

The  
**CIX**  
VFR Club

VATSIM  
PILOT RATINGS  
TRAINING  
MANUAL

Part 2:  
The P2 RATING

**NOT TO BE USED FOR REAL WORLD AVIATION**

Version 1.04

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For Simulation Purposes only. Not to be used for real World flight	<b>VATSIM PILOT TRAINING PROGRAMME</b> <b>P2 RATING</b>	Issue 1.04 18/05/14

### Document History

Date	Version	Changes
09/08/2012	1.00	Initial Draft version
19/08/2012	1.01	Minor revisions for publication
22/08/2012	1.02	Minor revisions for publication
13/09/2012	1.03	Minor revisions following feedback
18/05/2014	1.04	Some links updates

### Acknowledgements

The author, Peter Dodds, is CEO of the Cix VFR Club, and a VATSIM P3 Rated pilot.

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## 1 INTRODUCTION

The VATSIM Pilot Rating Program has several goals. First and foremost it is designed to promote the training of VATSIM pilots at all stages of experience using third party resources qualified and monitored by VATSIM. VATSIM has established the knowledge requirement and tasks to be carried out in order to qualify for a VATSIM pilot rating, after extended and detailed consultation with a steering group of interested members..

### 1.1 Authorized Training Organizations and Pilot Ratings

VATSIM has therefore established a number of Authorized Training Organizations (ATOs) to deliver the ratings. Cix VFR Club has been appointed as an ATO, and its established training system has been adapted where necessary to provide training for some, but not all, of the ratings.

The list of VATSIM ATOs may be found at the following website:

<http://linksmanager.com/vatsimvas/authorised-training-organisation.html>

There are planned to be nine distinct ratings for all pilots with room for additional ratings which may be identified over time.

P1: VATSIM Online Pilot

P2: VATSIM Flight Fundamentals

P3: VATSIM VFR Pilot

P4: VATSIM IFR Pilot

P5 :VATSIM Advanced IFR Pilot

P6: VATSIM International and Oceanic Pilot

P7: VATSIM Helicopter VFR and IFR Pilot

P8: VATSIM Military Special Operations Pilot

P9: VATSIM Pilot Flight Instructor

The P1 rating must be obtained before any other rating can be attempted, but other than that, no rating is a prerequisite of another and each stands alone.

The programme will provide pilots with recognition for having achieved demonstrated success in online flying at several levels. By maintaining a consistent worldwide standard for each rating, the ATOs will ensure that the ratings awarded reflect the capabilities of the pilot and become a sign of achievement and professionalism that both new and experienced pilots will desire to display. The ATOs will be audited at intervals in order to maintain the required standard of training.

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The ratings are voluntary and the VATSIM founders have decreed that they shall remain so, because they recognise that not all pilots will have a desire to gain any ratings regardless of their experience. As a corollary, an ATO approved programme will be the only path through which ratings can be achieved. An expedited process will be available for veteran pilots to gain their ratings without undue training, so long as they are prepared to demonstrate their competence to an ATO. No ratings will be granted automatically without either examination or demonstration of skills.

## 1.2 Cix VFR Club Training Department

Cix VFR Club, being a VFR enthusiast organisation, has an active Training Department which offers training for the P1 rating, and also for other General Aviation skills. These include courses modelled very closely on the real world Private Pilot Licence, Multi-engine Piston (MEP) and others. We have a team of four instructors who have all been very closely involved in real world aviation, most of them being, or having been, real world private pilots.

Although our principal interest is in VFR flight, we can carry out one to one Instrument Flight training if requested, as we do have suitably qualified instructors available. However, we do not carry out any training in aircraft outside the ICAO "Light" category (5,700kg Maximum All-Up Weight).

## 1.3 P1 Rating Revision

You cannot take the P2 written exam or flight test unless you hold a VATSIM P1 rating. Make sure you are thoroughly familiar with the knowledge you gained with the P1 Rating. The P1 Rating Training Manual is an Adobe Acrobat document which can be downloaded from the Club website if you don't still have it.

The P2 Rating Examiner will expect you to be fully competent in the P1 knowledge and skills.

## 1.4 P2 Rating Knowledge Requirement and Skills Test

The knowledge and skills required for the P2 rating are presented in this document. The Club training for the P2 rating is a distance learning programme which follows the VATSIM P2 Syllabus using the written material referenced in this document via the hyperlinks. A pilot's knowledge and skill will be tested by both:

- a) A written examination in the form of web-based multiple choice questionnaires, and
- b) By a practical demonstration of the ability to fly the chosen aircraft at a level of competence which will enable the pilot to have fun, continue to learn, and to avoid him causing difficulties for other VATSIM members.

The written test is a set of random questions covering all the information which a student ought to know about the theoretical aspects of light aircraft

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flying. It covers the theory of flight, effects of aircraft controls and technical details, at an elementary level only, of aircraft systems. It does not cover flying techniques. Cix VFR Club does not teach or examine students who wish to gain their P2 rating on aircraft outside the Light (less than 5700Kg) Category.

The practical skills test will be carried out in FSX in a shared cockpit environment; student and instructor sharing the flight in one aircraft and communicating via TeamSpeak.

To obtain the P2 rating, a pilot must be competent in the following knowledge areas: -

- 1) Understanding Flight.
  - a) The four forces of flight
  - b) Centre of Gravity
  - c) Aircraft Axes
- 2) Controlling the Aircraft
  - a) Maintaining airspeed, altitude and heading to defined tolerances
  - b) Make co-ordinated turns
  - c) Understand performance and limitations
  - d) Able to make appropriate engine and configuration changes to comply with ATC instructions
  - e) Able to choose a heading to compensate for winds aloft to follow a consistent ground track to defined tolerances
  - f) Able to start the aircraft from a 'cold and dark' condition, bring all aircraft systems to flight readiness, and return the aircraft to 'cold and dark' after parking at the end of the flight.
  - g) Able to taxi, take off, level, cruise, approach and land the aircraft within the published engine, configuration, and airspeed parameters.
  - h) Understands emergencies appropriate for the aircraft type and on VATSIM, and how to conduct them provided ATC approval is secured prior to commencing the emergency.
- 3) Aircraft Systems
  - a) Powerplant
  - b) Propellers
  - c) Wings and
  - d) Landing Gear
  - e) Basic Flight Instruments
  - f) Engine Instruments
  - g) Pitot/Static System
  - h) Navigation, Instrument, and Landing Lights

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The knowledge & skill requirements are set out in detail in this manual, with additional information as necessary to provide the student with the information needed to satisfy those requirements.

## 2 THE ESSENTIAL SOFTWARE

### 2.1 Requirements

As a holder of the prerequisite P1 Rating, the student is expected to have all the necessary software in place to enable them to immediately commence any practical flight test connected to the VATSIM network, and communicate with ATC when required.

The student is expected to be familiar with the Flight Simulator default Cessna 172SP in either FS9 or FSX. Earlier versions of Flight Simulator, and X-Plane unfortunately cannot be accepted.

#### 2.1.1 TeamSpeak 2

TeamSpeak is not essential for logging into VATSIM or flying online, but it is essential for talking to other Club members during events or training sessions. TeamSpeak is a stand alone Voice-over-Internet application. Version 3 is the most recent version, but at the moment, the Club continues to use Version 2. This can now be hard to find, as it has been archived on the TeamSpeak website, so the Club has provided a link to the TeamSpeak 2 File Archive area on its website on the Downloads/Software page.

[http://www.cixvfrclub.org.uk/downloads/1d\\_software.php](http://www.cixvfrclub.org.uk/downloads/1d_software.php).

The direct link is provided below.

<http://www.teamspeak.com/?page=downloads&archive=1>

TeamSpeak 2 is used to log into the Club's private voice server, so that members can talk to each other during club flights in addition to talking to ATC through the pilot client software. Very rarely do the two applications conflict, but for those using FSInn, it is important to disable the Use TeamSpeak option in the FSCopilot (traffic lights) application.

## 3 THE P2 TRAINING SYLLABUS

### 3.1 The Cix VFR Club Flight Training Manual

The Club initially built its training manual in 2005 and 2006. It is based closely on the UK Private Pilots Licence training course and comprises 23 separate Exercises. It has been completely revised and updated in 2012 to be suitable for use for the VATSIM P2 rating.

### 3.2 P2 Rating Training Documents

The following tutorials have been created specifically for the P2 Rating. They are all available on the Club website and the Club P2 Ratings web page has links to them all.



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- P2.1\_Pilot\_Ratings\_Training\_Manual\_Level\_P2 (this document)
- P2.2 Basic Flight Theory
- P2.3 Aircraft Performance
- P2.4 Wind and Drift
- P2.5 Flying with ATC

This document is the principle training resource for the P2 Rating. It is essentially a summary of all the P2 Rating training material with links to the relevant Club Training Manual Exercise for each P2 Rating syllabus topic.

The following three sections identify each training element and provide a link to the relevant section of the Club Training Manual or to the relevant P2 Rating tutorial.

## 4 UNDERSTANDING FLIGHT

### 4.1 The Four Forces Of Flight

The student is expected to know the relationship between lift, drag, thrust and weight.

Please read the Cix VFR Club Flight Training Manual [Exercise 3](#) - The Aircraft in Flight and the P2 Rating document [P2.2 Theory of Flight](#).

### 4.2 Centre of Gravity

The forces acting on the aircraft in any one direction can be assumed to act through a single point. The weight, for example, acts through the Centre of Gravity. The lift force acts through the Centre of Pressure. The mathematical principle which determines the relationship between forces and where they act, is the principle of Moments.

Please read the Cix VFR Club Flight Training Manual [Exercise 3](#) - The Aircraft in Flight and the P2 Rating document [P2.2 Theory of Flight](#).

### 4.3 Weight and Balance

The effect of cargo, passengers, and fuel distribution (the Payload) has to be calculated before every flight. Flight Simulator does this for you, so the mathematical procedure required in the real world can be avoided.

Please read The P2 Rating document [P2.3 Aircraft Performance](#).

### 4.4 Aircraft Axes – Pitch, Roll & Yaw

In flight, the aircraft can move in three dimensions as it is not constrained by being on the ground. Its movements can be defined as rotation about one or more of three axes of rotation, the normal axis, the longitudinal axis and the lateral axis.

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Please read the Cix VFR Club Flight Training Manual [Exercise 3](#) - The Aircraft in Flight

#### 4.5 Primary Effect of Controls

The aircraft flying surfaces have moveable sections which alter the way the aircraft behaves. The primary effect of these controls is that which the pilot wants to happen.

Please read the Cix VFR Club Flight Training Manual [Exercise 1](#) – Elements of an Aeroplane and Cix VFR Club Flight Training Manual [Exercise 4a](#) – Primary Effect of Controls

#### 4.6 Secondary Effect of Controls

Unfortunately the aircraft doesn't only respond in the way the pilot intends.

Please read the Cix VFR Club Flight Training Manual [Exercise 4b](#) – Secondary Effect of Controls.

### 5 CONTROLLING THE AIRCRAFT

#### 5.1 Taxying

Of course there is a right way and a wrong way to taxi, and in Flight Simulator some aircraft, of which the default Cessna 172SP is one, are notoriously much more difficult to taxi than real world Cessnas, due to some inaccuracies of behaviour modelling.

Please read Cix VFR Club Flight Training Manual [Exercise 5](#) – Taxying.

#### 5.2 Straight and Level Flight

The P2 Rated pilot will be able to maintain straight and level flight within required accuracy limits: -

Heading –  $\pm 10^\circ$       Altitude –  $\pm 100$  feet      Airspeed –  $\pm 10$  knots

Please read Cix VFR Club Flight Training Manual [Exercise 6](#) - Straight and Level Flight.

#### 5.3 Trimming

Without doubt, trimming is an art, and the pilot who masters that art has a relaxing flight, others spend a lot of energy fighting their aircraft.

Please read Cix VFR Club Flight Training Manual [Exercise 4c](#) - Trimming.

#### 5.4 Climbing

There are several different ways of going up – each designed for a particular situation.

Please read Cix VFR Club Flight Training Manual [Exercise 7](#) - Climbing.

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## 5.5 Descending

There are also several ways to (safely) come down again!

Please read Cix VFR Club Flight Training Manual [Exercise 8](#) - Descending.

## 5.6 Turning

Likewise there are several different ways to turn the aircraft.

Please read Cix VFR Club Flight Training Manual [Exercise 9](#) - Turning.

## 5.7 Slow Flight

Flying at speeds close to the stall, with and without flaps requires careful control in a condition where the controls are not as responsive as they are at higher speeds.

Please read Cix VFR Club Flight Training Manual [Exercise 10a](#) – Slow Flight.

## 5.8 Use of Flaps

Flaps can be used to aid take off and landing. However, the Club Training Manual describes the operation of flaps in detail in only the Approach configuration.

Please read Cix VFR Club Flight Training Manual [Exercise 8](#) – Descending.

## 5.9 Stalling

The stall behaviour in Flight Simulator is unrealistic in most aircraft, but the method of entering and recovering from a stall is described for various aircraft configurations.

Please read Cix VFR Club Flight Training Manual [Exercise 10b](#) – Stalling. Stalls are not part of the practical flight test for the P2 Rating.

## 5.10 Spin Avoidance and Recovery

For similar reasons to the inability of FSX aircraft to stall, few can be made to spin correctly but the types of spin are described method of entering and recovering from a spin is described.

Please read Cix VFR Club Flight Training Manual [Exercise 11](#) – Spin Avoidance.

Spinning is not part of the practical flight test for the P2 Rating.

## 5.11 Performance and Limitations

In this section the following elements are described in the Club P2 Rating document P2.2 Aircraft Performance.

- Take off and landing distances
- Altitude and Density Altitude

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- Fuel Management
- Weight and Balance
- Distance and Range
- Climb and Descent settings
- Cruise settings
  - Best fuel economy
  - Best Range
  - Best Speed
  - Altitude considerations

Please read the P2 Rating Training document [P2.3 Aircraft Performance](#)

### 5.12 Manoeuvring to Comply with ATC Instructions

This is a key part of flying on line with other aircraft and VATSIM ATC. If a pilot cannot position his aircraft as required by ATC, then he is going to spoil the enjoyment of the controller and the other aircraft.

Please read the P2 Rating Training document [P2.5 Flying with ATC](#)

### 5.13 Wind and Drift

Aircraft are creatures of the wind. If the wind blows across the direction of travel, then the aircraft has to be flown in such away as to cancel out any tendency to be blown off course. Unfortunately the procedure for counteracting drift involves more maths.

Please read the P2 Rating Training document [P2.4 Wind and Drift](#)

### 5.14 Start Up from Cold and Shut Down to Cold

When Flight Simulator loads for the first time after installation, it places you in a flexwing microlight aircraft, on a runway, with the engine running. VATSIM pilots like to do things better than that. They start where a real world pilot would start, in a cold and dark cockpit. At the end of their flight, they leave the aircraft in a cold and dark condition, as they would in reality.

Please read Cix VFR Club Flight Training Manual [Exercise 2](#) – Preparation for Flight and Closedown.

### 5.15 Carry out a Basic Flight

The student must be able to adequately demonstrate their ability to carry out a basic flight including taxi, take off, level, cruise, approach and landing within the published engine, configuration, and airspeed parameters.

Please read Cix VFR Club Flight Training Manual [Exercise 12](#) – The Standard Take Off & Climb To Downwind and [Exercise 13](#) – The Approach and Landing.

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## 5.16 Emergencies

The pilot needs to understand emergencies appropriate for the aircraft type and VATSIM, and how to conduct them provided ATC approval is secured prior to commencing the emergency.

Please read Cix VFR Club Flight Training Manual [Exercise 13E](#) – Emergencies.

## 6 AIRCRAFT SYSTEMS

The Cix VFR Club P2 rating student must be able to describe and demonstrate the following basics of flight and aircraft systems.

- Aircraft Systems
  - Powerplant
  - Propellers
  - Wings and Empennage
  - Flaps, slats, spoilers, air brakes
  - Mechanical or Electric Trim tabs
  - Landing Gear

These systems are described in Cix VFR Club Flight Training Manual [Exercise 1](#) – Elements of an Aeroplane.

- Basic Flight Instruments
  - Altimeter
  - Airspeed Indicator
  - Attitude Indicator
  - Turn Coordinator
  - Vertical Speed Indicator
  - Directional Gyro
  - Magnetic compass
  - Outside Air Temperature Gauge
- Engine Instruments
- Pitot/Static System
  - Pitot Heat
- Lights
  - Navigation Lights
  - Instrument Lights
  - Landing Lights

The web page [Aircraft Systems](#) on the Training Manual page of the Club website contains links to Internet resources which describe these aircraft systems in detail.

## 7 SUMMARY

This document has covered the requirements of the VATSIM P2 Pilot Rating at a level suitable for VATSIM members who have already gained the VATSIM P1 Rating. The links provided give access to the [essential training material](#)

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for the rating, so do read all the documents referenced. When you have done so, you should be in a position to take the P2 Pilot Rating Tests. The syllabus, the Practical Test Requirements and the P2 Rating application form are available from the Pilot Ratings page of the Club web site. The P2 written test is available on a separate page, once you have been registered as a student for the P2 Rating.

Members of Cix VFR Club automatically have access to all the training facilities offered by the Club. Those VATSIM members who wish to take the Pilot Ratings training or exams through Cix VFR Club are allocated a special temporary Student membership, which allows most of the privileges of Club membership while they are working through the courses.

The Club does not run a P2 Rating course with an instructor. However, we do offer a Single Engined Piston aircraft (SEP) flight training course with an instructor on a one to one basis, using all the training facilities available to Cix VFR Club members. This course is more comprehensive than the P2 Rating, and also covers the requirements of the VATSIM P3 VFR Pilot Rating.

The P2 Rating written test and flight test results are recorded in the Club's Student Training Records System, developed in-house. It includes the facility for students to look at (but not change) the information and comments entered by their instructor.