



CHAPTER 01

INTRODUCTION

Why work when you can play

Passion creates passion

Introduction

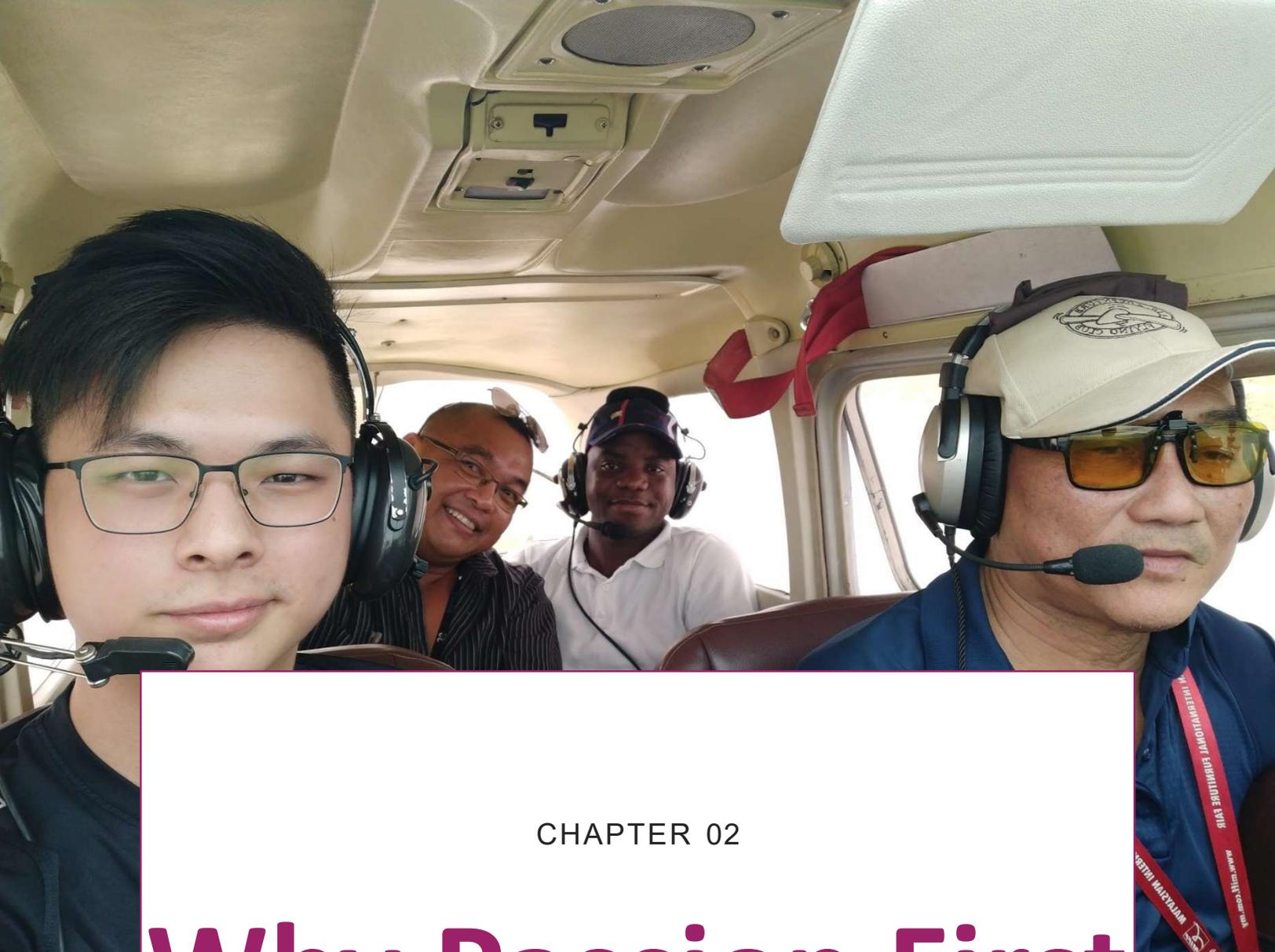
The earlier you know what you want to do when you grow up, the better. For kids, it is not always easy to get this answered immediately. Majority of adults too do not know for sure what they want to do for living, and why they accept the job that they currently do apart from that the job pays their bills and put food on the table. There is nothing wrong or right about that – and this book is not about debating it either. This book talks about how using passion made conducting one of the toughest subject in Aerospace Engineering easy, and how students benefitted from that which in turn made them excited (and probably passionate) to learn more about Aerospace. Hence, creating passion from passion!

This book is not about presenting complex mathematical equations representing aircraft dynamic motion – those are done in class. This book attempts to introduce the hidden ‘booster’ rarely talked about in your human mind that can be used to tackle big challenges heading your way. As a result of tapping into *passion*, solving *any* complex equations or problems become easier and often exciting - something that is appropriate for students who study a difficult course such as Aerospace Engineering.

Ask any Aerospace student in the world, they will tell you that flying in a plane to do flight testing is the highlight of the course. In UPM, this was the same. The course EAS3924 named, ‘Flying Laboratory for Agriculture Application’ was conducted in 2017. For this course, the students were required to prepare the flight testing, perform tests in groups, formulate and analyze flight test data. The aim of the course was to allow students to *experience* how aerospace engineers conduct actual flight testing on working fixed-wing aircraft.

There was only one problem. The course did not have any aircraft to work with. Rather than turning in circles trying to find out why, the author decided to tap into his own passion towards Aerospace and draw available resources to make the cut and give the students the most exciting part of learning Aerospace Engineering. In the end, students did fly, course objectives achieved and the relationship between the university and industry supporters were established beyond expectations. All these from tapping into the *passion* from the author’s love affair with Aerospace Engineering.





CHAPTER 02

Why Passion First

“Choose a job you love, and you will never have to work a day in your life.”

- Confucius

The Purpose

Why Passion First

Steve Jobs once said, “The only way to do great work is to love what you do”. Then, a famous 19th century Dutch painter, Vincent Van Gogh, was famously remembered for his quote, “I would rather die for passion than for boredom”. James M. Barrie, the creator of *Peter Pan*, also once said, “Nothing is really work unless you would rather be doing something else”. Why is it that so many iconic successful people talk about passion and relate it to the work that made them famous?

The answer is simple – love. Loving their job played a key role in turning them into geniuses. Human emotions is complex. Feelings cannot be precisely measured nor quantified although some scientists attempt to use ‘scales’ to understand subjects’ feelings towards matters under study. Even then, one man’s 10/10 feeling might not be the same as another man’s definition of perfection. But to understand passion is nothing less than to understand this human emotion. When you love what you do, creativity flows and productivity is of highest quality – not because you are forced to, but because you want to. Passion can rarely be accurately defined and impossible to measure. But perhaps someone who has experienced its power can describe it as follows:

- **Love:** ‘That crazy little thing’ as the late Elvis Presley once sang about.
- **Fuel:** When your mind and body are tired, exhausted and drained out, passion is the special boost that keep you going.
- **Fun:** You always look forward to go back to doing it.
- **Identity:** Because people know you love it so much, they start to remember you because of it. And you like this identity.
- **Proud:** You feel a sense of pride for associated closely with it.
- **Obsession:** When going gets tough, you still stay with it – until the ‘tough gets going’. And you will trade meals and sleeping hours to get things done!
- **Time:** When you love what you do, time becomes irrelevant to you. You are so engrossed in the work and noticeably, you are not tired either from doing it.





CHAPTER 03

REASON TO GET EXCITED

“Passion is Energy. Feel the power that comes from focusing on what excites you.”

– Oprah Winfrey.

Motivation

Reason To Get Excited

For the course EAS3924, the biggest problem organizing it was not having an aircraft to work with in the first place. But for the author this is a small problem. Why stress out when you can choose to have fun? Not having resources is not the same as not being resourceful. There are plenty of aircraft in Malaysia. We just need one! And a working one! That flies!

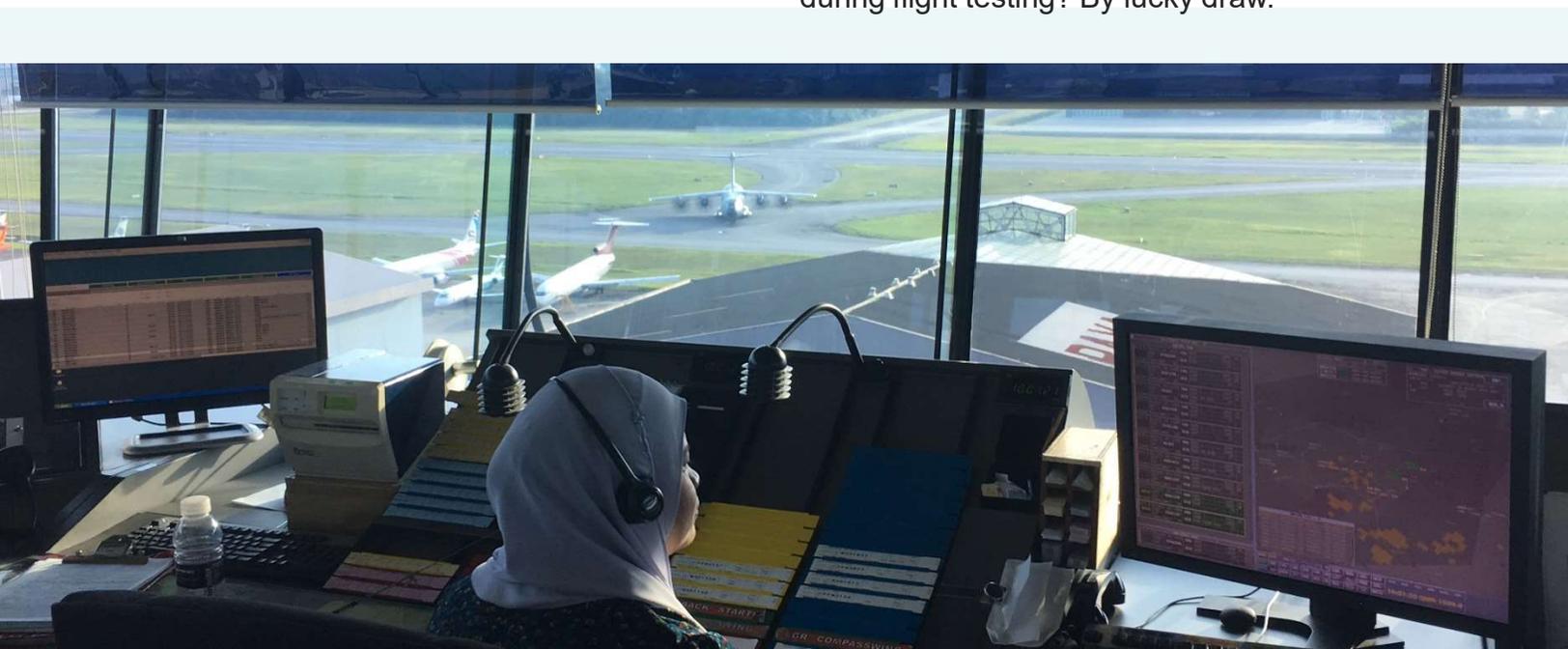
This is when magic happened. As a lifetime member of a local flying club called Air Adventure Flying Club (AAFC), asking the club for support is the best starting point. Pulling resources from the flying club could potentially solve the problem. It was a matter of negotiating and convincing – a skill that most passionate people have abundance of due to their zest for LIFE!

For the aviators in the flying club, the objectives of EAS3924 were too easy to meet. Most instructors and club members have done far greater feat than the objectives stated in EAS3324. At that point, the author realized the problem was almost solved – it was time to execute the mission.

40 students would use and benefit from the club facilities including the use of 3 light aircraft, the Cessna 172. But that's not all. The flying club also helped to arrange for 3 other organizations to participate in EAS3924 - the Malaysian Airport Berhad (MAHB), Malaysian Meteorology Department and Civil Aviation Authority Malaysia (CAAM). This was unprecedented for the students – a classic signature of working under passion (not pressure!). Things just got better and better as time went by!

With the 'stage' set, it was time to inform the students about the plan. Not surprisingly, all 40 students were ecstatic! Out of the 40 students, 3 were chosen as the flight test pilots. The other 37 classmates worked as flight test engineers on the ground responsible for planning the tests from A – Z and analyzing the flight test data. As much as possible, the class was arranged to mimic industry practice during flight testing.

So how did we choose who would be the 3 lucky ones to pilot the plane with an instructor during flight testing? By lucky draw.





CHAPTER 04

AEROSPACE ENGINEERING

“There is no passion to be found playing small—in settling for a life that is less than the one you are capable of living.”

- Nelson Mandela

Challenge

Aerospace Engineering

Among the many engineering disciplines, Aerospace Engineering course is generally accepted as one of the toughest engineering courses to endure. Aerospace Engineering is not like Mechanical, Electrical or Electronics Engineering. Elements of Aerospace consist of all three! In fact, there are more disciplines incorporated into Aerospace than these three. Materials Science and Engineering are also one of its core disciplines. In most top universities in the world, Aerospace Engineering course also incorporate Business and Management subjects in their syllabuses. In short, it is an 'integrated' engineering course with specific application to aeronautic and astronautics vehicles. Despite this reputation, Aerospace course is still popular around the world, especially in Western countries. For new students embarking on this journey, very few are aware of the challenges they will face compare to their friends who pursue other more common engineering disciplines. So how can one stay focused for 3 to 4 years studying something so hard? One way is by force. Another better way is to love it. So how do you make someone fall in love with Aerospace? Like anything else, it is impossible to make anyone fall in love. The emotion comes from within –
you just know it if you love it.

On the other hand, for someone who was not sure if they *will* like Aerospace Engineering (and many fell into this category!), these students would like to 'try' and 'see how things go'. For something as difficult to master as Aerospace, this was a big risk to take. Nevertheless, sometimes things do come around for some students and they begin to enjoy the course after awhile. For academic staff teaching Aerospace subjects, our job too was made easy if we loved the subject in the first place. We could assist students by making the course interesting and exciting instead of memorizing and aiming only to pass exams. Very few things excite Aerospace students more than flying. Flying light aircraft, gliders, helicopters, blimps or balloons are some of the common activities Western universities organize to promote interest in their students. At the very least, universities include subjects on Unmanned Aerial Vehicles and Drones. By providing theoretical exposure as well as equal amount of experimental work involving flying, students would find the difficulty of Aerospace changing fast to be interesting and exciting.





CHAPTER 05

FLIGHT TESTING COURSE

“I have no special talent. I am only passionately curious”

– Albert Einstein

Planning

Flight Testing Course

The success or failure of any flight test highly depends on proper planning. When the students taking the EAS3924 course were brought to Subang Airport, it was not for sight-seeing. One of the activities planned was to task them to familiarize with the aircraft, the Cessna 172, the aircraft which the class would use for flight test. Of course no student would be allowed to flight test a brand-new plane due to high risk. Instead, the course prepared a syllabus suitable for them to experience the process of flight testing without the danger involved. Students were thoroughly briefed on the aircraft systems from A – Z. Pilots and aircraft maintenance engineers from the flying club made themselves available to brief the students and answer all questions comprehensively. Who better to answer questions about aviation than these aviators who are in the industry already, flying and maintaining these aircraft everyday in the real-world. A copy of the flight test manual is included in Appendix.





CHAPTER 06

RECOGNITION

“Feedback is the breakfast of champions.”

– Ken Blanchard

