

Student Research Opportunities in Aviation Human Factors

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Student Research Opportunities in Aviation Human Factors

Presented to: National Training Aircraft Symposium

By: Jamie Barrett, PhD; Brett Torrence, PhD

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**Federal Aviation
Administration**



Aviation Careers

- **Many different jobs exist in aviation**
- **Lesser known, Psychology, Human Factors, and Instructional Design**
- **These are much more diverse than many may realize**





• Mike Monroney Aeronautical Center





CIVIL
AEROSPACE
MEDICAL
INSTITUTE



CAMI

The Civil Aerospace Medical Institute



Federal Aviation
Administration

CAMI Missions

- **Airman Certification**
- **Aviation Medical Examiner Training**
- **Physiology and Survival Training for Pilots**
- **Human Factors Research**
- **Aviation Safety and Air Traffic**
- **Aeromedical Research**
- **Occupational Health at Aeronautical Center**



Mission

Be a leader in aviation human factors research using innovative research methodologies to inform aviation advances in technology, operations, and human performance. Empower data-driven decision-making that improves efficiency of the National Airspace System and leads the world in aviation safety.



Federal Aviation
Administration

Areas of Excellence



Information Processing and Displays



Biophysiological Factors



System Design and Automation



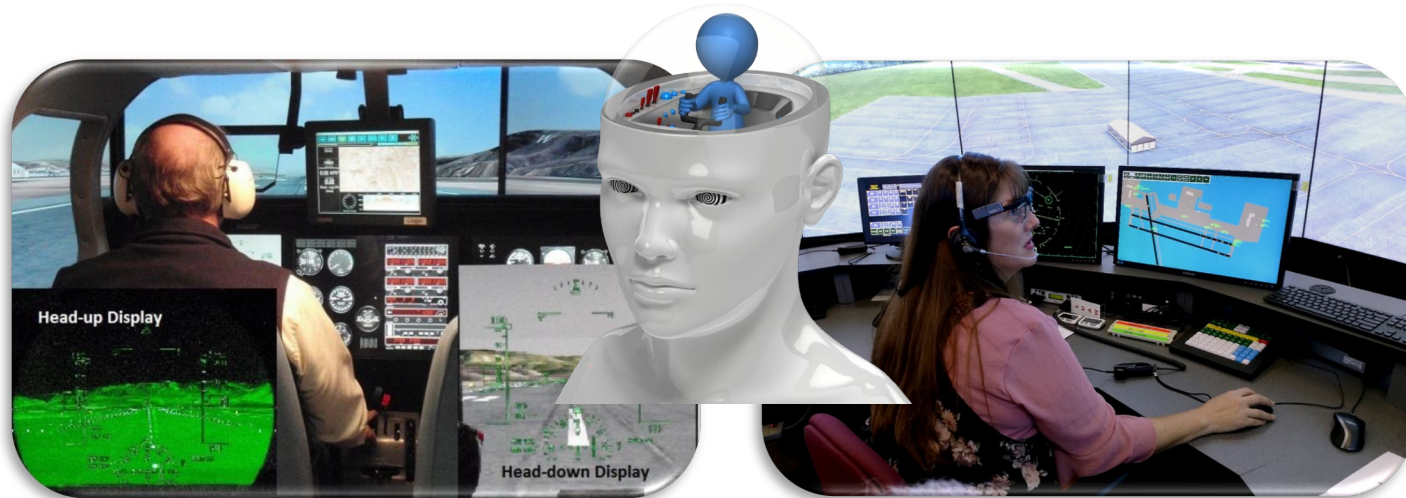
Aviation Workforce Optimization



Organizational Program Assessment



Human Factors Research Division (AAM-500)



Flight Deck Human Factors
Research Branch (AAM-
510)

National Airspace System
Human Factors Safety
Research Branch (AAM-520)



Federal Aviation
Administration

NAS Human Factors Safety Lab

General Air Traffic/Technical Operations Lab



Air Traffic Control Advanced Research

Radar Simulator



Air Traffic Control Advanced Research Tower Simulator



NAS Human Factors Safety Lab

- **Air Traffic Control**

- Responsible for the safe, orderly flow of air traffic
- 14,000+ controllers

- **Research**

- Performance measurement
- Selection and technical training
- Technology and human performance

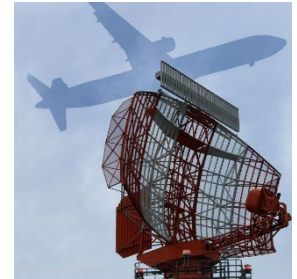


- **Technical Operations**

- Install, maintain, and certify the services and systems in the NAS
- 5,000+ technicians

- **Research**

- Competency Modeling
- Automation and XR
- Training technologies





Volunteer Program

- **Volunteer Program established in 2021**
- **University of Oklahoma agreement**
- **Participation in research projects**
- **Undergraduate research hours**





Specific Research Areas/Projects

- **Stress Management for FAA Academy trainees**
- **Individual Differences and FAA Academy Performance**
- **Changing Skills due to Technology**
- **Skill Degradation Due to new Technology/Systems**





Professional Development Opportunities

- **Monthly seminars**
- **Principle Investigators and Managers**
 - Psychologists
 - Engineers
- **Outside speakers**



Goals/Objective for Program

- **Learn about diverse aviation careers**
- **Learn about different career paths in Psychology, Human Factors, and Aviation**
- **Gain experience conducting real research in laboratory and field settings**
- **Gain experience conducting sponsor-driven operational research**
- **Work closely with PIs on guided research projects**
- **Allow freedom to request additional projects and/or more advanced projects**



Learn about diverse aviation careers

- “Honestly, I don’t think I ever thought about psychology in the field of aviation. It makes sense now but it’s not something I’ve heard of prior to the volunteer experience which is surprising thinking about it now.”
- “My idea of careers relating to psychology also widen as I met personnel on the CAMI team and learned about their interests, background, and position.”



Learn about diverse aviation careers

- From meeting with CAMI team members and learning about their past and current research projects, I think I have a pretty solid awareness of Human Factors careers in Aviation. What surprised me at first was that there is a lot more career options than just “research psychologist”, aside from primary researchers there are statisticians, psychology technicians, simulator specialists, etc. working as a team in human factors research.



Learn about different career paths in Psychology, Human Factors, and Aviation

- “After speaking to many of the PIs at CAMI and learning about their background, I learned that there are many different career paths relating to psychology and that the process of getting there doesn’t have to be a straight line to be successful (no one expects you to follow a social clock and the process looks different for everyone).”



Gain experience conducting real research in laboratory and field settings

- “I think a unique aspect of the FAA-OU student volunteer program is that it allows students to have an integral part in an on-going research project in a meaningful way.”



Gain experience conducting sponsor-driven operational research

- “I also got the chance to learn about the research process and what exactly goes into it from beginning to end. From getting approval, funding, method planning, reviews, finalizing, publishing, etc. The PIs were very transparent with the process which was very much appreciated.”



Work closely with PIs on guided research projects

- “This experience stands out among other research experience as it immerse you in the research process rather than making it feel like it’s just another homework assignment for class. It’s not too often you get one on one meeting time with researchers, given their busy schedule, but this program makes it happen.”



Work closely with PIs on guided research projects

- “I appreciated the honest and detailed feedback provided by the PIs on my work. Having that one-on-one mentoring really helped me hone/develop my skills and understand common problems to look out for.”
- “I think being treated as a professional and being expected to deliver at a higher standard than in most university course pushed me to perform better and learn at a faster rate.”



Allow freedom to request additional projects and/or more advanced projects

- “There was also a lot of autonomy and independence given in terms of workload scheduling, tasks, etc. As an undergrad you’re typically used to being treated as a student rather than a young professional (especially if you came straight from high school). It was really refreshing to be able to have the independence to move at my own pace and have the option to ask for more/less challenging tasks.”



Volunteer Experience

- “The volunteer experience was very positive. Unlike research experiences at the university where the student to PI ratio is typically 4:1, CAMI student volunteer program is more tight-knit and feels like a one-on-one mentorship experience. Meetings were frequent (once a week) which encouraged open feedback (from PIs) and consistent work flow. PIs also made effort to schedule one-on-one meetings with CAMI researchers for mentoring and networking opportunities.”



Volunteer Experience

- “All in all, I had a great experience as a volunteer. I gained a lot of hands-on experience that I would have never gotten in a large classroom or lecture setting. My idea of careers relating to psychology also widen as I met personnel on the CAMI team and learned about their interests, background, and position.”



Advice to Others

- “This is one of the most, if not the most, valuable research experience offered to you as an undergraduate psychology student. You’ll be able to work with the kindest and most encouraging team of researchers and have access to their wealth of knowledge. You’ll be assisting on on-going projects and get opportunities to develop your analytical, professional, and technical skills.”
- “If I had never signed up for the FAA-OU mentorship/volunteer program I would not have the job that I have now 😊”



Special Thanks

- **Dr. Eric Day, University of Oklahoma**
- **Dr. Carla Hackworth**
- **Dr. Brett Torrence**
- **AAM-520 Principle Investigators**
- **Tammy Ho**



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- **Thank you!**

