# Professional Pilot Student Survival Guide for MTSU Aerospace Program

by

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**Abstract**

This thesis examines the advantages of the Middle Tennessee State University Aerospace Professional Pilot program and the academic courses' unique setup. By interviewing recent graduates and seniors who finished the program, this thesis sorts out some of the best approaches to go through the program efficiently. The thesis begins with general information about the department of Aerospace. The program sets up uniquely to provide an accelerated professional pilot program. All the graduates are qualified for the Restricted Airlines Transport Pilot certificate, which allows them to go to the airlines with 1000 hours instead of 1500 hours. Then, the research analyzes the flight lab check ride passing rate data. The passing rate determines whether a light school holds high standards and provides high-quality training. The study also includes interviews with two recent graduates and two graduating seniors to summarize the best way to go through the program with minimums amount of time. The research presented in this study points out the recommended methods for the students in the program and features to pay attention to in the program. The Professional Pilot Student Survival Guide benefits the large student body of Aerospace Professional Pilot students.

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## Introduction

Middle Tennessee State University (MTSU) has the signature aerospace program. It has been growing into one of the most extensive, fastest, most respected aerospace programs in the United States (Middle Tennessee State University, 2020). Since WWII, the Middle Tennessee State University flight training program has been on campus. The program has grown to be one of the top aerospace institutes with more than 100 certified flight instructors. It continues growing with all technologically advanced Diamond 40 aircraft in the fleet while developing a brand-new aerospace campus (Middle Tennessee State University, 2020). The Aerospace graduates from Middle Tennessee State University have important influences on the aviation industry in providing high-quality pilots and airline operational positions such as dispatchers and mechanics.

The Middle Tennessee State University aerospace major offers six concentrations: Professional Pilot, Aviation Management, Dispatch, Aviation Maintenance, Aviation Technology, and Unmanned Aircraft Systems (UAS) (Middle Tennessee State University, 2020). The Aerospace program has a broad range of experienced faculty members in the aviation industry. The faculty experience level is one element that makes Middle Tennessee State University unique compared to other aerospace universities in the United States. The Middle Tennessee State University Aerospace Program is accredited by the Aviation Accreditation Board International (AABI), which is “serve as the official accrediting body for all collegiate aviation” (Aviation Accreditation Board International, 2021). AABI establishes an accreditation system, which recognizes the specialized aerospace program and educational institutions around the world. The system ensures that the institutions achieve and maintain a level of “performance, integrity, and

quality". There are only few recognized institutions and programs are qualified in the AABI systems for the trust of high-performance of the educational community, industry, and the publics for the aviation industry (Aviation Accreditation Board International, 2021). For receiving accreditation, MTSU aviation program must meet the expectations of a series of assignments and quality standards that relate to the strategic managements of resources, the interaction of faculty and students in the educational process, and the achievement of degree learning objectives (Aviation Accreditation Board International, 2021). MTSU aerospace program was first accredited by AABI in 1992, and the aerospace department holds the high standards of academic performance which has the accreditation period until July 2027. The MTSU aerospace department has the vision to "prepare the students to become the leaders of the next generation of aerospace professionals by developing the knowledge, skills, and attitudes necessary for successful careers in aerospace" (Middle Tennessee State University, n.d.)

The Professional Pilot program is attracting students from all over the country. Many Middle Tennessee State University graduates are currently flying for every major US airline, regional airline, corporation, and governments agencies (Middle Tennessee State University, 2020). The flight program has its unique structure of flight training, which requires flight students to have one lab per semester. The MTSU flight student has the opportunity to finish all of the certificates and ratings required for the degree, including the private pilot certificate, instrument rating, commercial pilot certificate, and multi-engine rating, in less than two years.

In the two years of flight training, MTSU flight students have the opportunity to fly an average of 250 hours. At MTSU Flight School, the flight students gain experiences

in real flight environments on Diamond 40 aircraft, which allows the program to provide complete hands-on experiences for the aerospace students. Diamond's DA 40 aircraft is a low-wing 4 seats composite airplane which is suitable for everything from primary trainings to personal use through hard instrument meteorological conditions (IMC). Diamond DA40 aircraft has an outstanding safety record during its more than 20 years operations. The unique design of the airplane makes the Diamond 40 aircraft to be one of the best and safest training aircraft in the world (Diamond Aircraft Industries, 2022). With all the advanced avionics aircraft at MTSU flight school, students can utilize the computerized system in an innovative and scenario-based training environment.

The Federal Aviation Administration (FAA) provides MTSU Flight School with an approved flight training curriculum that allows MTSU aerospace students to participate in a proficiency-based training program instead of a program requiring a set minimum number of flight hours for the flight labs. The MTSU flight school flight training program is certified under Federal Aviation Regulation Part 141 regulations which qualify graduates to meet the Restricted Airline Transport Pilot certificate requirement at 1000 hours instead of 1500 hours total flight time.

The training curriculums for the aerospace flight training program provide a fast track for students to get all their ratings and certificates. However, some students finish all the flight training in less than two years, while others take all four years to complete the flight training to graduate. Each student's progress appears to be different through the flight training at the MTSU aerospace program. Some factors affect the students completing the lab each semester, such as weather, illness, student/instructor issues, aircraft availabilities, and check ride schedules. Although most students desire to

complete the lab on time, unexpected factors cause delays in training for some students in the program. On the other hand, many students completed the program in a relatively short time and started time building as flight instructors. It is clear that the MTSU flight program designs a fast track for the aerospace student to achieve their end goal; However, some students find it challenging to find the correct path to follow in terms of finishing each lab every semester.

The FAA reviewed the MTSU flight school training curriculum and allowed MTSU flight school to have a unique program focusing on students' proficiencies and be qualified to receive 500 hours credited to qualify for the Restricted Airline Transport Pilot Certificate (Middle Tennessee State University, 2020). The students in the flight training program responded differently in their reflection on the progress they experienced in completing the flight training. The program is flexible, allowing the students to explore the best way of getting through the entire aerospace training program. Experiences including tips and tricks from seniors who have been through the program would help the current aerospace flight students chart a path for success at MTSU.

**Flight School Check Ride Passing Rate Data**

Table 1:

Check Ride Passing Rate Summer and Fall 2021

| Check Ride Type | # of First Time Attempt Failed | Total # of Check Rides | Pass Rate |
|---|---|---|---|
| Private | 4 | 20 | 80% |
| Instrument | 27 | 159 | 83% |
| Commercial | 17 | 138 | 88% |
| Multi-Engine | 7 | 98 | 93% |
| CFI | 6 | 58 | 90% |
| CFII | 4 | 30 | 87% |
| MEI | 1 | 10 | 90% |

Note. The data is from May 1, 2021 to December 31, 2021.

## Check Ride Passing Rate Data Analysis

Middle Tennessee State University flight program holds the Federal Aviation Regulation Part 141 certificate, which allows the graduates from the professional pilot program to qualify for the Restricted Airline Transport Pilot Certificate (RATP) at 1000 hours instead of 1500 hours (Federal Aviation Administration, 2021). According to Advisory circular 141-1B, “the pilot school has established a pass rate of 80 precent or higher on the first attempt […] may have its certificate renewed” (Federal Aviation Administration, 2017, pp. 7-3). The Check Ride Passing Rate Data presents the percentage of students completing FAA check rides on their first attempt across all levels of certification. During this period, the MTSU Professional Pilot Program achieved at least an 80% pass rate in each primary flight lab, which involves a check ride. The flight school tracks spreadsheets for each primary flight lab to keep improving the passing rate. Based on the Professional Pilot Annual Assessment Data, the MTSU flight school has updated its tracking method for stage checks and check ride failures to improve the passing rate for the Professional Pilot program continuously. MTSU Flight School demonstrates proficiency and strong academic areas in flight training to maintain the Part 141 Flight School certificate.

## Interview Data

**Question 1:** What Ratings and certificates do you have?

Interviewee 1 has a Commercial Single engine and Multi-engine certificate with an instrument rating. He also holds a Certificated Flight Instructor certificate with an instrument rating.

Interviewee 2 holds a Commercial Single engine and Multi-engine certificate with an instrument rating. She has a Certificated Flight Instructor certificate with an instrument rating for both single-engine and multi-engine airplane.

Interviewee 3 has a Commercial Single engine and Multi-engine certificate with an instrument rating. She holds a Certificated Flight Instructor certificate with an instrument rating for both single-engine and multi-engine airplane.

Interviewee 4 has a Commercial Single engine and Multi-engine certificate with an instrument rating. He also holds a Certificated Flight Instructor certificate with an instrument rating for both single-engine and multi-engine airplane.

**Question 2:** What characteristics of the MTSU program appeal to you and make you choose MTSU?

All interviewees mentioned that the MTSU professional pilot program allows the students to complete the desired ratings and certificates in as little as three years. One of the interviewees talked about the structure of the flight labs and the classes. Each lab had its associated lecture class.

**Question 3:** Can you share your flight training experiences at MTSU?

Two interviewees entered the Professional Pilot program at MTSU with their Private Pilot certificate. In their second semester of freshmen year, they enrolled in

an instrument lab to get their interment rating. The other two interviewees started the program with no aviation background and began with their private pilot training at MTSU. All interviewees mentioned the impact of the Covid-19 pandemic, which caused the delay in flight training. One of the interviewees decided to work on his private pilot certificate outside of MTSU at a local flight school which is Federal Aviation Regulation 14 CFR part 61 subpart E – Private Pilot. All interviewees finished graduation required flight labs in 5 to 6 semesters since the beginning of their training. Immediately after, they all decided to work on certificated flight instructor certificate at the flight school.

**Question 4:** What difficulties appear in your flight lab?

All interviewees mentioned the weather to be the biggest problem in flight training. Especially in private training, the weather appears to be the most serious difficulty during the training. Two interviewees talked about how Covid-19 affected their flight training with many adjustments, including wearing masks and different flight school policies during the pandemic. They believed that that was another difficulty that appeared in their flight lab.

**Question 5:** How did you solve or encounter the problems or challenges?

Interviewee 1 emphasizes the importance of time management. He had problems of having trouble managing schoolwork and flight lab at the same time. However, he talked about making plans and schedules for the flight lab, which helped him greatly throughout the training. Interviewee 2 mentioned doing flight training to be the priority over everything else. The flight schedule always comes first before planning for other activities. Interviewees 3 and 4 talked about the importance of flexibility for

flight training. It is quite often that some flight spots are opening last minute. Being flexible is the key to getting last-minute flight slots.

**Question 6:** How long did it take you to complete all your flight labs required for the Aerospace degree?

Interviewees 1 and 4 claimed that they attended summer classes, allowing them to complete all the flight labs in 2.5 years. Interviewees 2 and 3 completed all the flight labs required for the degree in 3 years.

**Question 7:** How does scheduling of stage check and end of the course (EOC) affect your training?

All the interviewees mentioned that weather and the stage check instructors' heavy schedules are the two only factors that can prolong the time of finishing the stage check or the end of the course. However, it never became an issue where the checks got delayed for more than a few days.

**Question 8:** Would you please share some of your studying tips and tricks for your flight training?

All interviewees mentioned that studying is the only way to be successful in-flight training. They all highlighted the facts that understand precisely why something in aviation worked the way it did. The interviewees pointed out that they paid close attention to small details, which paid off over time. Interviews 1 and 4 mentioned about the "armchair" flying to prepare for their flights. "Armchair" flying means mentally pre-flying the training profiles which are required to perform in flight. They said that "armchair" flying helped them to prepare and rehearse for the flight, and they ended up having a great flight.

**Question 9:** Tell me about some of the things you did to be successful for your check-ride, stage check, and end of the course.

All four interviewees mentioned that they treated stage checks very similarly to check rides. Stage checks is a required progress check at Part 141 Pilot Flight School. The purpose of stage checks is examining the student's level of skills to be on track in given stage. Interviewees 1, 2, and 4 created study guides and studied as much information about each testing item as possible. They usually started to study stage checks about a week before the stage check and two weeks before the check ride. Interviewee 3 emphasized the usage of flash cards. She mentioned that making flashcards is the only way for her to study and memorize the materials. Lastly, all interviewees mentioned the importance of "armchair" flying in their stage check and check ride preparations.

**Question 10:** What did you do to maintain your flight proficiency?

All interviewees talked about frequently flying to maintain flight proficiency. They enrolled in flight labs one after the other, so they do not have a big gap between their training in the flight labs.

**Question 11**: How long was your flight delayed

Interviewee 3 had the most prolonged flight delay for her commercial pilot certificate check ride. She had to wait for five weeks before she was able to do her check ride. The other interviewees didn't have any long delays for check rides.

**Question 12:** How would you analyze the unique sequencing of flight labs and academic classes?

All interviewees mentioned that the unique sequencing of flight labs and academic classes is highly beneficial for the students. The program offers a double dose of ground training, allowing the students to learn from their instructors, review the same materials with a professor, and then practice with their instructors on their flights.

**Question 13:** How did our academic and flight labs set up to help you succeed and complete the program?

Interviewee 1 stated that the program provided him with a firm base of knowledge that allowed him to understand what he needed to learn to be successful.

Interviewee 2 claimed that all the academic aerospace classes, such as Aerodynamics and Aircraft Performance, helped her have a better and deeper understanding. She found supporting aerospace classes to be extremely helpful for the students.

Interviewee 3 mentioned that Professional Pilot IV and Professional Pilot V are her favorite classes, where she received foundational knowledge about regional jets. She appreciated a lot for the 28 hours of simulator time on our CRJ-700 simulator, which serves as transitioning courses for the students to transition flying a jet.

Interviewee 4 talked about the flow of the program, which navigates the students through the program without too much difficulty. He mentioned that this program gives the students easy access to aviation careers and always knows what to do for the next step. He also talked about the flexibility of the flight lab, where the students are encouraged to fly as much as they want.

**Question 14:** What would be some advice you would give to future students to succeed in the program?

All interviewees talked about prioritizing flight training and keeping a good GPA. They took advantage of this program, which allowed them to finish all the required flight labs and become flight instructors in as little as two and a half years. They also mentioned the usage of the Flight Lab Guide. They utilized the Flight Lab Guide to navigate through the program because there are many small things to secure the flight lab spots. Lastly, they mentioned that it is an excellent time to be a pilot due to the pilot shortage. Therefore, take advantage of the MTSU Flight program to have a head start on flight training and a future career.

## Interviews: Experience in the program

This project is a qualitative, multiple case study design including two recent graduates and two graduating seniors who participated in this thesis project to discuss their strategies for navigating the professional program at Middle Tennessee State University. The interviews were conducted with the interviewees to discuss their experiences in the Aerospace Professional Pilot program covering their entire college journey. The interview covered interviewee demographic information, tricks, and tips for navigating the program.

The interview questions include the following:

- Interviewee demographic information.
- Aviation backgrounds.
- Personal insights of the program.
- Recommendations for future students.

The interviewees come from different backgrounds: one from Georgia, one from South Carolina, one from Tennessee, and myself from China. All the interviewees have different backgrounds in aviation as well. Two of them had their private pilot certificate when they started the professional pilot program, and the other two entered the program as student pilots. Two of the interviewees are males, and two are females. As revealed in the interviews, all participants pursued a different path through the program. However, the interviewees obtained all certificates and ratings in five semesters. They obtained flight instructor certificates at Middle Tennessee State University Flight School. The purpose of the interview was to provide a general overview of the professional pilot

program and insight information to help future students attain success and "survive" in their pilot flight training.

The interview began with questions regarding the interviewees' basic qualifications attained upon completion of the professional pilot program. All the interviewees hold single and multi-engine commercial pilot certificates with an instrument rating, and all interviewees hold Certified Flight Instructor certificates with the instrument rating (CFII). Two of us hold the multi-engine instructor certificate (MEI). The Certified Flight Instructor certificate, in conjunction with the Commercial Pilot certificate, is the highest pilot certificate available before attaining the Airline Transport Pilot certificate (ATP). It is probably one of the most beneficial certificates because the instructor is able to build hours at the same time as gaining experience by teaching students across all flight labs (Wetterdahl, 2020).

During the interview, the interviewees all presented different reasons for choosing and attending the MTSU aerospace program. However, the most appealing characteristic of the Professional Pilot program is that a student can complete the private pilot certificate to commercial multi-engine certificate in five semesters. The program is an accelerated professional pilot program for the students, allowing them to progress through the program while also receiving an applicable degree. MTSU aerospace program is set up uniquely. For each flight lab, there is an associated lecture class on campus each semester. The sequence of the courses allows the students to receive flight training, both for flight and ground sessions, with their assigned flight instructor. Flight instructors train in the flight lab, and an experienced professor teaches academic portions on campus. In comparison, most of the collegiate aviation programs do one flight lab per

school year instead of one flight lab per semester. For many other collegiate aviation programs, students need four to six years to graduate, because of the flight lab requirements. However, MTSU provides the student a fast-track that they have the opportunity to complete the flight labs in as short as five semesters.

For most of us who started college in the fall of 2019, our experiences are slightly different than most of the other students because of the Covid-19 pandemic. Here is the flight training experience from one of the recent graduates participating in this thesis project:

*"I enrolled in class fall of 2019 and built my GPA enough to successfully receive a pilot lab in the spring of 2020. I started private training and made it to the point just before my first solo as the COVID pandemic started to ramp up. After some health precautions were put in place, I was able to successfully complete my private lab in the summer. This allowed me to start my instrument lab in the fall, and it ended up being one of my favorite and quickest paced labs. Through my diligent instructor I was able to complete the lab in 5 weeks' time. The ability to pace my own training is something I valued a lot while going through the program. In the spring of 2021, I started and completed my commercial lab. I had one of my favorite single flights in the commercial lab. It was a solo IFR cross country which I was able to do entirely in IMC conditions. In the summer I started training for the certificate I had worked hardest for. The CFI lab was the most stressful and time-consuming lab I took but also the most rewarding. I was able to complete the lab and receive a job offer by the end of the summer. In the fall I started instructing my first private student and completed the multi-engine lab. It was a quick lab that I wish lasted longer. In my last semester as a student at MTSU, spring 2022, I took and*

*completed the CFII lab. I now work at the flight school full time and plan on doing so until I reach R-ATP minimums".*

Based on his experiences, it is easy to see that having a high GPA is essential to receive the flight lab. Many external factors can affect the progression of flight training; however, prioritizing flight training is a significant step to success in the professional pilot program at MTSU. Most aerospace classes and flight labs are the pre-requisite or co-requisite of the other; therefore, having a good plan throughout the four years of college would be a great idea. The aerospace department requires the professional pilot major concertation students to meet at least once every semester to ensure they are on track to graduating on time. A good flight instructor is also important to the program's success. During the spring and fall semesters, the student and instructor are required to meet at least four times a week, five times a week during the summer semester, and the flight school opens seven days a week from 6 am to midnight. However, there are no limits on how many times a student can fly or do ground training. The students and instructor are encouraged to do more than just the minimums. MTSU flight school provides a fast track for the students who prioritize their flight training. After fulfilling the required flight labs to graduate, the students are also encouraged to become certified flight instructors (CFI) and receive a potential job offer as an instructor at the flight school.

Everyone appears to have some difficulties in the flight lab. Three out of four interviewees mention the weather factors in flight training. Weather cancellation is one of the most common reasons to cancel a flight. Murfreesboro, Tennessee, usually has good weather for flying all year round except for a few weeks in the spring semester. Students

are always encouraged to do ground training when the weather isn't meeting the minimums for flight training. On average, students at MTSU Flight School can finish each flight lab within the same semester. Many students can finish their flight lab 8-10 weeks after the first day of school.

Stage checks are required as part of the approved syllabus for 14 CFR part 141 flight schools under the Federal Aviation Regulations. All the interviewees mentioned the waiting period to get scheduled for stage checks during the interview. Stage checks can be understood as progress checks during the pilot training. The student is paired with a senior flight instructor to examine the student's skills at the current stage of training. Weather and instructor schedules are usually the two most significant factors that delay training. The interviewees point out that it happens to everyone in training; however, it never prolongs enough to cause issues in training. The instructors and the students must prioritize flight training to process through the flight labs as quickly as possible. Stage checks are often treated as the mock check ride to prepare the students for the FAA check ride at the end of each flight lab to obtain the FAA pilot certificates. In the past 141 schools, stage checks and end-of-course exams are required in the flight labs. All interviewees point out that they make their study guides based on their level of flight experience, strengths, and weaknesses. Ground knowledge is just as necessary as flight skills for a pilot to succeed in their career. They all mention "armchair" fly to prepare themselves for the flight portion of the stage check and end-of-course. Based on the interview, all the interviewees used flashcards to help themselves to study the required materials.

Studying for the check ride and stage involves a lot of constant studying and accumulation of experiences at the level of flying. Review flights and "armchair" flying are recommended before each major check ride and end-of-course examination. Being a pilot is never easy, and there is a lot of studying behind every certificate. The interviewees show a good understanding of aviation and understand how and why it works the way it is. Paying attention to small details and the obsession pay off over time. They mention explaining the concepts to their peers while studying for the stage checks and check rides. One interviewee said explicitly that the more studying is done before the flight, the better he performs in the lesson, and it ends up being a great flight.

Maintaining proficiency in flying is important throughout the flight training because the more practice, the better understanding, and feelings toward the aircraft. Three out of four interviewees do not have a long gap between each flight lab. The other interviewee took a semester off due to medical issues. They were consistently flying and finishing each flight lab before the deadline helped maintains a high proficiency level. MTSU Professional Pilot Program provides students opportunities to keep high proficiency throughout their college career and bridges the gap between the regional airlines. Flight labs and academic classes are set up to benefit students to keep their proficiency. All the interviewees mentioned that the setup for the classes is extremely beneficial to the students. The student can receive a double dose of ground training: one from their instructor and the other from the academic professor. It helps to fill in the gap of knowledge in flight training, which provides a firm base of knowledge that allows the student to understand what is needed to learn to be successful in the professional pilot program.

At the end of the interview, all interviewees talk about advice to give future students to succeed in the professional pilot program at Middle Tennessee State University. They all mentioned putting effort and time into flight training, and the more one put in, the more one will get out of it. The Professional Pilot program at MTSU is flexible and allows the students to work more or less at the pace the student desire. It is a great time to be a pilot because of the pilot shortage appearing in the aviation industry. The program allows the students to take advantage of the time and situation. It can be a great tool to build a firm foundation for the aviation career by going through an FAA-approved Part 141 flight school along with a bachelor's college degree to endeavor the career.

## Program Analysis

Middle Tennessee State University Aerospace Professional Pilot Program provides a fast track for the students in aviation by allowing them to complete the program in a reasonable amount of time and to move on to the next step of their career. The MTSU Professional Pilot program allows the students to start to work on their certificates and rating as fast as their second semester freshman year due to the GPA requirements for awarding flight labs. The purpose of the flight lab awarding system is to hold high academic standards for professional pilot students. The program requires students not only to be qualified pilots, but also well-developed college graduates. The MTSU Flight School offers three flight labs each year in Fall, Spring and Summer semesters. It allows the students to fly all year round and finish required certificates and ratings in a timely manner. According to the Flight Lab Guide, the flight school has the goal of accommodating every student who wishes to fly to be awarded a flight lab each semester. However, it is the students' responsibilities to make sure that they are ready to begin flight training on the first day of the school semester.

The flight school developed a new Training Course Outline (TCO) to ensure the quality of training which includes Aviation Training Devices (ATD) for instrument lab and specific flight hour requirements. For Professional Pilot Flight Lab I – Private Pilot, the flight lab required 50.5 total hours to issue a graduation certificate for the program. The Professional Pilot Flight Lab II – Instrument Pilot required students to have 43.6 hours of total time in the aircraft with 4.0 hours of ATD. Out of the 43.6 hours of total flight time in the lab, the students need to meet 9.0 hours of dual cross-country flight time and 35.0 hours of total instrument time to include simulated instrument time. Comparing

to Part 61 Flight School requirements, the students need to meet at least 50 hours of cross-country flight time as pilot in command (Federal Aviation Administration, 2021). The Instrument Rating Course at MTSU allows students to get their ratings faster with less time and money needed. The Professional Pilot Flight Lab III – Commercial Pilot lab helps the students get their commercial pilot certificate in as little as 65 flight hours in the lab. In comparison, other students who decided to do their commercial pilot certificate at a part 61 flight school must have at least 250 hours of flight time (Federal Aviation Administration, 2021). The MTSU Professional Pilot Program designed to help students to have a fast track through their career in becoming a pilot across aviation industry. After Private, Instrument and Commercial lab, all Professional Pilot students are required to take Professional Pilot Flight Lab IV – Multi Engine lab to obtain multi-engine add-on rating. The multi-engine lab is designed as Part 61 lab, which has no specific flight hour requirements. The student can complete the multi-engine lab in as little as 2 weeks at MTSU flight school. The Professional Pilot I, II, III and IV labs fulfill the minimum certificates and ratings requirements for the airlines, which is multi-engine commercial certificate with instrument rating.

Other than the flight labs, the Middle Tennessee State University Professional Pilot program offers Professional Pilot IV and Professional Pilot V to bridge and help the students transition to an airline multi-crewmember environment. The Professional Pilot IV class serves as the “Airline Ground School” class, which teaches the students basic systems of flying a regional jet. The Professional Pilot IV class comes with a 7.0 hours CRJ-700 Simulator lab to introduce the basic systems operations. The Professional Pilot V class focuses on the operations of the regional jet, and the lab allows the students to

operate the CRJ-700 Simulator with another student for entire 21.0 hours. The professional Pilot V simulator sessions help the students learn and understand airline type operations from starting the jet engine to take-off, approaches and procedure profiles. The students also have the opportunities to deal with real life situations and emergencies in flight, which forces the students to work in the multi-crewmember environment.

The Middle Tennessee State University Professional Pilot program not only allows the students to obtain flight certificates and ratings, but also bridges the students into the aviation industry by building the foundations for their future career. Every student graduate from the professional pilot program should be able to act as a first officer under 14 CFR Part 121 in a multi-crew environment.

## Conclusion

Middle Tennessee State University Aerospace program offers the Professional Pilot Students a rigorous fast-tracking program to obtain all the required certificates and ratings for the next step of their aviation career. The program not only focuses on effective and efficient flight training but also prepares students for success in their future career. However, it is very important for the students to realize the privileges of being in the program and to utilize the resources MTSU offers to their advantage to achieve the best outcome from the program.

First of all, it is important to prioritize flight training for all flights labs. All the interviewees who successfully completed the program and obtained a degree in less than the traditional 4 years prioritized their flight training for each flight lab. To complete the certificate or rating early in each flight lab is a joint effort between the student and the instructor. Both the student and the instructor have to work together to figure out schedules that work for both of them. When the student provides very limited availability, it appears to be an issue to schedule flights. Flight training has its limitations, especially for the weather, aircraft availability, and other external factors. In certain times of the year, it is likely there will be cancellations for the flights for days or weeks. Taking advantages of good weather, when flights slots are available helps to achieve flight lab progression. During the interviews, the interviewees mentioned the advantage of short time bookings or flying more than once a day. When the flight schedule is built every afternoon, there are always open gaps on the schedules. Instructors are able to make bookings on the schedules when those openings are available. The professional program

provides students the opportunity to elevate their career, but it is also dependent on the students making flight training a priority.

Moreover, flying is not easy. Students have to spend time studying the required information and knowledge. Interviewees in this research all mentioned studying and preparing for each stage check and flight. One of the interviewees claimed that the more he studied for the flight, the more comfortable he was during the lesson and the more he can get out of it after each flight. MTSU Flight School publishes the Training Course Outlines (TCOs) on Foreflight and Flight Schedule Pro for both students and instructors to know what is covered in each flight lesson. The instructor has to preform and teach the exact items on the flight lesson to complete each lesson. Flying should be a constant learning process for both the students and the instructors. The learning process should not stop outside of the airplane. However, students have to understand the importance of preparing for the lessons, and it should not be the instructor's responsibility alone. What is more, "Armchair" flying is another great way to improve flying skills and the understanding of the procedures. MTSU Flight School published the Standardization Manual for students to study before their flights. It is every aerospace professional pilot student's responsibility to be prepared and study before each of their flights. The MTSU Flight School offers various resources for the students to use in their flight training. Therefore, there is really no reason not to study and to take advantages of the MTSU Aerospace Professional Pilot Program.

Lastly, the department of aerospace publishes the Flight Lab Guide to help each of the aerospace professional pilot students to navigate through the program. Each professional pilot student should carefully review and follow the Flight Lab Guide to

ensure a flight lab slot in each semester. Students should apply for financial aid as soon as possible before each lab. It is recommended to begin financial aid application before the flight lab is awarded. The flight school offers spring, summer and fall flight labs each year. Students are required to complete Flight Lab Request Forms for specific semesters. Therefore, professional pilot students who want to fly in each semester should carefully review the flight lab guide and submit the Flight Lab Request From as soon as it opens. Professional pilot students are required to have at least a Second-Class Medical Certificate to be considered for the flight lab. However, students are always encouraged to have a First-Class Medical and email it to the flight school. Federal Aviation Administration required pilots who act as pilot-in-command for the flight to obtain a medical certificate. Medical certificates are designated as first-class, second class or third-class. In general, airline transport pilots require a first-class medical certificate; second-class is designed for the commercial pilot; and a third-class medical is intended for the private, student, and recreational pilot (Federal Aviation Administration, 2015). Each flight lab has its associated academic course. Students should register for both the flight lab and the associated lecture class for the upcoming semester when the flight lab is awarded. In order to get the flight lab for the next certificate or rating, the previous flight lab must be completed, which shows the importance of being on top of flight training and follow the steps of the program sequence.

Middle Tennessee State University provides one of the topflight training programs in the United States and a unique academic training program allowing students to finish certificates and ratings efficiently. The Professional Pilot program helps to set students up for success, but it is also the students' responsibility to study and feel

prepared for each flight lesson. Students should take advantage of the program to obtain the required certificates and ratings to proceed to the next level in the aviation industry.

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# Appendix A: IRB Approval

**IRB**
**INSTITUTIONAL REVIEW BOARD**
Office of Research Compliance,
010A Sam Ingram Building,
2269 Middle Tennessee Blvd
Murfreesboro, TN 37129
*FWA: 00005331/IRB Regn.. 0003571*

MIDDLE TENNESSEE STATE UNIVERSITY

## IRBN007 – EXEMPTION DETERMINATION NOTICE

Wednesday, April 27, 2022

| | |
|---|---|
| *Protocol Title* | ***Aerospace Student Survival Guide for MTSU Aerospace Program*** |
| *Protocol ID* | **22-1135 2i** |
| *Principal Investigator* | **Weitan Jin** (Student) *Faculty Advisor:* Peter Neff |
| *Co-Investigators* | NONE |
| *Investigator Email(s)* | *wj2g@mtmail.mtsu.edu; peter.neff@mtsu.edu* |
| *Department/Affiliation* | Aerospace |

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXEMPT** review mechanism under 45 CFR 46.101(b)(2) within the research category ***(2) Educational Tests, surveys, interviews or observations of public behavior*** *(In person Interview)*. A summary of the IRB action and other particulars of this protocol are shown below:

| | |
|---|---|
| *IRB Action* | **EXEMPT from further IRB Review**<br>Exempt from further continuing review but other oversight requirements apply |
| *Date of Expiration* | **8/31/2023** *Date of Approval:* **4/27/22** *Recent Amendment:* **NONE** |
| *Sample Size* | TEN (10) |
| *Participant Pool* | **Healthy adults (18 or older) – Recent MTSU Graduates** |
| *Exceptions* | In-person data collection is permitted |
| *Type of Interaction* | ☐ Non-interventional or Data Analysis<br>☐ Virtual/Remote/Online Interview/survey<br>☒ **In person or physical– Mandatory COVID-19 Management (refer next page)** |
| *Mandatory Restrictions* | **1. All restrictions for exemption apply.**<br>**2. The participants must be 18 years or older.**<br>**3. Mandatory ACTIVE informed consent.**<br>**4. Identifiable information, such as, names, addresses, and voice/video data, must not be obtained. NO Audio/Video recording is approved.**<br>**5. NOT approved for online data collection.** |
| *Approved IRB Templates* | *IRB Templates:* Recruitment Flyer and Online Informed Consent<br>*Non-MTSU Templates:* Recruitment Script(s) |
| *Research Inducement* | NONE |
| *Comments* | NONE |

**Summary of the Post-approval Requirements:** The PI and FA must read and abide by the post-approval conditions (Refer "*Quick Links*" in the bottom):

- ***Final Report:*** The Faculty Advisor (FA) is responsible for submitting a final report to close-out this protocol before **8/31/2023**; if more time is needed to complete the data collection, the FA must request an extension by email. REMINDERS WILL NOT BE SENT. **Failure to close-out (or request extension) may result in penalties** including cancellation of the data collected using this protocol or withholding student diploma.
- ***Protocol Amendments***: IRB approval must be obtained for all types of amendments, such as:
  - Addition/removal of subject population and sample size.
  - Change in investigators.
  - Changes to the research sites – appropriate permission letter(s) from may be needed.
  - Alternation to funding.
  - Amendments must be clearly described in an addendum request form submitted by the FA.
  - The proposed change must be consistent with the approved protocol and they must comply with exemption requirements.
- ***Reporting Adverse Events:*** Research-related injuries to the participants and other events , such as, deviations & misconduct, must be reported within 48 hours of such events to compliance@mtsu.edu.
- ***Research Participant Compensation:*** Compensation for research participation must be awarded as proposed in Chapter 6 of the Exempt protocol. The documentation of the monetary compensation must Appendix J and MUST NOT include protocol details when reporting to the MTSU Business Office.
- ***COVID-19:*** Regardless whether this study poses a threat to the participants or not, refer to the COVID-19 Management section for important information for the FA.

**COVID-19 Management**:
The FA must enforce social distancing guidelines and other practices to avoid viral exposure to the participants and other workers when physical contact with the subjects is made during the study.

- The study must be stopped if a participant or an investigator should test positive for COVID-19 within 14 days of the research interaction. This must be reported to the IRB as an "adverse event."
- The FA must enforce the MTSU's "Return-to-work" questionnaire found in Pipeline must be filled and signed by the investigators on the day of the research interaction prior to physical contact.
- PPE must be worn if the participant would be within 6 feet from the each other or with an investigator.
- Physical surfaces that will come in contact with the participants must be sanitized between use
- **FA's Responsibility:** The FA is given the administrative authority to make emergency changes to protect the wellbeing of the participants and student researchers during the COVID-19 pandemic. However, the FA must notify the IRB after such changes have been made. The IRB will audit the changes at a later date and the PI will be instructed to carryout remedial measures if needed.

**Post-approval Protocol Amendments:**
The current MTSU IRB policies allow the investigators to implement minor and significant amendments that would not result in the cancellation of the protocol's eligibility for exemption. ***Only THREE procedural amendments will be entertained per year*** *(changes like addition/removal of research personnel are not restricted by this rule).*

| Date | Amendment(s) | IRB Comments |
|---|---|---|
| NONE | NONE. | NONE |

**Post-approval IRB Actions:**
The following actions are done subsequent to the approval of this protocol on request by the PI or on recommendation by the IRB or by both.

| Date | IRB Action(s) | IRB Comments |
|---|---|---|
| NONE | NONE. | NONE |

**Mandatory Data Storage Requirement**:
All research-related records (signed consent forms, investigator training and etc.) must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data must be stored for at least three (3) years after the study is closed. Additionally,

the Tennessee State data retention requirement may apply (*refer "Quick Links" below for policy 129*). Subsequently, the data may be destroyed in a manner that maintains confidentiality and anonymity of the research subjects. **The IRB reserves the right to modify/update the approval criteria or change/cancel the terms listed in this notice**. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:

- Post-approval Responsibilities: http://www.mtsu.edu/irb/FAQ/PostApprovalResponsibilities.php
- Exemption Procedures: https://mtsu.edu/irb/ExemptPaperWork.php
- MTSU Policy 129: Records retention & Disposal: https://www.mtsu.edu/policies/general/129.php

## Appendix B: Interview Questions

1. what ratings and certificates do you have?
2. What characteristics of the MTSU program appeal to you and make you choose MTSU?
3. Can you share your flight training experiences at MTSU?
4. What difficulties appear in your flight lab?
5. How did you solve or encounter the problems or challenges?
6. How long did it take you to complete all your flight labs required for the aerospace degree?
7. How does the scheduling of stage check and end of course affect your training?
8. Would you please share some of your studying tips and tricks for your flight training?
9. Tell me about some of the things you did to be successful for your checkride, stage check, and end of the course?
10. What did you do to maintain your flight proficiency?
11. How long was your flight delayed?
12. How would you analyze the unique sequencing of flight labs and academic classes?
13. How did our academic and flight labs set up to help your success and complete your program?
14. What would be some advice you would give to future students to succeed in the program?

This interview contains interviews with three senior students and a professor for the completion rate and graduation rate from MTSU Flight Program.