Denver ARTCC

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Subject: Training Syllabus

This syllabus is meant to give the students of the training program a way to know what is expected of them during each step of training as well as the flow of training from a new Observer all the way up to C1.

Please note, this order is intended for use on the VATSIM network and only applies in a virtual environment simulated on the VATSIM network. It is not applicable for live operations in the National Airspace System.

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1 Purpose

This document establishes and provides the formal rules, regulations, procedures, and guidelines which govern controller training operations within the ZDV ARTCC. This document is considered a supplement to any VATSIM, Executive Committee, VATUSA, and ZDV policies, procedures, and controlled documentation.

2 Roles and Responsibilities

This syllabus shall be maintained by the Training Administrator (TA). Upon vacating the position, the outgoing TA shall provide the source file of this syllabus to the incoming TA, so that they may continue to modify this syllabus as needed. Policies shall be maintained in accordance with the established VATSIM Global Controller Administration Policy. At no time shall any provision in this manual conflict with a VATSIM or VATUSA policy.

3 Distribution

This document is authorized for unrestricted public release.

4 Student 1 (S1) Training Pipeline

VATSIM training from Observer to S1 (Student 1) introduces aspiring air traffic controllers to the foundational skills needed for live virtual ATC operations. Starting as an Observer, you familiarize yourself with VATSIM's software, network policies, and basic ATC concepts. Training typically involves structured lessons with an instructor or mentor, focusing on ground control procedures, phraseology, and traffic management at small airports. Practical simulations and theory exams ensure readiness for the S1 rating, enabling you to manage ground traffic at controlled airfields confidently while laying the groundwork for higher ratings.

The S1 training pipeline recognizes that each student learns at their own pace, and progress can vary based on individual experience and grasp of the material. While some students may advance quickly, others might require additional time to fully master the skills and concepts necessary for the S1 rating. As a result, it may take several training sessions to complete each lesson, with most students progressing through approximately 5 to 8 sessions to achieve their S1 rating. This flexible approach ensures that students are thoroughly prepared for live operations and can perform confidently and accurately as S1 controllers.

4.1 S1 Conceptual Review

Lesson Description:

The VATSIM S1 Conceptual Review lesson is a critical step in solidifying the foundational knowledge required for an aspiring air traffic controller to excel in their role. This lesson revisits key topics, including airspace structure, standard phraseology, and ground control operations, ensuring a strong grasp of the concepts learned during initial training. Emphasis is placed on preparing students for practical application in live scenarios. By the end of this review, students will have an understanding of the skills and expectations necessary to achieve an S1 rating.

Prerequisites:

- Completion of VATUSA S1 Academy
- Transfer to vZDV ARTCC

Objectives:

- Understand the training flow from Observer (OBS) to Student 1 (S1).
- Demonstrate basic ATC knowledge obtained within the S1 Academy.
- Understand expectations for their first session (CYS Delivery).

Course Material:

- S1_1_Conceptual_Review.ppt

Completion Standards:

- The student should be able to recollect most topics from the academy. If not, they will either repeat the session or review the topics.
- The student does not need to demonstrate expertise in all areas but should have foundational knowledge. These concepts will be reinforced later in the course.

4.2 Cheyenne Clearance Delivery.

Lesson Description:

The Cheyenne Delivery lesson serves as an essential introduction to validating flight plans and issuing IFR clearances using the CRAFT format (Clearance Limit, Route, Altitude, Frequency, Transponder). This lesson provides aspiring controllers with the skills needed to ensure flight plans meet network and procedural standards while effectively communicating clearances to pilots. Emphasis is placed on accuracy, efficiency, and proper phraseology, preparing students to manage departure clearances confidently. By the end of this lesson, students will be equipped to handle delivery operations at Cheyenne Regional Airport (KCYS) with professionalism and precision.

Prerequisites:

- Completion of S1 Conceptual Review
- CRC Downloaded and Installed and Setup

Objectives:

- Understand process for validating a flight plan
- Issue clearances to aircraft using the acronym CRAFT
- There is no time limit for this exercise

Course Material:

- Presentation: S1_2_Cheyenne_Delivery.ppt
- Sweatbox File: CYSCD1
- Sweatbox Guide: CYSCD1.docx

Completion Standards:

- The student will be able to validate a flight plan effectively
- The student will be able to issue clearances using the CRAFT format

4.3 Centennial Clearance Delivery

Lesson Description:

The Centennial Clearance Delivery lesson builds upon the skills learned in the Cheyenne Delivery lesson, introducing the application of Letters of Agreement (LOAs) and the use of RNAV and Non-RNAV Standard Instrument Departures (SIDs). This lesson emphasizes the importance of adhering to established agreements between facilities while managing flight plans and issuing clearances tailored to RNAV-capable and non-RNAV aircraft. Students will refine their ability to validate flight plans, apply proper phraseology, and ensure compliance with network and procedural standards. By incorporating LOA coordination and SID selection, this lesson prepares students for more complex delivery operations at Centennial Airport (KAPA), further enhancing their confidence and accuracy in issuing clearances.

Prerequisites:

- Completion of Cheyenne Clearance Delivery

Objectives:

- Demonstrate process for validating a flight plan
- Issue clearances to aircraft using the acronym CRAFT
- There is no time limit for this exercise

Course Material:

- Presentation: S1_3_Centennial_Delivery.ppt
- Sweatbox File: APACD1
- Sweatbox Guide: APACD1.docx
- Sweatbox File: APACD2
- Sweatbox Guide: APACD2.docx

Completion Standards:

- The student will be able to validate a flight plan effectively.
- The student shall identify flight plans that need correction and issue reroutes
- The student demonstrates issuance of clearances using the CRAFT format with greater than 90% accuracy

4.4 Centennial Ground Control

Lesson Description:

The Centennial Ground Control lesson focuses on the proper issuance of IFR flight plans, ensuring students master validating flight plans, assigning appropriate SIDs, and delivering clearances using correct phraseology. Additionally, the lesson incorporates handling VFR aircraft. Emphasis is placed on situational awareness, adherence to network standards, and effective communication. By covering both IFR and VFR clearance procedures, this lesson prepares students to manage diverse traffic scenarios with confidence and precision at Centennial Airport (KAPA).

Prerequisites:

- Completion of Centennial Clearance Delivery

Objectives:

- Demonstrate process for validating a flight plan
- Issue clearances to aircraft using the acronym CRAFT
- Issue taxi instructions to/from the active runway

Course Material:

- Presentation: S1_4_Centennial_Ground.ppt
- Sweatbox File: APAGC1
- Sweatbox Guide: APAGC1.docx

Completion Standards:

- The student will be able to validate a flight plan effectively.
- The student will be able to issue clearances using the CRAFT format with greater than 90% accuracy
- The student shall identify flight plans that need correction and issue reroutes
- The student shall taxi aircraft to/from the active runway
- The student shall handle VFR aircraft IAW SOP

4.5 Class C Operations

Lesson Description:

The Class C Clearance Delivery and Ground Operations lesson introduces students to the unique challenges and procedures of managing air traffic at Colorado Springs Airport (KCOS), a busy Class C facility. This lesson focuses on issuing IFR and VFR clearances in accordance with Class C airspace regulations, ensuring proper coordination with tower and adherence to Letters of Agreement (LOAs). Additionally, students will learn to manage ground operations, including taxi instructions, runway assignments, runway crossings, and the sequencing of aircraft to maintain efficiency and safety. By the end of this lesson, students will have the skills and knowledge required for issuance of their S1 Certification on VATSIM.

Prerequisites:

- Completion of Centennial Ground Control
- Read COS ATCT/TRACON SOP (7110.1D) Clearance Delivery and Ground Control sections

Objectives:

- Understand the structure and operations of Class C airspace, including KCOS-specific procedures
- Demonstrate the ability to issue IFR clearances with proper phraseology and accuracy
- Handle VFR clearances, including departure instructions and squawk code assignments, following Class C requirements
- Provide clear and efficient taxi instructions to the assigned runway, ensuring safe ground movement.
- Apply the provisions of Letters of Agreement (LOAs) and coordination procedures when managing traffic

Course Material:

- Presentation: S1_5_Class_C_Ground.ppt
- Sweatbox File: COSGC1
- Sweatbox Guide: COSGC1.docx

Completion Standards:

- Issue IFR and VFR clearances with minimal to no assistance, demonstrating proper phraseology and a clear understanding of airspace regulations
- Accurately assign squawk codes, departure instructions, and coordinate with Tower/TRACON when necessary
- Provide efficient taxi instructions and runway assignments
- Demonstrate proper and safe runway crossing procedures, ensuring that aircraft cross runways only when cleared, and coordinate runway crossings when necessary

- Apply LOAs and coordination effectively, managing any reroutes or procedural changes accurately

4.6 S1 OTS

Lesson Description:

The VATSIM S1 Over-the-Shoulder (OTS) examination is the final evaluation for a student controller seeking to earn their S1 rating, which authorizes them to control Clearance Delivery and Ground positions. This practical test assesses the candidate's ability to manage ground traffic safely and efficiently, issue clearances accurately, and demonstrate a strong understanding of ATC procedures, phraseology, and VATSIM policies. Conducted by a certified examiner, the OTS ensures that the candidate can handle real-time traffic scenarios while maintaining professionalism and situational awareness. Passing this exam marks the first major milestone in a controller's VATSIM journey, paving the way for further advancement in virtual air traffic control.

Prerequisites:

- Completion of Class C Operations
- Read COS ATCT/TRACON SOP (7110.1D) Clearance Delivery and Ground Control sections
- This lesson must be completed by a Mentor with a rating of S3 or C1, or by an Instructor.

Objectives:

- Understand the structure and operations of Class C airspace, including KCOS-specific procedures
- Demonstrate the ability to issue IFR clearances with proper phraseology and accuracy
- Handle VFR clearances, including departure instructions and squawk code assignments, following Class C requirements
- Provide clear and efficient taxi instructions to the assigned runway, ensuring safe ground movement.
- Apply the provisions of Letters of Agreement (LOAs) and coordination procedures when managing traffic

Course Material:

- Sweatbox File: COSGC1
- Sweatbox Guide: COSGC1.docx

Completion Standards:

- Issue IFR and VFR clearances with minimal to no assistance, demonstrating proper phraseology and a clear understanding of airspace regulations
- Accurately assign squawk codes, departure instructions, and coordinate with Tower/TRACON when necessary

- Provide efficient taxi instructions and runway assignments
- Demonstrate proper and safe runway crossing procedures, ensuring that aircraft cross runways only when cleared, and coordinate runway crossings when necessary
- Apply LOAs and coordination effectively, managing any reroutes or procedural changes accurately
- Upon satisfactory completion of this lesson, student will be awarded Student 1 (S1) rating on the VATSIM network

4.7 Tier 2 Complex Procedures - Aspen

Lesson Description:

The Aspen Ground Control lesson focuses on managing ground operations at Aspen/Pitkin County Airport (ASE), a high-altitude, challenging airport with unique procedures. A key component of the lesson is learning how to manage departures via the LINDZ#, PITKN#, and COZY# Standard Instrument Departures (SIDs). The lesson also emphasizes effective communication, proper phraseology, and coordination with tower and TRACON controllers.

Prerequisites:

- Student 1 (S1) Certification
- Read ASE ATCT/TRACAB - 7110.10D

Objectives:

- Understand the unique challenges of Aspen ground operations, including high-altitude factors and terrain considerations
- Manage aircraft sequencing for departure on taxiway A, including proper coordination with other controllers
- Learn to issue clearances using the LINDZ#, PITKN#, and COZY# SIDs, ensuring proper routing and sequencing for each

Course Material:

- Presentation: S1_7_ASE_Ground.ppt
- Aspen Familiarization PowerPoint
- Sweatbox File: ASEGC1

Completion Standards:

- Demonstrate the ability to manage Aspen ground operations with minimal assistance, issuing precise taxi instructions and runway assignments
- Manage departures via the LINDZ#, PITKN#, and COZY# SIDs, ensuring correct routing and coordination with delivery and tower controllers
- This section will be considered complete when the student is able to handle ground control operations at Aspen with minimal assistance, accurately managing departures and coordinating with other controllers
- Upon completion of this lesson the student will be issued their T2 ASE GC certification

4.8 Tier 1 Denver Delivery/Ramp

Lesson Description:

The Denver Ground Control lesson introduces students to managing delivery and ramp operations at Denver International Airport (DEN), a major hub with high traffic volumes and complex procedures. This lesson focuses on the skills needed to efficiently handle taxiing aircraft, including issuing clear and precise taxi instructions, sequencing aircraft, and ensuring safe and efficient movement across the airport's extensive ground network. Students will also learn to clear VFR aircraft for departure from the Class B airspace, ensuring proper coordination with other controllers. Emphasis will be placed on effective communication, proper phraseology, correct usage of taxilanes, and situational awareness to maintain smooth operations in a busy environment. By the end of this lesson, students will be proficient in managing delivery and ramp operations at Denver International Airport, confidently coordinating aircraft movements while ensuring safety and compliance with airspace regulations.

Prerequisites:

- Student 1 (S1) Certification
- Read DEN ATCT - 7110.1G

Objectives:

- Understand the layout and taxiway structure of Denver International Airport, including the proper use of directional taxilanes for efficient aircraft movement
- Issue accurate taxi instructions, adhering to proper sequencing and runway configurations to maintain safe and efficient ground flow
- Issue and accept handoff of traffic departing and entering the ramp
- Demonstrate the ability to clear VFR aircraft out of Class B airspace, coordinating with other controllers as necessary
- Use TDLS to issue accurate pre-departure clearances for aircraft, ensuring correct routing and compliance with airport procedures

Course Material:

- Presentation: S1_8_DEN_Ground.ppt
- Sweatbox File: DENRC1

Completion Standards:

- Demonstrate mastery of Denver Delivery and Ramp procedures, to include areas of responsibility
- Accurately issue taxi instructions, making correct use of directional taxilanes and runway configurations to manage traffic flow effectively
- Safely clear VFR aircraft for departure from Class B airspace, ensuring coordination with approach and tower controllers

- Apply TDLS to issue accurate pre-departure clearances, ensuring safe and efficient routing for departing aircraft
- Communicate with other controllers using proper phraseology, ensuring smooth ground operations and coordination across all areas
- Demonstrate a solid understanding of the Denver International Airport layout, runway configurations, and procedures for managing high traffic volumes

4.9 Tier 1 Denver Ground Control

Lesson Description:

The Denver Ground Control lesson continues students' exposure to managing ground operations at Denver International Airport (DEN), a major hub with high traffic volumes and complex procedures. Emphasis will be placed on effective communication, proper phraseology, correct usage of taxilanes, and situational awareness to maintain smooth operations in a busy environment. By the end of this lesson, students will be proficient in managing delivery and ground operations at Denver International Airport, confidently coordinating aircraft movements while ensuring safety and compliance with airspace regulations.

Prerequisites:

- Tier 1 Denver Delivery/Ramp
- Read DEN ATCT - 7110.1G

Objectives:

- Understand the layout and taxiway structure of Denver International Airport, including the proper use of directional taxilanes for efficient aircraft movement
- Issue accurate taxi instructions, adhering to proper sequencing and runway configurations to maintain safe and efficient ground flow

Course Material:

- Sweatbox File: DENGC1

Completion Standards:

- Accurately issue taxi instructions, making correct use of directional taxilanes and runway configurations to manage traffic flow effectively
- Communicate with other controllers using proper phraseology, ensuring smooth ground operations and coordination across all areas
- Demonstrate a solid understanding of the Denver International Airport layout, runway configurations, and procedures for managing high traffic volumes
- Upon completion of this section the student will receive a Denver Solo Endorsement if the student can competently control all aircraft above the normal daily traffic level. If a student demonstrates all competencies proficiency a full certification may be issued with concurrence from the TA

4.10 Tier 1 Denver Ground Control Certification

The Tier 1 Denver Ground Control Certification is a final assessment that evaluates a student's proficiency in managing ground operations at Denver International Airport (DEN). This comprehensive exam covers a range of key skills, including issuing accurate taxi instructions, managing aircraft sequencing, clearing VFR aircraft for entry into or departure from Class B airspace, and effectively utilizing the Terminal Data Link Service (TDLS) for pre-departure clearances. Students will be required to demonstrate their ability to manage the high-volume traffic typical of DEN, ensuring smooth and efficient operations while maintaining safety and proper coordination with other controllers. This exam tests the student's ability to apply learned procedures in a realistic, time-sensitive environment, showcasing their preparedness to handle Denver's complex ground control operations with confidence and professionalism.

Prerequisites:

- Tier 1 Denver Ground Control Solo Certification
- 10 Hours logged in the DEN_GND position

Completion Standards:

The student will be considered proficient in the Denver Tier 1 Certification Exam when they:

- Demonstrate mastery of Denver Delivery and Ramp procedures, to include areas of responsibility
- Demonstrate mastery of Denver Ground procedures, to include areas
- Issue accurate and timely taxi instructions, making correct use of directional taxilanes and runway configurations to optimize ground flow
- Clear VFR aircraft for exit from Class B airspace with proper coordination and phrasing
- Use TDLS effectively to issue pre-departure clearances, ensuring safe, compliant routing for departing aircraft
- Maintain situational awareness while managing multiple aircraft on the ground, demonstrating safe and efficient sequencing with event level traffic
- Student shall be able to demonstrate volume level similar to a Tier1 event
- Upon completion of this lesson the student will be issued their T1 DEN GC certification

5 Student 2 (S2) Training Pipeline

The Student 2 (S2) Training Pipeline is designed to transition S1 controllers to more advanced and complex air traffic control responsibilities, focusing on local operations at a range of airports and airspaces. Building on the foundational knowledge gained during S1 training, this pipeline aims to develop the skills necessary for managing aircraft in more demanding environments, including sequencing arrivals and departures, managing aircraft separation, and coordinating with multiple control sectors. S2 controllers will learn to handle high-intensity traffic, making quick decisions while maintaining safety and efficiency of arriving, departing and pattern traffic. This training emphasizes situational awareness, effective communication, and the ability to execute local operations under varying conditions.

Students progress through the S2 training at their own pace, with some mastering the necessary skills more quickly than others. Typically, it takes 5 to 8 sessions to achieve the S2 rating, though this can vary depending on individual learning speeds, experience, and confidence. This approach allows for a tailored learning experience, ensuring that each student fully understands the complexities of local operations before they are certified as an S2 controller.

5.1 Local Control Basic Operations - Departures

Lesson Description:

The Local Control Basic Operations - Departures lesson focuses on the essential skills needed to manage departing aircraft at an airport, specifically under Local Control operations. This lesson introduces students to the complexities of sequencing and separating departing aircraft on the same runway, adhering to established runway separation requirements to ensure safe and efficient departures. Students will learn how to manage the flow of aircraft, issue timely and precise takeoff clearances, and maintain situational awareness while handling multiple departures. The lesson covers critical procedures for managing departure sequences, including the required separation between aircraft, ensuring that safety and efficiency are maintained even in high-traffic situations. By the end of this lesson, students will be proficient in managing departing aircraft, applying the appropriate runway separation requirements, and communicating effectively with pilots and other controllers.

Prerequisites:

- Student 1 (S1) Certification
- VATUSA S2 Academy
- APA ATCT - 7110.10D

Objectives:

- Understand and apply the runway separation requirements for departing aircraft, ensuring safe departure sequences
- Issue precise and timely takeoff clearances to departing aircraft, ensuring proper sequencing and separation
- Manage multiple departures from the same runway, maintaining situational awareness and controlling traffic flow efficiently
- Communicate effectively with pilots to provide clear instructions and avoid conflicts

Course Material:

- Presentation: S2_1_Departures.ppt
- Sweatbox File: APALC1 - Departures

Completion Standards:

- Consistently apply runway separation requirements between departing aircraft, ensuring safe and efficient departures
- Issue takeoff clearances accurately and in a timely manner, maintaining proper sequencing of departing aircraft
- Successfully manage multiple departures, maintaining situational awareness and efficient traffic flow even in busy scenarios

- Communicate with pilots and other controllers using proper phraseology, ensuring clarity and avoiding conflicts or delays
- Show confidence and precision in managing departure operations, with minimal to no assistance needed

5.2 Local Control Basic Operations - Arrivals

Lesson Description:

The Local Control Basic Operations - Arrivals lesson focuses on the essential skills needed to manage arriving aircraft at an airport under Local Control operations. This lesson introduces students to the complexities of sequencing arriving aircraft, ensuring safe separation on the same runway, and applying appropriate wake turbulence separation procedures. Students will learn to manage the flow of arriving traffic, provide timely and accurate landing clearances, and handle situations involving wake turbulence. Emphasis is placed on maintaining safe spacing between aircraft, including the required separation distances based on aircraft types and wind conditions. By the end of this lesson, students will be proficient in managing arrivals, applying runway separation requirements, and implementing wake turbulence procedures to ensure safe, efficient arrivals.

Prerequisites:

- Local Control Basic Operations - Departures
- APA ATCT - 7110.10D

Objectives:

- Understand and apply the runway separation requirements for arriving aircraft, ensuring safe spacing during landing
- Apply wake turbulence separation procedures to maintain safe distances between arriving aircraft, considering aircraft types and wind conditions
- Manage the sequencing of arriving aircraft, issuing accurate landing clearances and ensuring safe flow into the airport
- Demonstrate the ability to manage arrivals on a single runway, maintaining safe operations even in high-traffic or challenging conditions
- Communicate effectively with pilots to provide clear landing instructions, considering both runway separation and wake turbulence requirements

Course Material:

- Presentation: S2_2_Arrivals.ppt
- Sweatbox File: APALC2 - Arrivals

Completion Standards:

- Accurately apply runway separation requirements between arriving aircraft, ensuring safe sequencing during high-traffic conditions
- Consistently apply wake turbulence separation procedures, maintaining the required distances between aircraft and avoiding unsafe conditions
- Issue precise landing clearances to arriving aircraft, managing traffic flow smoothly and efficiently

- Effectively manage arrival sequencing on a single runway, ensuring a safe and orderly approach for multiple aircraft
- Communicate clearly with pilots and other controllers using proper phraseology, ensuring clear instructions and avoiding delays or conflicts

5.3 Local Control Basic Operations - Pattern Traffic

Lesson Description:

The Local Control Basic Operations - Pattern Traffic lesson focuses on the skills needed to manage aircraft within the airport traffic pattern. This lesson covers the procedures for handling aircraft entering, exiting, and maneuvering within the traffic pattern, which is a critical aspect of local control operations. Students will learn how to sequence aircraft within the pattern, ensure proper spacing, and manage aircraft transitions to and from the pattern while maintaining safety and efficiency. Emphasis is placed on providing clear instructions for pattern entry, controlling the sequence of aircraft within the pattern, and directing aircraft for safe pattern exit. By the end of this lesson, students will be able to confidently manage aircraft within the traffic pattern, ensuring safe operations and smooth transitions for arrivals and departures.

Prerequisites:

- Local Control Basic Operations - Arrivals
- APA ATCT - 7110.10D

Objectives:

- Understand the procedures for managing aircraft within the airport traffic pattern, including the entry, sequencing, and exit of aircraft
- Effectively sequence aircraft within the traffic pattern to maintain safe separation and efficient flow
- Demonstrate situational awareness when managing aircraft in the pattern, adjusting instructions as necessary to accommodate multiple aircraft
- Communicate clearly with pilots to provide concise instructions

Course Material:

- Presentation: S2_3_Pattern.ppt
- Sweatbox File: APALC3 - Pattern

Completion Standards:

- Accurately manage aircraft in the traffic pattern, providing clear instructions for pattern entry, pattern exit, and sequencing
- Maintain safe separation between aircraft within the traffic pattern, ensuring smooth flow and safe maneuvering
- Effectively adjust instructions based on traffic conditions and sequencing, demonstrating flexibility and situational awareness
- Issue clear, concise, and timely instructions to pilots for pattern operations, using correct phraseology

5.4 Local Control Basic Operations - Combined Operation

Lesson Description:

The Local Control Basic Operations - Combined lesson is designed to integrate the skills and knowledge learned in previous lessons related to managing departures, arrivals, and aircraft in the traffic pattern. This lesson brings these core elements together into a unified, real-world local control operation, preparing students for their solo certification. Students will learn how to seamlessly manage traffic flow, ensure safe sequencing, and apply appropriate separation requirements across all aspects of local control, including managing departures, arrivals, and aircraft in the pattern. Emphasis will be placed on multitasking, maintaining situational awareness, and communicating effectively under more complex and realistic scenarios. Since this lesson involves integrating multiple skills simultaneously, it is expected that students will require multiple sessions to demonstrate proficiency before receiving solo certification.

Prerequisites:

- Local Control Basic Operations - Pattern
- APA ATCT - 7110.10D

Objectives:

- Apply all necessary skills to manage departing aircraft, arriving aircraft, and aircraft in the traffic pattern within the same operational environment
- Maintain proper sequencing and separation between aircraft for departures, arrivals, and while managing aircraft within the traffic pattern, following all runway and wake turbulence separation requirements
- Demonstrate the ability to multitask effectively, adjusting instructions as needed based on the flow of aircraft within the pattern, during arrivals, and during departures
- Communicate effectively with pilots and other controllers, ensuring clear and concise instructions across all operations (departures, arrivals, and pattern operations)
- Develop and demonstrate effective situational awareness to handle high-traffic or changing conditions, ensuring safe, efficient, and coordinated operations

Course Material:

- Sweatbox File: APALC4 - Combined
- Sweatbox File: APALC5 - Combined

Completion Standards:

- This section will be considered complete when the student can independently handle a combined local control operation, managing all aspects of departures, arrivals, and traffic pattern operations with minimal assistance, demonstrating proficiency across all key areas. The student must also show competence in multitasking, maintaining situational awareness, and using correct phraseology to safely and efficiently manage the airspace.

5.5 Local Control Class C Operations

Lesson Description:

This lesson provides an in-depth exploration of local control responsibilities within Class C airspace, emphasizing the critical role of safety alerts. Participants will gain knowledge and practical skills necessary to manage takeoff and landing clearances, maintain situational awareness, and ensure the safety of aircraft operations in a complex and dynamic environment.

Prerequisites:

- Local Control Basic Operations - Pattern
- APA ATCT - 7110.10D

Objectives:

- Understand the role and responsibilities of a local controller in Class C operations.
- Demonstrate proficiency in issuing safety alerts for traffic conflicts and terrain proximity.
- Apply proper separation standards for arrivals and departures in Class C airspace.
- Effectively manage communication with pilots and other ATC positions to ensure operational safety.

Course Material:

- Sweatbox File: COSLC

Completion Standards:

- This section will be considered complete when the student can independently handle a combined local control operation, managing all aspects of departures, arrivals, and traffic pattern operations with minimal assistance, demonstrating proficiency across all key areas. The student must also show competence in multitasking, maintaining situational awareness, and using correct phraseology to safely and efficiently manage the airspace.
- Student will be issued their Tower Solo Certification at COS upon completion of this lesson

5.6 S2 OTS

The S2 OTS Exam is the final evaluation for students progressing through the Student 2 (S2) Training Pipeline. This exam is designed to assess the student's ability to independently manage local control operations for departures, arrivals, and aircraft within the traffic pattern in a live virtual environment. The S2 OTS Exam incorporates all aspects of the S2 curriculum, ensuring that the student can efficiently handle the high-traffic demands and complexities of a busy airspace while adhering to proper separation, sequencing, and communication protocols. This exam is intended to verify that the student has developed the proficiency and situational awareness required for the S2 rating, and is ready for independent control of local operations.

Completion Standards

The student will be considered proficient in the S2 OTS Exam when they:

- Demonstrate mastery of local control procedures: Effectively manage departures, arrivals, and aircraft within the traffic pattern, ensuring proper sequencing, separation, and coordination between all involved aircraft
- Adhere to runway and wake turbulence separation: Apply correct separation standards between aircraft during all phases of operation, following guidelines outlined in FAA Order JO 7110.65AA - Air Traffic Control
- Communicate clearly and effectively: Use proper phraseology when providing instructions to pilots and other controllers, ensuring clarity and reducing the potential for miscommunication
- Maintain situational awareness: Demonstrate the ability to monitor multiple aircraft and adjust instructions in real-time based on traffic flow, weather conditions, and operational requirements
- Demonstrate independent operation: Perform all required tasks with minimal assistance, efficiently managing local control operations with confidence and professionalism
- Meet the specific evaluation criteria: Successfully meet all completion standards as outlined in VATUSA DP002 and 3120.25B

5.7 Tier 2 Complex Procedures - Aspen

Lesson Description:

The Tier 2 Complex Procedures - Aspen lesson focuses on advanced procedures for managing aircraft in the Aspen airspace, specifically addressing the use of the wrap procedure and the westbound in front of procedure. This lesson will emphasize the importance of maintaining safe separation and efficient traffic flow, using these procedures to manage complex traffic flow during opposite direction operations. By the end of the lesson, students will be proficient in using both procedures.

Prerequisites:

- S2 Certification
- ASE Ground Certification
- ASE ATCT/TRACAB - 7110.10D

Objectives:

- Understand and apply the wrap procedure to ensure safe transitions for aircraft during opposite direction operations
- Effectively manage aircraft using the westbound in front of procedure to ensure safe transitions for aircraft during opposite direction operations
- Manage traffic flow efficiently while maintaining proper separation between aircraft, applying separation standards specific to both procedures

Course Material:

- Sweatbox File: ASELC1
- Aspen Familiarization

Completion Standards:

- This section will be considered complete when the student can independently manage both the wrap procedure and westbound in front procedure, efficiently handling traffic flow and maintaining separation, with minimal guidance
- Upon completion of this lesson, the student will be issued :LC T2 ASE certification

5.8 Tier 1 Denver Local Control

Lesson Description:

The Tier 1 Local Control - Denver lesson introduces new local controllers to the complexities of managing operations at Denver International Airport (DEN), one of the busiest and most complex airports in the United States. This lesson covers the management of six runways, handling both RNAV (Area Navigation) and Non-RNAV departures, as well as managing the intricate flow of aircraft in a high-traffic environment. Students will learn how to coordinate departure sequencing, manage multiple runways for simultaneous operations, and ensure safe and efficient handling of aircraft both departing and arriving. Special emphasis will be placed on understanding Denver's unique operational environment, handling simultaneous departures from multiple runways, and effectively managing both RNAV and non-RNAV departure procedures. By the end of this lesson, students will be prepared to confidently manage local control operations at Denver International Airport. This lesson may require multiple sessions to gain sufficient proficiency necessary to earn solo certification.

Prerequisites:

- S2 Certification
- DEN Ground Certification
- D01 TRACON - 7110.10D

Objectives:

- Understand the operational complexities of Denver International Airport
- Gain proficiency in handling both RNAV and Non-RNAV departure procedures, ensuring aircraft depart safely and efficiently according to their respective routing requirements
- Learn the sequencing and spacing requirements for aircraft departing from multiple runways simultaneously
- Demonstrate effective coordination between ground control, tower control, and departure sequencing, managing aircraft flow efficiently to avoid conflicts
- Develop an understanding of the unique traffic flow at Denver, incorporating variable factors such as weather, high traffic volumes, and airspace congestion into decision-making processes

Course Material:

- Sweatbox File(s)
    - DENLC1 LNC (LC2)
    - DENLC1 LSC (LC4)
    - DENLC1 LNC (Combined)

- DENLC2 LNW (LC4)
- DENLC2 LSW (LC4)

Completion Standards:

- This section will be considered complete when the student can manage Denver's six runways and both RNAV and Non-RNAV departures independently and efficiently, ensuring safe operations in a complex environment with minimal assistance
- Upon completion of this lesson, the student will be issued LC T1 solo certification

5.9 Tier 1 Denver Local Control Certification

Lesson Description:

The Denver Tier 1 Certification is a comprehensive evaluation designed to assess the student's proficiency in managing local control operations at Denver International Airport (DEN). This exam integrates the key skills learned throughout the Tier 1 Local Control - Denver lesson, including the management of six runways, handling RNAV and Non-RNAV departures, and coordinating traffic flow in the complex Denver airspace. The goal of this exam is to evaluate the student's ability to manage high-traffic volumes, handle multiple runways, and ensure safe, efficient operations in a challenging environment. Students will be tested on their ability to effectively sequence aircraft, issue departure clearances, and manage coordination with other controllers while maintaining high operational standards. Successful completion of this exam will demonstrate the student's readiness for independent operation as a Denver Tier 1 Local Controller.

Completion Standards

The student will be considered proficient when they:

1. Handle both RNAV and Non-RNAV departures effectively, issuing appropriate clearances and ensuring correct routing for each departure
2. Maintain safe sequencing and spacing for departing aircraft, adjusting for any conflicts and managing traffic flow efficiently
3. Communicate clearly and confidently with pilots and fellow controllers, adhering to proper phraseology and handling live traffic scenarios with minimal assistance
4. Independently manage all required tasks without substantial assistance, demonstrating proficiency in sequencing, managing departures, and coordinating with other controllers

6 Student 3 (S3) Training Pipeline

The Student 3 (S3) Training Pipeline is the next level of development for air traffic controllers who have completed their S2 rating and are ready to take on more advanced local control responsibilities. This pipeline focuses on the skills and knowledge required to handle high-density traffic scenarios, complex arrival and departure operations, and coordinating with various sectors for optimal traffic management. The S3 pipeline introduces controllers to the challenges of managing complex airport environments, including multi-runway sequencing, handling mixed traffic (RNAV and Non-RNAV procedures), and coordinating visual and instrument approaches. Training at this level focuses on enhancing situational awareness, improving multitasking skills, and ensuring that the controller can manage high-stress situations with precision and professionalism. Upon completion, S3-rated controllers will be fully equipped to handle complex and high-volume air traffic control scenarios independently, contributing to smooth, efficient operations at major airports.

This portion of your training is widely recognized as the steepest climb in the VATSIM ratings due to the advanced skills and extensive knowledge required to manage complex air traffic scenarios. Students in this phase learn at their own pace, with each controller progressing according to their individual strengths and development. Due to the complexity of the skills being mastered, it typically takes between 6 to 10 sessions to achieve solo certification at this level. As controllers move through the S3 pipeline, they will face increasingly difficult challenges that require a high level of precision, situational awareness, and decision-making under pressure. With commitment and focus, students will develop the expertise needed to handle busy and challenging traffic flows with confidence.

6.1 Departure Basic Operations

Lesson Description:

This lesson focuses on basic departure operations at Colorado Springs Municipal Airport (COS). Students will learn how to provide effective approach control services, including vectoring aircraft for departures, sequencing traffic, managing airspace boundaries, and handling handoffs to the center or adjacent facilities. The lesson emphasizes mastering radar identification techniques, departure routes, and standard operating procedures specific to COS.

Prerequisites:

- S2 Certification
- VATUSA S3 Academy Completion
- COS ATCT/TRACON - 7110.10D

Lesson Objectives

By the end of this lesson, students will:

- Identify Aircraft: Use primary and secondary radar methods to identify and track aircraft accurately within the approach control environment
- Apply Vectoring Techniques: Use appropriate headings and altitudes to provide vectoring services for arriving aircraft while maintaining separation standards
- Sequence Traffic: Manage the sequence of departing aircraft to ensure efficient flow and adherence to standard arrival procedures
- Coordinate with Adjacent Facilities: Perform handoffs to and from adjacent air traffic control facilities, including en route centers D01
- Adhere to FAA Standards: Comply with FAA regulations and VATSIM guidelines for safe and efficient approach control operations

Course Material:

- Sweatbox File(s)
    - COSTC1 - Departures

Completion Standards

The student will be considered proficient in this lesson when they:

- Aircraft Identification: Accurately identify and track aircraft using both primary and secondary methods
- Traffic Management: Maintain safe and efficient traffic flow, ensuring no less than the required separation standards
- Effective Communication: Use standard phraseology and maintain clear, concise communication with pilots and adjacent controllers

- Problem-Solving: Resolve conflicts and deviations promptly while maintaining situational awareness
- Coordination: Execute proper handoffs with minimal delays and ensure smooth transitions between control sectors

6.2 Approach Basic Operations

Lesson Description:

This lesson focuses on basic approach operations at Colorado Springs Municipal Airport (KCOS). Students will learn how to provide effective approach control services, including vectoring aircraft for arrivals, sequencing traffic, managing airspace boundaries, and handling handoffs to the tower or adjacent facilities. The lesson emphasizes mastering radar identification techniques, arrival routes, and standard operating procedures specific to COS.

Prerequisites:

- Departure Basic Operations
- COS ATCT/TRACON - 7110.10D

Lesson Objectives

By the end of this lesson, students will:

- Identify Aircraft: Use primary and secondary radar methods to identify and track aircraft accurately within the approach control environment
- Apply Vectoring Techniques: Use appropriate headings and altitudes to provide vectoring services for arriving aircraft while maintaining separation standards
- Sequence Traffic: Manage the sequence of arriving aircraft to ensure efficient flow and adherence to standard arrival procedures
- Coordinate with Adjacent Facilities: Perform handoffs to and from adjacent air traffic control facilities, including en route centers and the KCOS tower
- Adhere to FAA Standards: Comply with FAA regulations and VATSIM guidelines for safe and efficient approach control operations

Course Material:

- Sweatbox File(s)
    - COSTC2 - Arrivals

Completion Standards

The student will be considered proficient in this lesson when they:

- Aircraft Identification: Accurately identify and track aircraft using both primary and secondary methods
- Traffic Management: Maintain safe and efficient traffic flow, ensuring no less than the required separation standards
- Effective Communication: Use standard phraseology and maintain clear, concise communication with pilots and adjacent controllers

- Vectoring and Sequencing: Successfully vector and sequence multiple aircraft to final approach courses, considering traffic flow and environmental factors
- Problem-Solving: Resolve conflicts and deviations promptly while maintaining situational awareness
- Coordination: Execute proper handoffs with minimal delays and ensure smooth transitions between control sectors

6.3 Uncontrolled Field Basic Operations

Lesson Description:

This lesson introduces air traffic control operations at uncontrolled airports, focusing on providing services to IFR aircraft. Students will learn how to issue IFR clearances to departing aircraft, manage arrivals, handle pop-up IFR requests, and coordinate one-in-one-out procedures to ensure safety and compliance with FAA standards. The lesson emphasizes procedural control, communication with VFR and IFR pilots, and effective coordination with adjacent facilities to maintain orderly traffic flow in a non-towered environment.

Prerequisites:

- Approach/Departure Basic Operations
- COS ATCT/TRACON - 7110.10D

Lesson Objectives

By the end of this lesson, students will:

- Issue IFR Clearances: Provide accurate and timely IFR clearances to departing aircraft at uncontrolled airports, ensuring compliance with routing and altitude requirements.
- Apply One-In-One-Out Procedures: Manage traffic to and from the uncontrolled airport using one-in-one-out principles to ensure safe operations.
- Process Pop-Up IFR Requests: Handle last-minute IFR clearance requests from aircraft operating in or near the uncontrolled airport environment.
- Maintain Traffic Awareness: Monitor and manage the flow of IFR and VFR traffic within the vicinity of the uncontrolled field, ensuring separation and situational awareness.

Course Material:

- Sweatbox File(s)
    - COSTC3 - Uncontrolled

Completion Standards

- IFR Clearance Issuance: Successfully issue IFR clearances to departing aircraft, including clearances with route amendments, departure instructions, and altitude assignments.
- One-In-One-Out Compliance: Effectively implement and manage one-in-one-out procedures, ensuring only one IFR aircraft operates within the vicinity of the uncontrolled field at a time.
- Pop-Up IFR Management: Process pop-up IFR requests promptly, coordinating clearances and releases as necessary.
- Traffic Separation: Maintain standard separation between IFR aircraft, and between IFR and VFR traffic where applicable.

6.4 Basic Approach/Departure Operations - Combined

Lesson Description:

This lesson combines the foundational skills learned in approach operations, departure operations, and uncontrolled field operations to provide a comprehensive understanding of managing a full range of terminal environment responsibilities. Students will integrate these skills to handle simultaneous arrivals and departures, coordinate with adjacent facilities, manage operations at controlled and uncontrolled airports, and resolve complex traffic scenarios. Emphasis is placed on maintaining situational awareness, adhering to separation standards, and ensuring efficient traffic flow in varying operational contexts.

Prerequisites:

- Uncontrolled Field Basic Operations
- COS ATCT/TRACON - 7110.10D

Lesson Objectives

By the end of this lesson, students will:

- Integrate Approach and Departure Procedures: Effectively manage arrivals and departures simultaneously, ensuring safe and efficient traffic flow.
- Handle Uncontrolled Field Operations: Provide IFR services, including clearances and one-in-one-out procedures, for aircraft operating at uncontrolled fields within the terminal environment.
- Coordinate with Adjacent Facilities: Communicate and coordinate with en route and D01 facilities to manage IFR and VFR traffic transitions.
- Resolve Traffic Conflicts: Identify and resolve conflicts between arriving, departing, and overflying aircraft promptly and safely.
- Maintain Radar Identification: Use primary and secondary radar techniques to track and identify aircraft accurately within the terminal airspace.
- Adhere to Separation Standards: Apply appropriate separation techniques, including lateral, vertical, and procedural separations, in both radar and non-radar environments.

Course Material:

- Sweatbox File(s)
    - COSTC4 - Combined
    - COSTC5

Completion Standards

- Traffic Integration: Successfully manage simultaneous arrivals and departures, ensuring safe sequencing and separation.
- Uncontrolled Field Operations: Effectively handle IFR clearances, pop-up IFR requests, and one-in-one-out procedures for aircraft operating at uncontrolled airports.

- Coordination Proficiency: Demonstrate effective coordination with adjacent facilities, ensuring smooth transitions for all traffic types.
- Conflict Resolution: Resolve traffic conflicts promptly while maintaining separation standards and minimizing disruptions to traffic flow.
- Situational Awareness: Maintain a comprehensive understanding of the traffic picture, including the location and intentions of all aircraft under control.
- Separation Standards: Consistently apply FAA-mandated separation standards for IFR and VFR traffic.
- Communication Skills: Provide clear, concise, and professional communication with pilots and other controllers, adhering to standard phraseology and protocol
- Upon successful completion of COSTC5, student shall be awarded solo certification for COS APP.

6.5 S3 OTS

The S3 OTS Examination is the final evaluation in the S3 training pipeline, designed to assess a controller's readiness to handle complex air traffic control operations within Class C airspace. This examination focuses on the ability to manage arrival and departure procedures, coordinate traffic flow, and apply separation techniques in a busy and dynamic environment. The S3 OTS will test the student's proficiency in handling both routine and exceptional situations, such as popup IFR clearances, uncontrolled field operations, and responding to safety alerts. The goal of this examination is to ensure that the student can manage the demands of local air traffic control with minimal guidance and demonstrate decision-making capabilities under pressure.

Completion Standards

The student will be considered proficient in the S3 OTS Exam when they:

- Demonstrates proficiency in managing arrival and departure operations ensuring safe separation and efficient sequencing
- Shows strong situational awareness and decision-making abilities when handling complex traffic patterns and high-traffic volumes
- Effectively applies separation standards in all situations, including popup IFR clearances, aircraft transitions between sectors, and uncontrolled field operations
- Responds appropriately to safety alerts, such as conflict or proximity warnings, ensuring that aircraft separation is maintained at all times
- Uses standard phraseology consistently to communicate clearly with pilots and fellow controllers throughout the examination
- Operates independently, handling complex air traffic control tasks with minimal supervision, and demonstrating overall competence in managing busy air traffic operations
- Meet the specific evaluation criteria: Successfully meet all completion standards as outlined in VATUSA DP002 and 3120.25C
- Upon satisfactory completion of the S3 OTS Examination, student will be awarded the Student 3 (S3) rating

6.6 Tier 2 Complex Procedures - Grand Junction

Lesson Description:

The Tier 2 Complex Procedures - Grand Junction (GJT) lesson is designed to introduce students to managing air traffic in the GJT sector of the D01 TRACON. Grand Junction is located in a valley surrounded by high terrain, which presents unique challenges in both arrival and departure procedures. Students will learn to handle aircraft in this complex environment, which requires close attention to terrain clearance, traffic sequencing, and procedural coordination. The lesson focuses on safely managing arrivals and departures in this high-altitude, mountainous region, ensuring that aircraft are properly sequenced and separated while dealing with the complexities of a terrain-restricted environment. By the end of the lesson, students will understand the intricacies of managing traffic in this area, including the specific techniques needed to mitigate risks posed by the surrounding terrain.

Prerequisites:

- S3 Certification
- D01 TRACON - 7110.10D

Lesson Objectives

By the end of this lesson, students will:

- Understand the unique challenges presented by the Grand Junction (GJT) area of the D01 TRACON, including managing traffic in a terrain-restricted valley
- Apply terrain awareness and adjust traffic sequencing to safely manage aircraft departures and arrivals, avoiding conflicts with high terrain
- Demonstrate proficiency in sequencing and clearing aircraft using RNAV and Non-RNAV procedures, taking into account the specific limitations of the Grand Junction area

Course Material:

- Sweatbox File(s)
    - GJTTC1
    - GJTTC2

Completion Standards

- This lesson will be considered complete when the student demonstrates the ability to handle arrival and departure operations at Grand Junction (GJT), safely sequencing aircraft, ensuring proper terrain clearance, and maintaining clear communication with pilots and other controllers in a terrain-restricted, high-altitude environment
- Upon satisfactory completion of this lesson, student will be awarded the APP T2 GJT certification

6.7 Tier 2 Complex Procedures - Aspen

Lesson Description:

The Tier 2 Complex Procedures - Aspen (ASE) lesson focuses on the intricacies of managing air traffic operations at ASE, which is located in a valley surrounded by high terrain. The terrain in the Aspen area presents unique challenges for both arrival and departure procedures. Students will learn how to manage Aspen Approach, including the use of the Roaring Fork Visual Approach, while ensuring aircraft safely enter and exit the mountainous valley. Emphasis will be placed on maintaining terrain clearance, sequencing aircraft efficiently, and managing traffic flow through the visual approach procedure, which requires a higher degree of coordination and situational awareness due to the challenging mountainous environment. By the end of this lesson, students will be equipped to manage both visual and IFR approaches to Aspen, taking into account the valley's geography and other operational complexities.

Prerequisites:

- S3 Certification
- ASE Tower Certification
- ASE ATCT/TRACAB - 7110.10D

Lesson Objectives

By the end of this lesson, students will:

- Understand the unique challenges of managing air traffic at Aspen/Pitkin County Airport (ASE), particularly the high terrain and valley environment
- Learn to handle Aspen Approach, including integration of visual approaches (Roaring Fork Visual Approach) and IFR operations into the valley, while ensuring safe separation and terrain clearance
- Gain proficiency in sequencing and managing aircraft for visual approaches while accounting for specific limitations and risks of operating in a terrain-restricted environment
- Understand and apply the specific departure and arrival procedures at Aspen, including coordinating with adjacent sectors and ensuring smooth transitions in and out of the valley

Course Material:

- Sweatbox File(s)
    - ASETC1
    - ASETC2

Completion Standards

- This lesson will be considered complete when the student can independently manage approach and departure operations at Aspen/Pitkin County Airport (ASE), sequencing aircraft safely in and out of the valley, maintaining situational awareness of terrain, and using appropriate procedures for visual and IFR approaches
- Upon satisfactory completion of this lesson, student will be awarded the APP T2 ASE certification

6.8 App/Dep D01 TRACON Dep Procedures

Lesson Description:

The D01 TRACON lesson introduces students to the operations within the D01 Terminal Radar Approach Control (TRACON) area, focusing on the skills and procedures required to manage air traffic effectively within this busy region. This lesson will cover arrival, departure, and transition procedures for aircraft entering and exiting D01 coverage area. Students will also learn to manage operations at satellite airfields, handling arrivals and departures for airports in the D01 coverage area that are not the primary destination airport, as well as ensuring smooth transitions between these and the main airfield. The lesson will focus on maintaining separation standards, situational awareness, and applying safe and efficient procedures, as well as managing high-traffic volumes within D01. This lesson will require several sessions to complete.

Prerequisites:

- S3 Certification
- DEN Tower Certification
- D01 TRACON - 7110.10D

Lesson Objectives

By the end of this lesson, students will:

- Understand the structure and coverage area of the D01 TRACON, including the specific procedures for managing aircraft within this airspace
- Gain proficiency in handling arrival and departure procedures for aircraft entering and leaving the TRACON, including RNAV and Non-RNAV routes
- Learn to manage satellite airfield operations, including arrivals and departures for airports in the TRACON's coverage area, ensuring smooth integration with the primary airport's traffic
- Understand the transition procedures for aircraft moving in and out of the D01 TRACON, including coordination with adjacent sectors and handling handoffs
- Apply separation standards to ensure aircraft are properly sequenced and safely managed, especially in high-traffic situations
- Use standard phraseology and effective communication skills to coordinate with pilots and other controllers within the D01 TRACON

Course Material:

- Sweatbox File(s)
    - D01 FR-N 34R or 35L
    - D01 LN AR/FR
    - D01 DR/SR

Completion Standards

- This lesson will be considered complete when the student can independently manage arrival, departure, and finals within the D01 TRACON, including satellite airfield operations, ensuring safe, efficient traffic flow and maintaining effective coordination with both pilots and other sectors
- Upon satisfactory completion of this lesson, student will be awarded the APP T1 certification

7 Controller 1 (C1) Pipeline

The VATSIM C1 training pipeline is the next step in an air traffic controller's progression after achieving the S3 rating. This training program is focused on developing advanced radar control skills in the enroute environment. All training for the C1 rating takes place on the live VATSIM network, providing practice with live traffic while under the guidance of a qualified instructor. The training will cover a variety of situations, from routine operations to more complex cases requiring strong decision-making and coordination skills. Students will also be responsible for ensuring proper separation standards and effective communication with both pilots and other controllers.

The C1 rating is a significant milestone and is typically achieved after many training sessions and hundreds of hours on the live network. As each student learns at their own pace, it may take time to reach proficiency, depending on experience and frequency of training. Successful completion of the C1 training pipeline will prepare students for managing a diverse and busy airspace environment confidently and independently.

7.1 D-Side Introduction

Lesson Description:

The D-Side lesson focuses on the essential skills needed for handling aircraft information and managing traffic flow from the data entry side of the operation. This lesson introduces students to the specific ERAM (En Route Automation Modernization) keyboard commands used to interact with radar data and manage aircraft tags. Students will learn how to interpret and update aircraft tags, ensuring that the information displayed is accurate and up to date. This includes understanding key components of an aircraft tag, such as identifiers, flight plan data, and position reports. By the end of this lesson, students will be able to proficiently handle the ERAM system and update aircraft tags with precision, contributing to effective traffic management from the D-side. This lesson will require several sessions to complete.

Prerequisites:

- S3 Certification
- ASE Approach Certification
- GJT Approach Certification
- D01 Certification

Lesson Objectives

By the end of this lesson, students will:

- Understand the structure and components of an ERAM aircraft tag, including identifiers, flight plan data, and position reports
- Learn the specific ERAM keyboard commands used to manage aircraft tags and interact with radar data
- Gain proficiency in updating aircraft tags to reflect accurate and current information, including changes in flight plan data, altitude, and route adjustments
- Learn to effectively use the ERAM system to track aircraft and ensure accurate data is available to controllers and adjacent sectors

Completion Standards

The student will be considered proficient in this lesson when they:

- Demonstrate the ability to accurately interpret and update aircraft tags using the ERAM system, ensuring that all critical flight data is reflected correctly
- Show proficiency with the ERAM keyboard commands, making changes to aircraft tags quickly and efficiently while maintaining accuracy
- Apply proper procedures for updating flight plan data, altitude assignments, and route changes, ensuring that all necessary information is current and communicated to relevant sectors

- Consistently maintain situational awareness by managing accurate aircraft tags, ensuring proper sequencing, and assisting in safe separation between aircraft

7.2 Enroute - Live Monitoring Denver Center

Lesson Description:

The Live Monitoring Session: Denver Center provides students with the opportunity to observe and actively engage in the live air traffic control environment, focusing on operations at Denver Center (ZDV) and its interaction with multiple TRACONs. During this session, students will be monitored in real-time on the VATSIM network, allowing them to gain exposure to high-traffic airspace operations and practice working with various TRACONs that feed into Denver Center's airspace. This live environment will emphasize coordination, communication, and maintaining separation standards while transitioning aircraft through multiple sectors, including arrivals, departures, and enroute phases. Students will observe how controllers manage traffic flow and handle complex coordination between TRACON sectors and center airspace, such as handing off aircraft, route changes, and sequencing. By the end of the lesson, students will gain firsthand experience in dealing with the dynamic and complex nature of live air traffic management, ensuring that they are prepared for future operational sessions.

Lesson Objectives

By the end of this lesson, students will:

1. Gain exposure to the operational environment of Denver Center and how it interacts with surrounding ARTCCs
2. Understand the process of transitioning aircraft between TRACONs and Denver Center, ensuring proper coordination and sequencing
3. Observe and practice maintaining separation standards and effective traffic flow in a live, high-traffic airspace environment
4. Learn to handle complex handoffs of aircraft between TRACON sectors and Denver Center, including route changes and coordination with adjacent sectors
5. Understand the challenges and strategies involved in managing both arrivals and departures while maintaining situational awareness in a busy airspace
6. Demonstrate ability to handle uncontrolled airfield operations, popup IFR, and holds.
7. Gain practical experience in communication techniques, including the use of correct phraseology and coordination practices between TRACONs and Denver Center controllers

Completion Standards

This session will be considered complete when the student can successfully monitor, engage, and coordinate in the live environment, demonstrating the ability to work top down with multiple TRACONs and contribute to the safe and efficient management of air traffic within Denver Center airspace.

7.3 Enroute OTS Denver Center

The C1 OTS (On-the-Scope) Examination on VATSIM represents the culmination of the training completed to date and marks the end of the VATSIM controller training pipeline. This examination is designed to assess a student's overall proficiency as a Center Controller (C1), testing their ability to manage complex live air traffic control operations on the VATSIM network. Throughout the exam, students will be required to manage normal traffic volumes, maintain safe separation standards, and coordinate effectively with both pilots and adjacent sectors. The scenarios will challenge the student's ability to handle a diverse set of traffic types, including departures, arrivals, and enroute traffic.

The C1 OTS Examination is intended to evaluate the full range of controller skills, including situational awareness, communication, radar techniques, and the ability to apply separation standards in live air traffic environments. This marks the final assessment in the VATSIM controller training pipeline, confirming that the student has developed the necessary skills and is ready to operate independently as a certified C1 Controller. Successful completion of the C1 OTS demonstrates that the student is fully prepared to manage complex and dynamic air traffic operations, making critical decisions under pressure and ensuring the safety and efficiency of air traffic on VATSIM.

Completion Standards

The student will be considered to have successfully completed the C1 OTS Examination when they meet the following criteria:

1. The C1 OTS will be considered successfully completed when the student is able to operate with minimal guidance, demonstrating the ability to handle all aspects of Center Control operations independently and confidently. This marks the completion of their VATSIM controller training pipeline, preparing them for solo certification and full independent operation as a Center Controller (C1)
2. Meet the specific evaluation criteria: Successfully meet all completion standards as outlined in VATUSA DP002 and 3120.25D
3. Upon satisfactory completion of the C1 OTS Examination, student will be awarded the Controller 1 (C1) rating