

**Saint Louis University-Madrid campus
Division of Sciences, Engineering & Nursing**

**Program: Global Aviation Degree with Concentration in Flight
Science-Professional Pilot**

SECTION:	01
CREDIT HOURS:	2 Credit Hours
INSTRUCTOR:	Stephen Belt
SCHEDULE:	Tuesdays and Thursdays 14:00 – 15:30
INSTRUCTOR OFFICE HOURS:	TBA
INSTRUCTOR CONTACT INFO:	TBA

REQUIRED TEXTS, MATERIALS, AND EQUIPMENT

- *Pilot's Handbook of Aeronautical Knowledge* (PHAK)
- *Airplane Flying Handbook* (AFH)
- *ATPL Ground Training Series: Communication* (ATPL), Oxford Aviation Academy
- *DA20-C1 Information Manual* (DA20 IM)
- *FAR/AIM 2012* (Will be available for purchase in October)
- *Parks Flight Operations Manual* (FOM)
- **Terminal and Sectional Charts**

INSTITUTION MISSION STATEMENT

The mission of Saint Louis University is the pursuit of truth for the greater glory of God and for the service of humanity. The University seeks excellence in the fulfillment of its corporate purposes of teaching, research, health care and service to the community. It is dedicated to leadership in the continuing quest for understanding of God's creation and for the discovery, dissemination and integration of the values, knowledge and skills required to transform society in the spirit of the Gospels. As a Catholic, Jesuit University, this pursuit is motivated by the inspiration and values of the Judeo-Christian tradition and is guided by the spiritual and intellectual ideals of the Society of Jesus.

PROGRAM MISSION STATEMENT

The mission of the department of aviation science is to actively engage in the fulfillment of Saint Louis University's mission so that our students are formed as global citizens who are intellectually, technically, and ethically prepared to be responsible leaders in the profession and their community.

FIVE DIMENSIONS OF THE SAINT LOUIS UNIVERSITY EXPERIENCE

Scholarship and Knowledge: By developing a well-rounded educational foundation which incorporates learning through experience, by becoming scholars in their chosen fields, and by dedicating themselves to the advancement of knowledge, students are prepared for advanced study, for their careers, and for lifelong learning.

Intellectual Inquiry and Communication: By developing the abilities of intellectual inquiry and communication, students are able to learn effectively, express ideas and concepts clearly, and apply their knowledge to new situations they encounter.

Community Building: By welcoming and working with others, regardless of race, ethnicity, religion, or gender, students build an inclusive community which leads to respect and compassion for human life and the dignity of each person.

Leadership and Service: By serving others and by promoting social justice, students become men and women for others who lead by their example.

Spirituality and Values: By developing their spirituality, values, and openness to the transcendent, students determine principles to guide their actions and their relationships with others.

PROGRAM OBJECTIVES AND GENERAL OUTCOMES

Knowledge: Graduates of the Flight Science program will **demonstrate** broad knowledge in the following fundamental subject areas: Mathematics; Physics; Chemistry; Philosophy; Psychology; Theology; Ethics; English Composition & Literature

Graduates of the Flight Science program will **demonstrate** their ability to build upon their fundamental knowledge in mathematics, sciences, and liberal arts to **analyze, synthesize, and evaluate** contemporary problems in the Flight Science domain. The overall areas covered in the program include the following: Professional Orientation; Aircraft Design, Operation, and Maintenance; Aviation Safety and Human Factors; National and International Aviation Law and Regulations; Airports, Airspace, and Air Traffic Control; Meteorology and environmental issues; Aerodynamics; Incident/Accident Investigation; Advanced Aircraft Systems; Air Charter and Air Carrier Operations; Flight Deck Automation; Corporate Aviation Management; Economics of Air Transportation; Culminating Senior Project; and a Cohesive Set of Approved Electives (a minor or a certificate is strongly encouraged).

Skills: Graduates of the Flight Science program will **demonstrate** proficiency in the following skills:

1. **Aircraft piloting** skills to achieve a Commercial Pilot Certificate with Instrument and Multiengine Ratings.
2. Oral, written and team **communication** skills to plan, execute, and present team projects in a peer-review setting.
3. **Research** skills to collect data via appropriate literature searches, apply appropriate analytical techniques, synthesize professional-quality reports, and present the research results.
4. **Critical thinking** and **analytical** skills to solve problems.
5. **Decision-making** skills to evaluate and proactively resolve flight-related challenges.
6. **Team building** skills that apply interpersonal communication skills and decision-making skills to resolve conflicts, manage challenges, and build high-performing teams.

Abilities: In general, graduates of the Flight Science program will have the ability to succeed in life, regardless of their chosen career field. They will **demonstrate** the following key abilities:

1. They will be able to **learn to learn**; therefore, they will be able to acquire new knowledge, solve new problems, and adapt to new environments.
2. They will maintain their **curiosity** for new knowledge, their **imagination** for innovative solutions, and their **creativity** in applying their knowledge and skills in novel ways.
3. They will develop their ability to **self-motivate** and **dedicate** themselves to every endeavor with **passion**.

4. They will apply **sound ethical judgment** in their personal and professional lives marked by integrity and trust.
5. They will strive to **serve others** in the personal, professional, and communal responsibilities.

Attitude: Ultimately, the graduates of the Flight Science Program are products of a Jesuit university. As such, they will **demonstrate** the following attitudes:

1. They will **respect the universality**—the inclusiveness—of a variety of intellectual disciplines that synergistically enrich each other as well as the multitude of spiritual paths that open one’s mind to the transcendent.
2. They will strive toward service to their fellow human beings as **men or women for others** and in so doing they will strive to apply prepared to be their technical knowledge and skills for the betterment of humanity.
3. Always give more – **MAGIS**. These graduates will be whole-heartedly charged to make a contribution toward their family, their organization, and their society—they will be inspired to choose to **do what is most needed** among the multitude of things that they are trained, skilled, prepared, or gifted to do.

AVIATION ACCREDITATION BOARD INTERNATIONAL (AABI) ACCREDITATION CRITERIA MANUAL – FORM 201

AABI Criterion 2.3 General Outcomes - Flight Science program

Aviation programs **MUST** demonstrate that graduates have:

- a. An ability to apply knowledge of mathematics, science, and applied sciences to aviation-related disciplines
- b. An ability to analyze and interpret data
- c. An ability to function on multi-disciplinary and diverse teams
- d. An understanding of professional and ethical responsibility
- e. An ability to communicate effectively, including both written and oral communication skills
- f. A recognition of the need for, and an ability to engage in, life-long learning
- g. A knowledge of contemporary issues
- h. An ability to use the techniques, skills, and modern technology necessary for professional practice
- i. An understanding of the national and international aviation environment
- j. An ability to apply pertinent knowledge in identifying and solving problems
- k. An ability to apply knowledge of business sustainability to aviation issues

AABI 201, Criterion 2.3 General Program Outcomes - Flight Science program

Course	AABI General Outcomes Criterion 2.3	
	h. An ability to use the techniques, skills, and modern technology necessary for professional practice	j. An ability to apply pertinent knowledge in identifying and solving problems

PP 120 Fundamentals of Flight I	X	X
------------------------------------------------	---	---

AABI 201, Criterion 2.4 Curriculum

The curriculum MUST address:

- a. Outcomes in college level mathematics and basic sciences appropriate to the program
- b. Outcomes in general education that complement the technical content of the curriculum and are consistent with the program and institutional objectives.
- c. Outcomes appropriate to the following aviation core topics:
 1. Attributes of an aviation professional, career planning, and certification
 2. Aircraft design, performance, operating characteristics, and maintenance
 3. Aviation safety and human factors
 4. National and international aviation law, regulations, and labor issues
 5. Airports, airspace, and air traffic control
 6. Meteorology and environmental issues
- d. Outcomes appropriate to the program-level criteria (Flight Science program)
 1. An ability to apply knowledge, skills, and attitudes to competently and ethically function as professional pilots in the aviation industry
 2. A broad education in the classroom and laboratory leading to Federal Aviation Administration Commercial certification with Instrument and Multi-engine Ratings, and turbine experience
 3. An ability to generate solutions to problems that arise in the professional pilot discipline in the capstone course
 4. An ability to succeed in life -- able to learn to learn, to self-motivate and dedicate themselves to every endeavor with passion -- regardless of their chosen career field
 5. A recognition of the need to serve their fellow human beings as men or women for others and in so doing, they will be prepared to apply their technical knowledge and skills for the betterment of humanity.

AABI 201, Section 2.4 Aviation Core Topics – Flight Science program

Course	c.2. Aircraft Performance	c.2. Aircraft Operating Characteristics	c.4. Regulations	c.5. Airports and Airspace	c.5. Air Traffic Control
PP 120 Fundamentals of Flight I	X	X	X	X	X

Program-Level Outcomes: Flight Science program

	PP 120 Fundamentals of Flight I
An ability to apply knowledge, skills, and attitudes to competently and ethically function as professional pilots in the aviation industry	X
A broad education in the classroom and laboratory leading to Federal Aviation Administration Commercial certification with Instrument and Multi-engine Ratings, and turbine experience	X

An ability to generate solutions to problems that arise in the professional pilot discipline in the capstone course	X
---------------------------------------------------------------------------------------------------------------------	---

MULTI-CREW PILOT LICENSE (MPL)

Graduates of the Flight Science program will have received training on the required knowledge areas for the issuance of an MPL. The MPL is a new licensing standard developed by the International Civil Aviation Organization (ICAO) which allows a pilot to exercise the privileges of a co-pilot in commercial air transportation on multi-crew airplanes. It provides the aviation community with an opportunity to train pilots directly for co-pilot duties.

Students will be tested over the required knowledge areas during this course, in subsequent courses, and at the end of their undergraduate work. ***Therefore, it is vital that the MPL information covered in this class is learned correctly and retained.***

This course will utilize the *ATPL Ground Training Series: Communications* textbook. Students will be expected to have adequate knowledge of the following topics by the end of the semester. Additionally, knowledge of the topics below will be evaluated during daily quizzes, and on the midterm and final exams:

- 1) VFR Communications
 - a) General operating procedures
 - i) Transmission of letters
 - ii) Transmission of numbers (including level information)
 - iii) Transmission of time
 - iv) Transmission technique
 - v) Standard words and phrases (relevant RTF phraseology included)
 - vi) Radiotelephony call signs for aeronautical stations including use of abbreviated call signs
 - vii) Transfer of communication
 - viii) Test procedures including readability scale
 - ix) Read back and acknowledgement requirements
 - x) Radar procedural phraseology
 - b) Relevant weather information terms (VFR)
 - i) Aerodrome weather
 - ii) Weather broadcast
 - c) Action required to be taken in case of communication failure
 - d) Distress and urgency procedures
 - i) Distress (definition, frequencies, watch of distress frequencies, distress signal, distress message)
 - ii) Urgency (definition, frequencies, urgency signal, urgency message)
 - e) General principles of VHF propagation and allocation of frequencies
- 2) IFR communication
 - a) Definitions
 - i) Meanings and significance of associated terms
 - ii) Air traffic control abbreviations
 - b) General operating procedures
 - i) Transmission of letters
 - ii) Transmission of numbers (including level information)

- iii) Transmission of time
- iv) Transmission technique
- v) Standard words and phrases (relevant RTF phraseology included)
- vi) Radiotelephony call signs for aeronautical stations including use of abbreviated call signs
- vii) Transfer of communication
- viii) Test procedures including readability scale; establishment of RTF communication
- ix) Read back and acknowledgement requirements
- x) Radar procedural phraseology
- xi) Level changes and reports
- c) Action required to be taken in case of communication failure
- d) Distress and urgency procedures
 - i) PAN medical
 - ii) Distress (definition, frequencies, watch of distress frequencies, distress signal, distress message)
 - iii) Urgency (definition, frequencies, urgency signal, urgency message)
- e) Relevant weather information terms (IFR)
 - i) Aerodrome weather
 - ii) Weather broadcast
- f) General principles of VHF propagation and allocation of frequencies

COURSE DESCRIPTION

This course will provide an overview of the concepts necessary for the safe solo operation of an airplane, in addition to a part of the aeronautical knowledge required for a private pilot certificate. The amount of material covered this semester is very large considering the number of times this class meets. There will not be enough time to discuss every topic in detail, so every student is expected to take the time necessary to complete reading assignments outside of class.

I understand that some topics are challenging and the reading may raise more questions than it answers. Please feel free to ask questions before, during and after class. It is your responsibility to make sure you understand a topic. If you feel confused on a subject, find me or another flight instructor, and we would be happy to help you.

Learning Outcomes:

- Provide students with the fundamental knowledge to use the techniques, skills, and modern technology necessary for a career as a professional pilot.
- Provide students with knowledge to build upon in their pursuit of a commercial pilot certificate with instrument and multiengine ratings.
- Help students in developing the ability to apply pertinent knowledge to identify and solve problems.
- Provide students with the ability to apply their knowledge to safely pilot an aircraft in solo flight and as a private pilot.
- Provide students with the knowledge necessary to pass the Private Pilot Written Exam over the information covered.

- Provide students with the knowledge of communications necessary to meet the MPL standard and pass the associated exam.

Course Objectives:

By the end of the semester, all students should be able to:

- List the policies and restrictions applicable to solo flight contained in the Parks College Flight Operations Manual.
- Explain the aircraft limitations and the importance of adhering to the limitations contained in the Pilot Operating Handbook.
- List and describe the components of an aircraft and the operation of all primary and secondary control surfaces.
- Explain lift, weight, thrust, and drag and how these forces affect an aircraft during the basic flight maneuvers and during slow flight, stalls, and spins.
- Describe and explain the operating principles of the aircraft engine and propeller, and describe the operation of all other airplane systems.
- Describe the operation and use of all six primary flight instruments.
- Identify and describe the different types of airport signs, lighting, and markings.
- Identify and explain symbology on a sectional or terminal chart, including all types of normal and special use airspace.
- Describe the Air Traffic Control services available to pilots, in addition to proper radio communication procedures and phraseology.
- Explain and calculate aircraft performance and weight and balance.
- Identify and explain the Federal Aviation Regulations and NTSB reporting requirements applicable to flight as a student or private pilot.

Teaching Methodology: This course will consist primarily of classroom lecture. Lecture slides will be posted online following each class for students to review. Reading assignments will be given for students to complete *prior* to class. These assignments can be found on the class schedule and may be modified or added to as necessary throughout the semester. The majority of assigned reading will only be 20-25 pages per class period, which should be manageable and allow enough time to study the material before coming to class. Expect to spend a minimum of one hour between each class period completing the homework and reading. Students should come to each class period already having a basic understanding of the subject. In class, there will only be time to reinforce the important points, answer questions, and to introduce information that may not be found in the books.

Attendance Policy: Attendance is mandatory. All students are expected to be in class at the scheduled start time and properly prepared for each class session. Attendance is documented by the instructor at the beginning of each class session. This class is a part of the FAA-Approved Private Pilot Certification Course. Therefore, attendance is dictated by federal regulations, and every class period must be attended in order for the minimum hour requirements to be met.

It is understood that a class period may be missed due to circumstances outside of your control. In these cases, it is expected that you notify the instructor *prior to* the missed class session. Additionally, the missed class period *must be made up*. A make-up session will need to be scheduled with me, another instructor, or a Flight Science Tutor. See me for more information regarding scheduling these sessions if necessary. All outstanding absences must be made up prior to taking the Midterm or Final Exam. If these absences are not made up prior to the exam, the exam grade will be decreased by 10% for each outstanding absence.

Attendance makes up 10% of the total grade for this course. One absence will have no impact on the attendance grade. Two absences will result in a 30% reduction in the attendance grade. Three absences will result in a 0% attendance grade, and more than three absences will result in an Absence Failure (AF) grade being issued for the course. Repeated tardiness will also negatively impact the attendance grade.

Assignments/Homework: Homework may be assigned as necessary to evaluate completion of the reading and understanding of classroom discussions. This homework may be given out in class, or posted online to be completed prior to the next class session. Late homework will only be accepted at the discretion of the instructor, and will result in a 30% reduction in the grade for that assignment.

Scenarios: Scenarios will consist of hypothetical situations posed to the class. These scenarios will be designed to represent actual circumstances that could be encountered by student or private pilots. Scenarios may be discussed in small groups, presented to the entire class for discussion, and may involve written assignments. Scenarios will provide students with an opportunity to improve their judgment and decision making skills by applying knowledge gained during the semester to a real-life situation.

Exams and Tests: Four exams will be given this semester. The dates for the exams are listed in the class schedule. All exams will be closed book. The first three exams will take place during the normal class meeting time. The Midterm and Final exams will be cumulative, meaning they will cover all information from the beginning of the semester up to the date of the exam. If a student knows he or she will be absent on a day an exam will be given, it is the student's responsibility to notify the instructor and schedule a time to take the exam outside of normal class time.

Quizzes: Quizzes will be given as necessary at the beginning of class to verify that the assigned reading was completed. These quizzes will be unannounced and closed book. They will consist of several simple questions from the reading assignment for that day. If you miss a quiz because you are late for class, you will not be able to make it up.

SLU Global: SLU Global will be utilized to post handouts, assignments, notes, and classroom presentations. Access to SLU Global is required for the course.

Academic Integrity and Honesty: The University is a community of learning, whose effectiveness requires an environment of mutual trust and integrity. Academic integrity is violated by any dishonesty such as soliciting, receiving, or providing any unauthorized assistance in the completion of work submitted toward academic credit. While not all forms of academic dishonesty can be listed here, examples include:

- Copying from a book or class notes during a closed book exam
- Submitting materials authored by or revised by another person as the student's own work
- Copying a passage or text directly from a published source without appropriately citing or recognizing that source
- Taking a test or doing an assignment or other academic work for another student
- Securing or supplying in advance a copy of an examination without the knowledge or consent of the instructor

Any clear violation of academic integrity will be met with appropriate sanctions. Possible sanctions for violation of academic integrity may include, but are not limited to, assignment of a failing grade in a course, disciplinary probation, suspension, and dismissal from the University. Students should review the policy on Academic Honesty.

Revision of syllabus and schedule: The syllabus and schedule will be revised as necessary throughout the semester at the instructor's discretion. Each document will include a revision number and/or revision date to aid in determining currency of modified documents.

METHOD OF ASSESSMENT AND EVIDENCE

Measure	Weight	Evaluation	Evidence
Attendance	10%	Attendance taken at beginning of each class session	Attendance records
Homework/Quizzes	10%	Written assignments and quizzes	Quiz/Homework grade records
Exam 1	15%	Written Exam	Exam grade records
Mid-Term Exam	25%	Cumulative Written Exam	Exam grade records
Exam 3	15%	Written Exam	Exam grade records
Final Exam	25%	Cumulative Written Exam	Exam grade records

Grading Scale:

Letter Grade:	Percentage:	Transcript Pts:
A	95% - 100%	4.0
A-	90% - 94%	3.7
B+	87% - 89%	3.3
B	84% - 86%	3.0
B-	80% - 83%	2.7
C+	77% - 79%	2.3
C	74% - 76%	2.0
C-	70% - 73%	1.7
D	60% - 69%	1.0
F	≤ 59%	0.0

Sample Class Schedule

Date	Subjects	Reading Assignment
	Syllabus Introduction to FOM	None
	<i>No Class – Mass of the Holy Spirit</i>	None
	Aircraft Flight Manual Aircraft Limitations, Airworthiness	FOM, PHAK Chapter 8 DA20 IM Sections 1, 2
	Airplane Components Flight Controls	PHAK Chapter 2 PHAK Chapter 5
	Principles of Flight	PHAK Chapter 3 PHAK 4-1 to 4-11
	Airport Markings and Signs Airport Operations	PHAK Chapter 13

	Flight Instruments Basic Aircraft Systems	PHAK Chapter 7
	Exam 1	None
	Local VFR Communication Communication Definitions and Phraseology	Handout ATPL Chapter 1, 3
	VFR Communication Procedures	ATPL Chapter 2
	Communication: Weather Information Communication: Failures and Emergencies	ATPL Chapters 4, 5
	Propeller Principles Aircraft Stability	PHAK 4-11 to 4-28
	Aerodynamics of Maneuvering Flight Slow Flight, Stalls, Spins	PHAK 4-28 to 4-33 AFH Chapter 3, Chapter 4
	Weight and Balance	PHAK Chapter 9
	Weight and Balance Introduction to FAR's	PHAK Chapter 9
	Midterm Exam	None
	<i>No Class – Fall Break</i>	None
	VFR Charts/Pilotage	Chart Legend PHAK 15-1 to 15-12
	National Airspace System	PHAK Chapter 14 Handout
	National Airspace System	PHAK Chapter 14 Handout
	Systems - Powerplant	PHAK 6-1 to 6-19 DA20 IM Section 7
	Systems - Airframe	PHAK 6-25 to 6-39 DA20 IM Section 7
	IFR Communication VHF Propagation	ATPL Chapters 6, 7
	Exam 3	None
	Performance	PHAK 10-1 to 10-26
	<i>No Class – Thanksgiving</i>	None
	Performance	DA20 IM Section 5
	FAR's – Part 1, 43	Selected FAR's
	FAR's – Part 61	Selected FAR's
	FAR's – Part 91	Selected FAR's
	No Class – Study Day	None
	Final Exam (12:00 – 1:50)	None

