Training Course on Advanced Air Mobility (AAM) Operations and Vertiport Design

Professional Development Training Course Outline

Category	Aviation and Airport Management	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

The **Advanced Air Mobility (AAM)** sector is rapidly emerging as a transformative force, revolutionizing urban and regional transportation with **eVTOL aircraft**, **drones**, and **autonomous flight systems**. This paradigm shift necessitates a specialized understanding of complex **AAM operations**, **regulatory frameworks**, and critical **vertiport infrastructure development**. As global investments pour into this **innovative aviation ecosystem**, skilled professionals are crucial to navigate the challenges and seize the immense opportunities presented by **urban air mobility (UAM)**, **cargo logistics**, and **emergency services**. This comprehensive training course provides an in-depth exploration of the technical, operational, and regulatory aspects vital for successful **AAM integration** and **vertiport design**.

Training Course on Advanced Air Mobility (AAM) Operations and Vertiport Design is meticulously crafted to equip participants with the essential knowledge and practical skills required to excel in the burgeoning AAM industry. From understanding **airspace management** and **aircraft performance** to mastering **vertiport planning**, **safety protocols**, and **sustainable infrastructure solutions**, this course offers a holistic perspective. Participants will delve into the intricacies of **digital infrastructure**, **traffic management**, and **community integration**, ensuring they are prepared to contribute to the safe, efficient, and equitable deployment of future air transportation networks.

Programme Curriculum

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Course Objectives

Upon completion of this training, participants will be able to:

1. Gain a comprehensive understanding of the entire AAM landscape, including its historical context, current state, and future projections.
2. Identify and differentiate various **electric Vertical Take-off and Landing (eVTOL) aircraft** configurations, propulsion systems, and performance characteristics.
3. Interpret and apply current and evolving **aviation regulations** and **certification standards** for AAM operations and infrastructure.
4. Develop proficiency in the **siting, layout, and design** of **vertiports**, considering critical elements like Final Approach and Take-Off (FATO) areas, Touchdown and Lift-Off (TLOF) areas, and safety zones.
5. Understand the principles and technologies behind **Unmanned Aircraft System Traffic Management (UTM)** and its integration with traditional ATM for AAM operations.
6. Analyze diverse **AAM use cases**, including passenger transport, cargo delivery, and emergency services, and their unique operational requirements.
7. Identify and mitigate risks associated with **AAM operations**, including cybersecurity threats, aircraft integrity, and ground safety.
8. Explore strategies for minimizing the **environmental impact** of AAM, particularly concerning noise pollution and emissions.
9. Develop approaches for seamless connectivity between AAM and existing **urban and regional transportation systems**.
10. Evaluate the **economic viability** of AAM projects and vertiport investments, considering market demand and revenue models.
11. Develop strategies for fostering **public acceptance** and addressing community concerns related to AAM development.
12. Stay abreast of **cutting-edge advancements** such as AI, automation, and advanced navigation systems relevant to AAM.
13. Utilize practical case studies to solve complex problems in **AAM operations** and **vertiport design**.

Organizational Benefits

- Develop a workforce capable of optimizing AAM operations, leading to faster service delivery, reduced congestion, and improved logistical flows.
- Ensure adherence to evolving **aviation safety standards** and regulations, minimizing legal risks and fostering a secure operational environment.
- Position the organization at the forefront of the burgeoning AAM industry, leveraging **first-mover advantage** and attracting top talent.
- Foster a culture of innovation by equipping teams with knowledge of the latest **eVTOL technologies**, **vertiport design principles**, and **digital aviation solutions**.
- Implement environmentally conscious AAM strategies, promoting **low-carbon emissions** and building public confidence through responsible infrastructure development.
- Make informed decisions on **vertiport development** and **smart city integration**, ensuring cost-effective and future-proof infrastructure.
- Upskill existing employees and attract new talent with specialized expertise in a high-growth sector, improving **workforce readiness** and retention.

Target Audience

1. Aviation Professionals
2. Aerospace Engineers & Designers.
3. Urban Planners & Civil Engineers.
4. Government & Regulatory Officials.
5. Logistics & Supply Chain Managers.
6. Real Estate Developers & Investors
7. Technology & Software Developers.
8. Emergency Services & Public Safety Personnel.

Course Outline

Module 1: Introduction to Advanced Air Mobility (AAM)

- Defining AAM: Concepts, history, and future vision.
- Key enablers: eVTOLs, automation, and digital technologies.
- Market trends and growth projections for urban and regional air mobility.
- Distinction between AAM, UAM, and traditional aviation.
- Social, economic, and environmental impacts of AAM.
- **Case Study:** Analysis of NASA's AAM National Campaign and its objectives for future air mobility.

Module 2: eVTOL Aircraft Technologies and Performance

- Types of eVTOL aircraft: Multicopters, lift-plus-cruise, tilt-rotor, and tilt-wing.
- Propulsion systems: Electric, hybrid-electric, and hydrogen fuel cell technologies.
- Battery technology, charging infrastructure, and energy management.
- Aircraft performance metrics: Range, payload, speed, and noise profile.
- Certification challenges and airworthiness standards for novel aircraft.
- **Case Study:** Performance analysis of Joby Aviation's S4 and Archer Aviation's Midnight eVTOLs for urban passenger transport.

Module 3: AAM Regulatory Landscape and Certification

- Global regulatory bodies: FAA, EASA, ICAO, and national civil aviation authorities.
- Certification pathways for eVTOL aircraft (Part 23, Part 27, Part 29, etc.).
- Operational rules and procedures for AAM flight.
- Airworthiness and maintenance requirements for AAM vehicles.
- International harmonization of AAM regulations.
- **Case Study:** The certification journey of Volocopter's VoloCity in Europe and its path to commercial operation.

Module 4: Airspace Management for AAM

- Current airspace structure and air traffic control (ATC) limitations.
- Unmanned Aircraft System Traffic Management (UTM) architecture and principles.
- Integration of AAM traffic into existing national airspace systems.
- Communication, Navigation, and Surveillance (CNS) requirements for AAM.
- Low-altitude airspace considerations and geofencing.
- **Case Study:** Development of a hypothetical UTM system for a major metropolitan area to manage drone deliveries and eVTOL flights.

Module 5: Vertiport Siting and Location Analysis

- Strategic considerations for vertiport placement in urban and regional areas.
- Factors influencing site selection: Population density, multimodal connectivity, noise sensitivity, and real estate availability.
- Environmental impact assessments and community engagement for siting.
- Geospatial analysis and mapping tools for optimal vertiport location.
- Integration with existing transportation hubs (airports, train stations).
- **Case Study:** Siting analysis for a proposed vertiport network in a bustling city, considering noise, accessibility, and public acceptance.

Module 6: Vertiport Physical Design and Layout

- Components of a vertiport: FATO, TLOF, safety areas, taxiways, and terminal facilities.
- Dimensional requirements based on eVTOL aircraft characteristics.
- Ground support equipment (GSE), charging infrastructure, and fueling systems.
- Passenger flow, baggage handling, and security screening in vertiports.
- Emergency response and firefighting services (RFFS) at vertiports.
- **Case Study:** Designing a multi-level vertiport integrated into a commercial building, addressing structural loads, noise dampening, and passenger flow.

Module 7: Vertiport Operational Procedures

- Standard Operating Procedures (SOPs) for vertiport ground and flight operations.
- Vertiport traffic management and scheduling.
- Personnel training and licensing for vertiport operations.
- Weather considerations and operational limitations.
- Handling of emergencies, diversions, and unexpected events.
- **Case Study:** Developing an operational plan for a vertiport during peak hours, including arrival/departure sequencing and ground crew coordination.

Module 8: Digital Infrastructure for AAM and Vertiports

- Data management, cybersecurity, and secure communication networks.
- Digital twins for vertiport planning and optimization.
- Sensors, cameras, and monitoring systems for vertiport operations.
- Artificial intelligence (AI) and machine learning (ML) in AAM decision-making.
- Connectivity and interoperability with broader smart city initiatives.
- **Case Study:** Implementing a comprehensive digital platform for a vertiport to manage bookings, optimize charging, and monitor security in real-time.

Module 9: Safety Management Systems (SMS) for AAM

- Introduction to Safety Management Systems (SMS) principles and components.
- Hazard identification, risk assessment, and mitigation strategies specific to AAM.
- Safety culture development and human factors in AAM operations.
- Incident reporting, investigation, and corrective action processes.
- Compliance with ICAO Annex 19 and national SMS regulations.
- **Case Study:** Developing an SMS for a hypothetical AAM operator, identifying potential risks from new technologies and outlining mitigation measures.

Module 10: Security and Cybersecurity in AAM

- Threat assessment for AAM operations: Physical security and cyber threats.
- Passenger and cargo security screening at vertiports.
- Cybersecurity measures for aircraft systems, ground infrastructure, and data.
- Response protocols for security incidents and breaches.
- Regulatory requirements for AAM security.
- **Case Study:** Analyzing a simulated cyberattack on an AAM network and developing a comprehensive response plan.

Module 11: Environmental Sustainability in AAM

- Noise impact assessment and mitigation strategies for vertiports and flight paths.
- Emissions reduction strategies: Electric propulsion, sustainable aviation fuels (SAFs).
- Waste management and resource efficiency in vertiport design and operations.
- Public perception and community engagement on environmental issues.
- Regulatory frameworks for environmental compliance in AAM.
- **Case Study:** Designing a "green vertiport" with renewable energy sources, noise reduction features, and sustainable building materials.

Module 12: Economic Models and Business Cases for AAM

- Revenue generation models for AAM operators and vertiport owners.
- Cost analysis: Aircraft acquisition, maintenance, operational expenses, and infrastructure development.
- Funding mechanisms and investment opportunities in the AAM sector.
- Market demand forecasting and pricing strategies for AAM services.
- Public-private partnerships (PPPs) for AAM infrastructure.
- **Case Study:** Developing a business plan for an AAM taxi service in a target urban market, including financial projections and competitive analysis.

Module 13: Community Integration and Public Acceptance

- Strategies for engaging local communities in AAM planning and development.

- Addressing public concerns: Noise, privacy, safety, and equity.
- Benefits communication: Economic growth, improved mobility, emergency response.
- Stakeholder collaboration: Government, industry, academia, and local residents.
- Case studies of successful and challenging community integration efforts.
- **Case Study:** Creating a public engagement plan for a new vertiport development, addressing resident concerns and highlighting community benefits.

Module 14: Emerging Technologies and Future Trends in AAM

- Advanced automation and autonomous flight operations.
- Beyond Visual Line of Sight (BVLOS) operations for drones and eVTOLs.
- Artificial intelligence (AI) for optimized flight paths and predictive maintenance.
- Quantum computing and its potential impact on AAM.
- Future AAM use cases: Medical transport, disaster relief, and specialized cargo.
- **Case Study:** Researching and presenting on a cutting-edge AAM technology and its potential to disrupt the industry within the next decade.

Module 15: Capstone Project: Integrated AAM and Vertiport Planning

- Participants will work in teams to develop a comprehensive plan for an AAM operation and vertiport network in a chosen geographical area.
- This project will integrate all concepts learned throughout the course, including regulatory compliance, economic analysis, environmental considerations, and community integration.
- Teams will present their detailed proposals, addressing technical feasibility, operational efficiency, and stakeholder buy-in.
- Focus on innovative solutions and addressing real-world challenges.
- Peer review and expert feedback on project proposals.
- **Case Study:** Designing a comprehensive AAM ecosystem for a new smart city development, encompassing vertiport design, operational protocols, and seamless integration with other smart city services.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

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Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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