# *Keith Crisman, PhD* *701.777.2355*

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## Educational Background

***Associate of Arts*** – Psychology
Ozarks Technical Community College, Springfield, MO *GPA:4.0 – May 2012*

***Bachelor of Science*** – Psychology (M) / Biology (m)
University of North Dakota, Grand Forks, ND *GPA:3.5 – May 2015*

***Master of Science*** – Human Factors in Aeronautics
Florida Institute of Technology, Melbourne, FL *GPA:4.0 – May 2017*

***Doctor of Philosophy*** – Human Centered Design
Florida Institute of Technology, Melbourne, FL *GPA:4.0 – May 2020*

## Titles Held

- Associate Professor of Space Studies, University of North Dakota
- Chief of Dive Safety and Underwater Operations, Neutral Buoyancy Space Operations Facility, University of North Dakota
- Assistant Professor of Space Studies, University of North Dakota
- Chairman of the Academic Standing Committee, IAASS
- Health and Safety Officer of the Human Space Flight Lab, HCDI, Florida Institute of Technology
- NASA Community College Aerospace Scholar (NCAS)
- NASA NCAS Facilitator
- NASA Student Ambassador
- DAN DFA-Pro Provider
- Research Assistant of the Human Space Flight Lab, HCDI, Florida Institute of Technology
- Health and Safety Officer, Crew 219 MDRS
- Commanding Officer, Crew 239 MDRS
- AERO [Adventure, Exploration, Research, and Outreach] Faculty Advisor
- DSS [Dakota Space Society] Faculty Advisor
- Commanding Officer & Dive Safety Officer, AERO Crew 001 Jules 24-Hour
- Commanding Officer & Dive Safety Officer, AERO Crew 002 Jules 48-Hour
- Faculty Facilitator, SSEP [Student Spaceflight Experiments Program] Mission 18 to the ISS [International Space Station]

## Association Memberships

- IAASS [International Association for the Advancement of Space Safety] Human Performance and Health Technical Committee
- AIAA [American Institute of Aeronautics and Astronautics] Senior Member Life Sciences Technical Committee
- AIAA Senior Member Space Architecture Technical Committee
- Divers Alert Network – DAN DFA - Professional Provider
- ARRL [American Radio Relay League] General Member

## Professional Certifications

- PADI Scuba Rescue Diver
- AAUS Science Diver [Florida Institute of Technology, former]
- PADI Aquanaut Diver
- ARRL General Class Licensed Radio Operator [W0DRV]
- OSHA HAZMAT for High-Pressure Cylinders
- DAN DFA-Pro Provider/AED/CPR/Basic Life Support

## Research Areas and Focus

- *High-Fidelity Surface and Environment Simulation for Lunar Analog Training*
- Extreme Environment Survivability
- Hemodynamics/Biometrics Vitals Monitoring In-Situ
- Long-Duration Mission Psychological & Physiological Impact
- *Study of Performance for Extravehicular Space Suit*
- Variable Gravity Emergency and Medical Systems
- Analog Environment/Simulation Fidelity and Safety
- Variable Gravity Rescue Systems Architecture
- AERO 24-hour Dive for Outreach and Novel Communications System for Ocean-Worlds Tools
- AERO 48-hour Dive for Outreach and Novel Communications System for Ocean-Worlds Tools
- *Preliminary Study on the Feasibility of Current US Spacecraft Systems to Support Parastronauts Activities*
- *Research and Development of a Lunar Boot Outsole*
- *Human Factor Analysis of Space Crop Cultivation Methods and Interactions*
- *Design and Fabrication of Inflatable Habitat Core Section for Microgravity Medical Systems*

- *Design and Fabrication of Action, Control, Tactile, and Visual Board for HITL testing of IVA/EVA suits*
- *High-Fidelity Surface and Environment Simulation Using Immersive Virtual Reality for Lunar Expedition Training*
- Design and Development of Autonomous EVA Rescue System
- Design and Fabrication of HF Deployable Antenna for Ocean Environments

## Awards and Honors [Selected]

- UND Founder's Day Award for Interdisciplinary Collaboration in Research and Creative Activity, University of North Dakota, Grand Forks, ND, 2025
- Outstanding Graduate Faculty Mentor Award Nominee, University of North Dakota, Grand Forks, ND, 2025
- Distinguished Alumni Award Nomination, Ozarks Technical Community College, Springfield, MO, 2025
- Florida Institute of Technology Outstanding Student of the Year, Graduate College of Engineering and Sciences 2020
- NASA National Community College Aerospace Scholar winning team 2011
- Phi Theta Kappa Missouri Alumni Association Distinguished Alumni Award
- Missouri Community College Association's Student Leadership Award, 2011
- Missouri All-Academic Scholar, Team 1, 2011
- Florida Tech Graduate Scholarship, 2017-2020
- USA All-Academic Team Nominee, 2012
- NASA Student Ambassador, 2014-2015

## Professional Experience

- *Faculty Facilitator / Laboratory Lead*
  SSEP [Student Spaceflight Experiments Program], Mission 18 to the ISS, John D. Odegard School of Aerospace Sciences, University of North Dakota, Grand Forks, ND / Kennedy Space Center
- *Commanding Officer / Dive Safety Officer*
  AERO Mission 001-24Hour & 002-48Hour Jules Undersea Facility, Key Lago, FL
- *Assistant Professor of Space Studies*
  John D. Odegard School of Aerospace Sciences, University of North Dakota, Grand Forks, ND
- *Human Factors Engineering Internship*
  Marshall Space Flight Center, Huntsville, AL EV74 Vehicles and Systems Engineering Directorate, Human Factors Branch
- *Health and Safety Officer / Research Assistant*
  Human Spaceflight Laboratory, Florida Institute of Technology, Melbourne, FL
- *Health and Safety Officer / Commanding Officer*
  Mars Desert Research Station (MDRS) Crew 219 / Crew 239, Utah High Desert, Hanksville, UT

## Teaching Experience

***University of North Dakota – Space Studies - Teaching***

- SPST 200 Introduction to Space Studies, undergraduate course [30-90 students/semester]
- SSEP Student Spaceflight Experiment Program [SPST200] Team Mentor; Experiment Launch to ISS 2024 [30+ students group project / 3 students launch]
- SPST 501 Survey of Space Studies (co-taught) [20-30 students per semester]
- SPST 530 Human Centered Design, graduate course [15-25 students per semester]
- SPST 531 Applied Human Centered Design, graduate course [15-25 students per semester]
- SPST 532 Disasters in Human Spaceflight, graduate course [15-25 students per semester]
- SPST 533 Space Architecture: SciFi to Reality [15-25 students per semester]
- SPST 590 Space Studies Colloquium [20-30 students per semester]

***University of North Dakota – Space Studies - Advising***

- 15 Master's Student Advisees, as Advisor and Committee Chair [not including Master's Students as *other than chair*]
- 6 PhD Student Advisees, as Advisor and Committee Chair [not including Master's Students as *other than chair*]
- *All* students in my classes and beyond. I am happy to, and often do, offer advice and lessons well beyond the classroom, even assisting in vehicle repair. My students know that my office is always open to them and I am a short message away if they need anything. I may not have the answer, but we will find it together
- Training/Briefing UND ILMAH crews on safety procedures related to habitat/simulation [4 crewmembers per mission]
- Training/Briefing AERO Mission Divers on safety procedures related to the dive and underwater habitat [3-4 crewmembers per mission]
- Training/Briefing SSEP students on lab safety and procedures related to their ISS-bound experiment [3 crew members]

***Century Elementary – South Middle (Grand Forks, ND)***

- AERO Outreach in-class pre-mission briefing, *Why do we Dive for Science* [80, 4$^{th}$ grade students]
- AERO Outreach in-situ mission tour and lecture, *Living underwater / Amateur Radio Underwater*, [80, 4$^{th}$ grade students and open to public via Zoom]
- PTO member, Century Elementary 2020-2025, STE(A)M Ambassador and Derby Facilitator [30-50 participants per year]
- PTO Vice President, South Middle School 2025-current

***Previous Institutions and Outside UND***

- Teaching Assistant Ozarks Technical Community College for the Sophomore Seminar *Leadership Development*, a PTK International Honor Society Course [15-20 students]
- Assistant Facilitator NASA's National Community College Aerospace Scholars program. [48 participants]
- Training of MDRS Crew 219 & 239 participants in emergency and off-nominal procedures [6-8 crewmembers per mission]
- Training of Florida Tech Human Spaceflight Lab researchers and participants in safe operation of Intravehicular (IVA) Spacesuit [50-75 participants]
- Facilitator of several leadership activities and breakout sessions during Phi Theta Kappa local and regional events. [200-300 participants]

## Subject Matter Expert Requests [Selected]

- September 2018, Safety Observation in Human Factors, *Embry-Riddle Aeronautical University, Volusia County aim to land piece of growing space industry*, USA Today
- May 2022, Redundancy in Launch Systems, *Boeing's Starliner is years late*, *but NASA says it's also necessary*, Florida Today
- August 2022, Artemis 1 System Design, *UND plays a small part in Artemis I rocket*, KVRR
- November 2022, History of Human Spaceflight, *Bizarre History of Cats in Space*, Newsweek
- April 2023, Plants beyond Food (Earth Anchoring), *To Boldly Grow Where No Food Has Been Grown Before*, Future Farmer Magazine
- January 2024, Scuba Diving for Space Studies, *Space Studies, Under the Sea*, UND Today

## Professional Presentations

- 2026 ICES (International Conference on Environmental Systems), *High-Fidelity Surface and Environment Simulation for Lunar Analog Training*, Rio Grande, Puerto Rico
- 2026 NATURE (Nurturing American Tribal Undergraduate Research and Education) Sunday Academy, *Spaceflight Physiology Through Indigenous Lenses: Cognitive, Vestibular, and EVA Spaceflight Participant Skills*, North Dakota Tribal Colleges (*var.*)
- 2025 Oral Presentation for AAC&U CLASS Conference on Learning and Success, San Juan, Puerto Rico, "*Inclusion of ISS Research Experience for Undergraduates to Facilitate Exposure of the Research Process*"
- 2024 Oral Presentation for IAASS International Association for the Advancement of Space Safety as part of the 13th Annual Conference, Prague, Czech Republic "*Crisman Modified Hierarchy of Needs Methodology for Space Systems Architecture within Human-Centered Design*"
- 2024 Invited Panel Session for IAASS International Association for the Advancement of Space Safety as part of the 13th Annual Conference, Prague, Czech Republic "*Assisting Decision Making on Long Duration Missions*"
- 2024 Invited Speaker Grand Farms Space Ag Conference Grand Forks, North Dakota "*Space Research Under Water*"
- 2023 Invited Speaker Grand Farms Space Ag Conference Grand Forks, North Dakota "*More than Food*"
- 2019 Oral Presentation for IAF/IAA Space Life Sciences Symposium (A1) as part of the 70th International Astronautical Congress, Washington D.C. "*Cis-Lunar Orbital Medical Facility and Roadmap"*
- 2019 Presentation for Experience 2 Lead, Cape Canaveral, FL *"Human Centered Design / Design Thinking aspects with an Intravehicular Activity Space Suit"*
- 2013 Graduate Students Scholarly Forum Poster Presentation *"Development of a Contained Environment Airlock System and Geologic Sample Return Container"*
- Fall 2012 NASA Internship Final Presentation *"Design and Development of a Contained Environment Airlock and Sample Materials Return System (CEB-SMR)"*
- SpaceVision 2013 Students for the Exploration and Development of Space, Poster Presentation *"Design and Development of a Contained Environment Airlock and Sample Materials Return System (CEB-SMR) Emphasis on Additive Manufacturing"*

## Published Works [Selected]

- Cauthorn, G., & Crisman, K., et. al., (2025). Japanese Oblate Film as a Novel Method for Seed Handling and Activation in Microgravity. Gravitational and Space Research V13 Issue 1
- Crisman, K. (2025). Inclusion of ISS Research Experience for Undergraduates to Facilitate Exposure of the Research Process. American Academy of Colleges and Universities 1st CLASS Conference Proceedings
- F. Del Canto Viterale, K. Crisman, P. DeLeon, M. Dodge, M. Fernandez-Tous, R. Fevig, S. Fieber-Beyer, D. Kugler, (2024), *Pioneering Space Education at the Post Graduate Level – The Case of the University of North Dakota*, IAC/IAF (E1). 75th International Astronautical Congress, Milan, Italy. Published at IAC 2024
- Crisman, K. & Nelson, T (2024). Crisman Modified Hierarchy of Needs Methodology for Space Systems

Architecture within Human-Centered Design IAASS 13th Conference Proceedings

- Rhoades, J., Mangle, K., DeLeon, P., Crisman, K., & Manyapu, K. (2024). Study of Parastronaut Ingress and Egress of the Orion and Boeing CST-100 Starliner Space Vehicles. 2024, International Astronautical Congress.
- Rhoades, J., DeLeon, P., Crisman, K., Mangle, K., Southern, T., & Moiseev, N. (2024). Assessment of Commercial Extravehicular Space Suit Kinematic Performance. 2024 International Conference on Environmental Systems.
- Doule, O., Kobrick, R.L., Crisman, K., Skuhersky, M., Lopac, N., Fornito II, M.J., Covello, C., Banner, B.C. (2021), *IVA spacesuit for commercial spaceflight - Upper body motion envelope analysis.* Acta Astronautica, Vol 186
- K. Crisman, O. Doule, K. Momose, (2019)*, Cis-Lunar Orbital Medical Facility and Roadmap*, IAF/IAA Space Life Sciences Symposium (A1). 70th International Astronautical Congress, Washington D.C. Published at IAC 2019
- Doule, O., Crisman, K., Kobrick, R.L., Lopac, N., Fornito II, M.J., Covello, C., and Banner, B. (2019), *Adjustable IVA Analog Spacesuit Ergonomics – Upper Body Motion Envelope Reference Model.* 10th International Conference on Applied Human Factors and Ergonomics, 7th International Conference on Human Factors in Transportation: Space. Washington D.C., USA
- O. Doule, D. Kiss, Y. Mehta, K. Crisman, E. Beltran, and M. Miller, (2019), *Design and Operational Considerations for Human Spaceflight Occupant Safety,* New Space, Vol 7, No 2
- PhD Dissertation: Crisman, K. (2020), *Microgravity Emergency Medical Containment System – A Concept of Architecture, Prototyping, and Usability Research*
- Multiple interviews as subject matter expert in local, state, and federal news sources (*KVRR, Florida Today, Newsweek, etc.*

## In-Process Works [Selected]

- *Modified (Crisman) Hierarchy of Needs Methodology for Space Systems Architecture within Human-Centered Design – **In Review**;* Journal of Space Safety Engineering
- *Design and Development of the Action Control Tactile Visual (ACTV) Board for HCD and HITL in Motion Capture Environment – In Development*
- *Inclusion of ISS Research Experience for Undergraduates to Facilitate Exposure of the Research Process: Challenging the Group Project – In Development, Presented at* American Academy of Colleges and Universities 1st CLASS Conference

## Grants and Current Research [Selected]

- Crisman, K. E. (PI), "Spaceflight Physiology Through Indigenous Lenses: Cognitive, Vestibular, and EVA Spaceflight Participant Skills", Sponsored by EPSCoR, State, $4,300. (August 2026 - May 2027)
- Crisman, K. E. (Sci-I), "Human Factor Analysis of Space Crop Cultivation Methods and Interactions," Sponsored by NASA, Federal, $470,368.00. (May 15, 2023 - May 15, 2026).
- De Leon, P. G., Crisman, K. E. (Co-PI), Rhoades, J., "Study of Performance for Commercial Extravahicular Space Suit," Sponsored by NASA, Federal, $100,000.00. (August 1, 2021 - August 1, 2022).
- Rhoades, J. L., De Leon, P. G., Crisman, K. E., "The Research and Development of Extravehicular Activity Gait Assist Device" Co-Op with Candeeska Cikana Community College, $133, 274.81 (August 14, 2023 – August 13, 2026)
- Crisman, K. (PI), De Leon, P., Cauthorn, G., et. al., Revised Human Factor Analysis of Space Crop Cultivation Methods and Interactions (Current 2025)
- Crisman, K., (PI, HSO), Rhoades, J., Pedaparthi, S., High-Fidelity Surface and Environment Simulation Using Immersive Virtual Reality for Lunar Expedition Training (Current 2025)
- Crisman, K. & (PI), Cauthorn, G., et. al., Survey Study for ILMAH Crop Production Operations (Current 2025)
- Rhoades, J., De Leon, P., Crisman, K. (HSO), Examination of Foot Actuation during Lunar Walking, Running, and Skipping (Current 2025)
- Rhoades, J., De Leon, P., Crisman, K. (Co-PI, HSO), et. al., Research and Development of a Lunar Boot Outsole (Current 2025)
- De Leon, P., Rhoades, J., Crisman, K. (Co-PI, HSO), Preliminary Study on the Feasibility of current US Spacecraft Systems to Support Parastronauts Activities (Review 2025)
- De Leon, P., Rhoades, J., Crisman, K. (Co-PI, HSO), Study of Performance for Extravehicular Space Suit (Review 2025)

## Service [Selected]

**Professional International Service**

- IAASS [International Association for the Advancement of Space Safety]
  - Academic Functional Director
  - Human Health and Performance Committee

***Professional National Service***

- Senior Member AIAA [American Institute of Aeronautics and Astronautics]
  - Space Architecture Technical Committee [SATC]
  - SATC Education Subcommittee
  - Life Sciences and Systems Technical Committee [LS&S]
  - LS&S Education Subcommittee

***University Service***

- Center for Aerospace Medicine Concept Committee
- ASC Deep Dive Well Design Committee (design of a neutral buoyancy facility for use by students and faculty for space systems research)
- Building Safety Committee: Clifford Hall 5th Floor
- Graduate Research Achievement Day Judge (2020-current)

***College Service***

- College Promotion & Tenure Committee
- College Curriculum Committee

***Department Service***

- DSS [Dakota Space Society] Faculty Advisor
  - UND's SEDS [Students for the Exploration and Development of Space] Chapter focused on student opportunities and community outreach.
- AERO [Adventure, Exploration, Research, and Outreach] Faculty Advisor
  - Facilitated the creation of a new student organization that looks to provide students opportunities to accomplish the four tenets of Adventure, Exploration, Research, and Outreach. The inaugural mission had two graduate students and myself performing novel research while living 22 feet below sea water for 24 hours. We accomplished our outreach (see community) and were the first known individuals to send and receive high frequency communications while underwater to amateur radio operators from San Diego to South Africa.

***Community Service***

- North Dakota State Science Fair regional and state judge (2020-current)
- STEAM Outreach to Century Elementary & South Middle School as member of PTO [Parent Teacher Organization]
  - Run the elementary school's STEAM Derby which has students from kindergarten through 5th grade build pinewood cars and race them. Further, created the award categories and designs, then utilized a 40W HEV laser to engrave the slate awards.
  - Have done in-person demonstrations on space-habitat analogs, in particular using underwater habitats, as well as amateur radio.
  - Have done live demonstrations and outreach while in an underwater analog habitat (22 feet of sea water).
  - Demonstrated rocketry with a pneumatic rocket launch to kick-off fundraising for their elementary