Aerospace Medicine Training Opportunities Compendium

Created and maintained by the Aerospace Medical Association Education and Training Committee.

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This guide is informational only and may not include all opportunities in all countries. AsMA does not endorse specific opportunities. Furthermore, the scope of the discipline of Aerospace Medicine may vary based on the accrediting College, therefore awareness of the accrediting body may be important for trainees. Hyperlinks for additional information are provided. To report additional opportunities for consideration in this compendium, please contact the Education and Training Committee.

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A. Camps, Clerkships, and Internships

1. United States

1.1 Summer Camps

Camps for grade school through high school aged children.

a. Camp Kennedy Space Center
b. US Space and Rocket Center Space Camp Programs
c. Seattle Aerospace Camp Experience
d. US Army GEMS

1.2 Clerkships/Short Courses

Short courses and clerkships offered for medical students and physicians.

a. FAA-CAMI
    i. Aerospace Physiology Training Class (1/2 day)
    ii. Clinical Aerospace Physiology Review for AME (6 hours, online)
b. NASA JSC Clerkship
c. NASA KSC Clerkship
d. University of Texas Medical Branch – Principles of Aviation and Space Medicine Course (3 weeks virtual, 1-week live workshop)

1.3 Internships

a. NASA Student Internships (Available to students 16 years and older)
b. NASA Space Life Sciences Training Program (10 weeks, for college juniors/seniors and entering graduate students)

2. International

2.1 Summer Camps

a. ISSET Mission Discovery Summer School (UK)
b. One Giant Leap (Australia)
c. Scottish Space School

2.2 Clerkships/Short Courses

a. ESA Space Physician Training Course
b. DLR, Germany - Short Course (1 day)
c. University of Minho, Portugal - Space.Minho (3-day course)
d. World Extreme Medicine Space Medicine Course (3 day)

2.3 Internships

a. ESA student internships
b. MEDES (France)

B. Academic Courses

1. United States

1.1 Courses Open to the Public

Courses requiring registration, but not requiring enrollment in a degree program (i.e., can be pursued individually).

a. Dartmouth Space Medicine Elective
b. Duke Space Medicine (Coursera)

1.2 Undergraduate Courses

Access to these courses requires enrollment in a degree-granting program.

a. Purdue University
    i. Aeronautical and Astronautical Engineering
        a. Space Biology and Medicine (ABE 495)
            1. Marshall Porterfield
b. University of Colorado Boulder
    i. Bioastronautics Curriculum
        a. ASEN 3036 Introduction to Human Spaceflight
c. University of Maryland
    i. Aerospace Engineering
        a. Space System Design (ENAE 483)
            1. Dave Akin
d. University of Michigan
    i. Aerospace Engineering
        a. Intro to Bioastronautics course and a graduate certificate
            1. Aaron Johnson, Oliver Jia-Richards
e. University of North Dakota
    i. Department of Space Studies
        a. Minor in Space Studies
f. University of South Florida
    i. Mechanical Engineering
        a. Intro to Bioastronautics course (BME 4440) and related Senior capstone projects
            1. Stephanie Carey
g. US Naval Academy
    i. Space Environment (EA 461), Human Spaceflight (EA 460)
        a. Ken Reightler

1.3 Graduate Level Courses

Access requires degree enrollment.

a. Colorado State University
    i. Systems Engineering Department

        a. Spaceflight and Biological Systems (ENGR 533)
b. Florida Institute of Technology (Florida Tech)
        a. Spaceflight Human Physiology (SPC 5066)
c. George Washington University
        a. Introduction to Human Health in Space
d. University of California Davis
    i. Mechanical Engineering/Aerospace Engineering
        a. Spacecraft Engineering for Human Spaceflight
            1. Steve Robinson
        b. Human Spaceflight Physiology
            1. Rich Whittle
        c. Humans in Space (in development)
            1. Sanjay Joshi/Zhaodan Kong
e. University of Colorado Boulder
    i. Aerospace Engineering Sciences – Bioastronautics and Microgravity Sciences
        a. Space Life Sciences, EVA, Medicine in Space and Surface Environments
            1. Allison Hyman
        b. Space Habitat Design, Space Life Sciences
            1. David Klaus
        c. Spacecraft Life Support Systems, Grad projects, ECLSS
            1. Jim Nabity
        d. Intro to Human Spaceflight (undergrad)
            1. Jim Voss
        e. Graduate projects: Human Spacecraft
            1. Jim Voss
f. University of Maryland
    i. Aerospace Engineering
        a. Space Human Factors and Life Support (Graduate)
            1. Dave Akin
g. University of Minnesota
        a. Human Factors and Ergonomics Program
            1. Human Factors in Design, and a future course in Principles and Practice of Wearable Technology
                a. Brad Holschuh
        b. Functional Clothing Design (NASA collaboration)
            1. Lucy Dunne
h. MIT
    i. Department of Aeronautics and Astronautics
        a. Aerospace Biomedical and Life Support Systems Engineering
            1. Oliver de Weck
            2. Jeff Hoffman

3. Dava Newman
4. Chuck Oman

i. University of North Dakota
    i. Department of Space Studies
        a. Master's in Space Studies

j. University of Southern California
    i. Astronautical Engineering
        a. Human Factors of Spacecraft Operations (ASTE 561), Engineering Principles for Spaceflight, Human Spaceflight
            1. Garrett Reisman

2. International

2.1 Undergraduate Courses

a. FH Aachen University of Applied Sciences
    i. Human Spaceflight & Microgravity Research
b. Indian Institute of Space Science and Technology
    i. Environmental Control and Life Support Systems (ECLSS)
        a. KG Sreejalekshmi
c. KTH Royal Institute of Technology, Sweden
    i. Human Spaceflight – An Introduction
        a. Christer Fuglesang
d. Technical University of Munich
    i. Human Spaceflight Technology
        a. Human Spaceflight, Life Support Systems
            1. Gisela Detrell
e. Universitat Stuttgart
    i. European Space Agency
        a. Astronaut Training, EVA, Exploration, Analogs, Subsystems, Regenerative ECLSS, Soyuz flight dynamics, summer space stations design workshop
            1. Reinhold Ewald
    ii. Department of Aerospace Engineering
        a. Space Stations – Design and Utilization, Human Space Exploration, Life Support Systems, and IN-situ Utilization
            1. Claas Olthoff
f. University of Bristol
    i. Module on Human Spaceflight
        a. Space Systems Engineering, Department of Aerospace Engineering
            1. Lucy Berthoud

2.2 Graduate Level Courses

a. International Space University (France)

i. Space Studies Program (9 weeks)
ii. “Astrobiology and Space Exploration” course (2 weeks)
iii. ”New Space Business Plan” workshop (1 week)

C. Medical School Courses/Electives

Access requires enrollment in medical school.

1. United States

1.1 Medical School Longitudinal Curricula

a. Baylor electives and space medicine pathway
    i. Only available to Baylor medical students
b. Cornell Medical College Aerospace Medicine Area of Concentration:
    i. As part of Healthcare Technology Area of Concentration, 1 course in: Aerospace Medicine, Space Genetics & Technology AND Metagenomics
    ii. Only available to Cornell Medical Students
c. University of Texas Medical Branch Scholarly Concentration in Aerospace Medicine
d. University of California Irvine SpaceMed Curriculum

2. International

2.1 Medical School Electives

a. University of Melbourne Medical School
    i. Human Health in the Space Environment (2 semesters)

D. Research Groups

Opportunities require affiliation/position within the relevant research group.

1. United States

a. Johns Hopkins University
    i. Human Spaceflight Laboratory
        a. PI: Mark Shelhamer
    ii. Bioastronautics and Space Health Journal Club
        a. Kate Flickinger
b. Texas A&M University
    i. Bioastronautics and Human Performance Laboratory
        a. Ana Diaz Artilles
    ii. Aerospace Human Systems Laboratory
        a. Bioastronautics
            1. Bonnie Dunbar
    iii. Aerospace Engineering, Aerospace Technology, Research & Operations (ASTRO Center)
        a. Human Spaceflight Operations, Space Systems Design, Space Systems Engineering (Senior Capstone Design)

1. Greg Chamitoff

iv. Aerospace Engineering, Systems Engineering, Architecture and Knowledge (SEAK) Laboratory

a. Space systems Design, Space Systems Engineering (Senior Capstone Design)

1. Daniel Selva

v. Systems Analysis and Functional Evaluation (SAFE) Laboratory

a. Human Factors Engineering for Aerospace Environments; Human Error and Resilient System Design; Quantitative Risk Analysis

1. Nany Currie-Gregg

2. International

a. Canadian Space Health Research Network

b. King's College London

a. Centre for Human and Applied Physiological Sciences, Aerospace Medicine and Extreme Physiology Research Group

b. Spacesuit Physiology Laboratory (SPL)

E. Certificates and Degrees

1. United States

a. Arizona State University, Thunderbird School of Global Management

i. Space Leadership, Business, and Policy (1-week Executive Certificate)

b. Case Western Reserve

i. Aerospace Physiology Certificate

ii. Aerospace Physiology Master of Science

c. TRISH Post-Doctoral Fellowship

d. University of Colorado Anschutz MD/MS Aerospace

e. University of Texas Medical Branch Master of Science in Aerospace Medicine

i. Only available to University of Texas Medical Branch Residents in Aerospace Medicine

f. Wright State Certificate

i. Applicants must possess an unrestricted medical license and history of independent medical practice. Experience as a Federal Aviation Administration (FAA) Aviation Medical Examiner (AME) or military/government flight surgeon is typical of successful candidates. Flight experience as a military or civilian pilot is also common. Requires approval of the Aerospace Medicine Certificate Program Faculty.

ii. For more information, contact Laura Marker, Certificate Program Coordinator, at laura.marker@wright.edu.

g. FAA - aeromedical examiner (AME) certificate

i. Melchor Antuñano MD – US and international opportunities

2. International

a. DGLRM (German Society for Aerospace Medicine)

i. Certificate in Space Medicine

ii. Certificate in Aerospace Medical Research

b. European Astronaut Centre
    i. Residential Space Medicine & Space Physiology Training Courses; E-learning; Flight Surgeon Certification; Medical Project Internships, Visiting Scientists, Sabbaticals with the ESA Space Medicine Team
c. European School of Aviation Medicine
    i. Basic Course (9 days)
    ii. Advanced Course (9 days)
    iii. Diploma Course (9 days)
d. Erasmus Mundus Joint Master of Physiology and Medicine of Humans in Space and Extreme Environments (SPACEMED)
    i. Master of Science in extreme environments and spaceflight
e. International Space University (France)
    i. Master of Science in Space Studies
f. Kings College Aviation Medicine
    i. Postgraduate diploma (PG Dip) in aerospace medicine (6 months)
    ii. Master of Science in aerospace medicine (12 months) – this degree encompasses the Post-Graduate Diploma and a research project.
    iii. Introduction to Aerospace Medicine (1 week, online, self paced)
    iv. Basic Course in Aviation Medicine for doctors wishing to apply to be private pilot Aeromedical Examiners (AMEs) (2 weeks)
    v. Advanced Course in Aviation Medicine for doctors wishing to apply to be professional pilot Aeromedical Examiners (AMEs) (2 weeks)
    vi. Aircraft Accident Investigation course (1 week)
    vii. Advanced Course in Aviation Psychology (1 week)
g. Swinburne University of Technology "Humans in Space" in a Space Science and Technology co-major, Space and Microgravity Science
h. Universidade GAMA FILHO – Sao Pablo, Brazil:
    i. 420 hours of post-graduate courses, for medical graduates
    ii. Subjects include Aerospace Physiology - Aerospace Pathophysiology - Aviation Medicine - Travel Medicine - Aeromedical Transport - Airport Problems - Occupational Medicine - Equipment and Systems - Legislation - Expertise - Accident Investigation and Prevention
i. University of Otago – New Zealand
    i. Master of Aviation Medicine
        a. Rob Griffiths
    ii. Master of Aeromedical Retrieval & Transport
    iii. Postgraduate Certificate in Civil Aviation Medicine
j. University of Padua (Italy)
    i. Course in Aeronautical and Space Medicine (One year)
        a. Counts towards AME in Italy
k. Japan Society of Aerospace and Environmental Medicine (JSASEM)

i. Certificate of Aerospace Medicine (3 day course, PD Naoki Matsunaga, MD, space-air-med-certif@umin.ac.jp)

l. Kyoto University (Japan)
   i. Space Medicine Education Program (PD Masahiro Terada, PhD, terada.mashiro.2m@kyoto-u.ac.jp)

F. Residencies and Fellowships

Post-graduate medical education programs requiring completion and an undergraduate medical program and competitive matching/selection for enrollment.

1. United States

1.1 Accredited Aerospace Medicine Fellowships and Residencies

Post-graduate medical education programs, accredited by the ACGME (Accreditation Council for Graduate Medical Education). Completion leads to board eligibility/board certification via the American Board of Preventive Medicine. All include either a Master of Public Health or a Master of Science in Aerospace Medicine in their curriculum.

a. Mayo Clinic Aerospace Medicine Fellowship (2-year program)
   i. Requires completion of a prior primary specialty
b. University of Central Florida Aerospace Medicine Residency
   i. Starts 2027
c. University of Texas Medical Branch Aerospace Medicine Residency
   i. Categorical Residency (2-year program)
      a. Requires completion of a prior primary specialty
   ii. Combined Emergency Medicine/Aerospace Medicine (4-year program)
   iii. Combined Internal Medicine/Aerospace Medicine (4-year program)
b. US Navy (2-year program)
   i. Requires military enlistment.
d. US Army (3-year combined Aerospace Medicine/Occupational Medicine program)
   i. Requires military enlistment.
e. US Air Force Residency (2-year program)
   i. Requires military enlistment.

1.2 Unaccredited Fellowships

Post-graduate medical education programs that are unaccredited by ACGME. Graduates are not board eligible/board certified in Aerospace Medicine (ABPM) after completion.

a. MGH/SPEAR Med
b. UCLA
c. University of Arizona
d. UTHealth Houston

2. International

a. Australasian College of Aerospace Medicine, Fellowship Program
b. McGill Fellowship in Aviation Medicine (1 Year, Montreal, Canada)
c. United Kingdom Aviation and Space Medicine Registrar
d. University of Toronto, Aerospace Medicine Fellowship
    i. 2 years, including MScCH (Master of Public Health equivalent)
    ii. Seeking accreditation from the RCPSC (Royal College of Physicians and Surgeons of Canada)
    iii. Joan Saary, MD, PhD, FRCPC (aerospace.med@utoronto.ca)
e. Universidad Nacional de Columbia
    i. Aimed at Medical Surgeons with a degree issued by an approved University in the country and who have also completed the mandatory social service with a license to practice (professional card) or its equivalent in a foreign University recognized internationally and by the ICFES (Institute for the Evaluation of Education)
    ii. 3-year program
f. Universitas Indonesia, Faculty of Medicine
    i. Aviation Medicine Specialist Study Program
        a. 7 Semesters, 3 stages – "Enrichment, internship, and independent stages"
        b. Only training program in Asia

G. Commercial and Corporate Opportunities

Training available at a cost for employees and interested individuals. Created by and for industry. Not monitored or verified by an academic institution or accrediting body.

1. United States

b. International Institute for Astronautical Sciences (Florida)
    i. EVA 102 Course
        a. Shawna Pandya
c. J4 Insights, LLC
    i. Systems engineering, Crew Health and Performance
        a. Jennifer Mindock
d. Jaguar Space, LLC
    i. In-space R&D and manufacturing
        a. Luis Zea
e. NASTAR
    i. Commercial Human Spaceflight Training
f. Sovaris Aerospace
    i. Precision Medicine in Spaceflight; Multi-scale OMICs in Spaceflight; Human Performance
        a. Michael Schmidt

2. International

a. InnovaSpace Space Without Borders, UK
    ii. Space Pharmacology (Kings College London)
        a. Marlise Araujo dos Santos
b. Metavisionaries/International Space University
    i. Medicines in Space Course (Oxford, UK, 5 days)