
- Sanding Techniques
- Recording resin samples
- Reading and recording a wet and dry temperatures
Aeronautical Engineering Building Fire Safety Information

In case of a fire or a fire alarm this emergency procedure should be followed:

1. Alert others of the fire.
2. Following directions provided by the fire warning system.
3. Ensure the immediate safety of anyone near the fire.
4. Call the fire brigade "0 (outside line if using internal telephone) then 000" **
   (Using the Fire warden emergency telephone if accessible)

Security Phone: 13333
General Office Phone: 17197
Student Health Phone: 13484

5. Fight the fire if safe to do so.
6. Evacuate the area (if need be), to the back of the building, between the Seymour Centre and the multi-storey carpark, where a roll call will be made

** Even if an automatic alarm has been instigated, a "000" emergency telephone call should still be made to confirm receipt of alarm and to give further details.

At times of emergency, listen to instructions given by the Floor Wardens who will be wearing coloured safety hats.

More details will be given during class sessions.