JOHNS HOPKINS
WHITING SCHOOL
of ENGINEERING

Lifelong Learning

Learning about Cislunar Space: Executive Workshop

Course Description

ELEVATE YOUR TECHNICAL AND LEADERSHIP SKILLS with our 1-day executive education course at Johns Hopkins University, designed to demystify the complexities of operating in the cislunar domain. Gain technical insights, understanding, and intuition of this complex dynamical domain as American astronauts return to the moon along with the best and brightest commercial companies. You will be taught by faculty that are world-class experts in developing, designing, and flying deep space missions. This course is specifically designed and tailored for executive leaders that need to understand this domain and that may not have a technical degree. This dynamic in-person course not only offers unparalleled networking opportunities but also equips you with practical technical examples that will position you at the forefront of cislunar understanding in this rapidly evolving landscape.

Date & Time

May 19
8 a.m. to 4:30 p.m.

Modality

In-person
JHU Applied Physics Laboratory
11100 Johns Hopkins Rd.
Laurel, MD 20723

Cost

$1,400

Agenda

Time	Event	Instructor/Host
08:30 to 09:15	**Check-In and Networking Breakfast**	**JHU**
09:15 to 09:30	Introduction and Basic Review	Juan Ojeda-Romero
09:30 to 09:35	Preliminary Q & A	JHU
09:35 to 10:35	Session 1: Cislunar Dynamics (Part 1)	Juan Ojeda-Romero
10:35 to 10:45	**Break**	**JHU**
10:45 to 11:45	Session 1: Cislunar Dynamics (Part 2)	Juan Ojeda-Romero
11:45 to 12:00	Q & A	JHU
12:00 to 13:00	**Networking Lunch**	**JHU**
13:00 to 14:00	Session 2: Cislunar Navigation	Fouad Khoury
14:00 to 14:15	Q & A	JHU
14:15 to 14:30	Break	JHU
14:30 to 15:15	Design Activity	JHU
15:15 to 15:30	**Break**	**JHU**
15:30 to 16:30	Session 3: Proximity and Operations	Fouad Khoury
16:30 to 16:45	Course Survey and Closing Q & A	JHU
16:45 to 17:00	Wrap-Up & Certificates	JHU

Key Takeaways

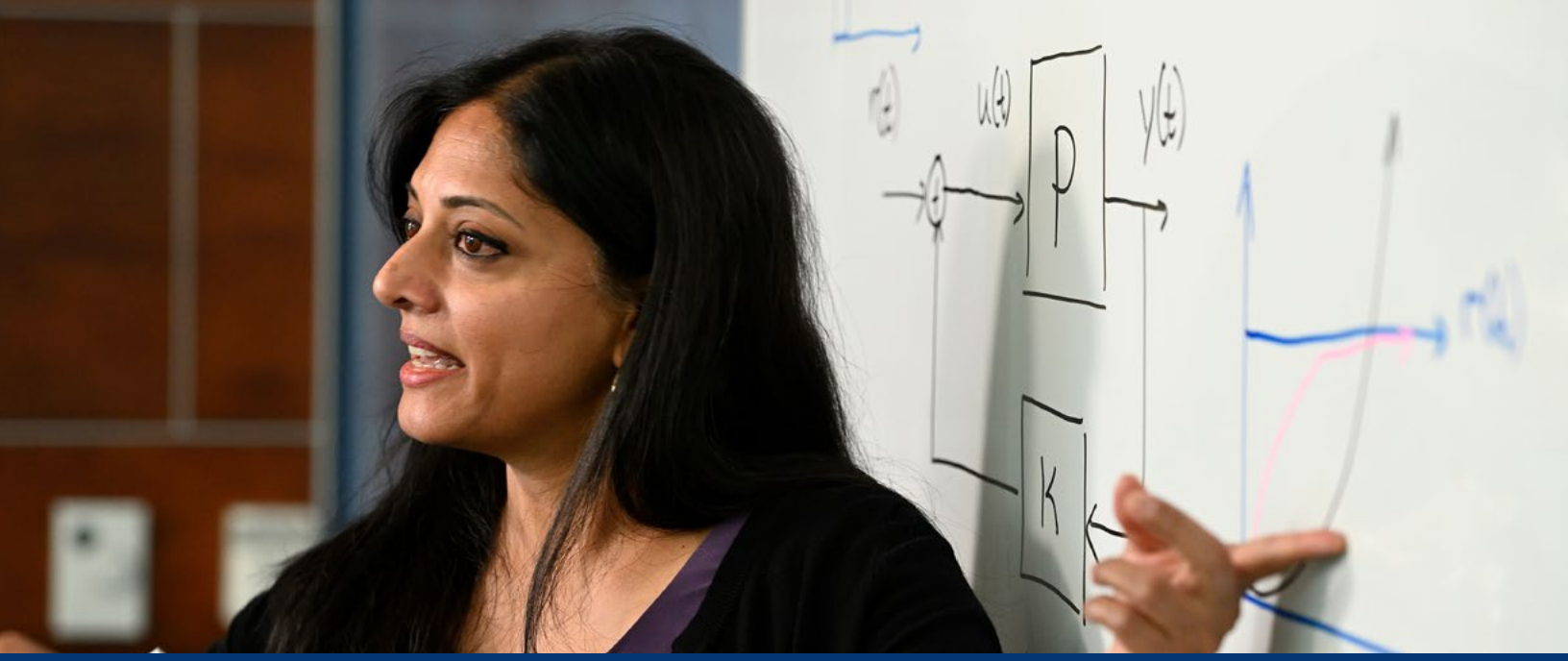
1. Learners will acquire a foundational understanding of the dynamical difference between the Circular Restricted Three-Body problem (CRTBP) model and the Two-Body model.

2. Learners will explore current challenges and best practices for constructing periodic orbits and transfers in Cislunar space.

3. Learners will gain basic knowledge and skills to analyze the stability of periodic orbits in Cislunar space.

4. Learners will gain a basic understanding of strategies for Cislunar Proximity and Operations.

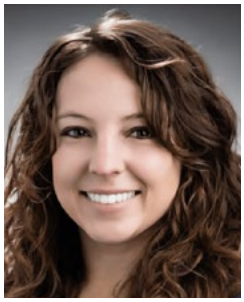
5. Learners will gain a basic understanding of strategies for Cislunar navigation.



Faculty

Juan Ojeda Romero, PhD

Dr. Juan Ojeda Romero is a mission design engineer in the Space Astrodynamics and Controls group at Johns Hopkins University's Applied Physics Laboratory (JHU/APL). He is currently supporting a variety of mission concepts and studies for both Civil and National Security Space. Prior to his current role, Dr. Ojeda Romero worked at a.i. Solutions, Inc. in the Flight Dynamics team supporting various NASA missions at the Goddard Space Flight Center. His personal research interests include new AI applications for mission design and navigation and applying dynamical systems theory to complex gravitational environments. He received his B.A. and M.S. in Aerospace Engineering from Virginia Tech and his Ph.D in Aerospace Engineering from Purdue University.



Corinne Lippe, PhD

Dr. Corinne Lippe is a section supervisor and the Technology Development Lead for the National Security Space Mission Area in the Space Exploration Sector at Johns Hopkins University Applied Physics Laboratory. Dr. Lippe has served as a G&C engineer on the IMAP and Dragonfly missions. She has also provided G&C, Mission Design, and Navigation support for a variety of civil and national security projects and proposals. She received her B.S In Mechanical Engineering from Cornell University and her M.S. and Ph.D. in Aeronautics and Astronautics from Stanford University, where she was supported by the National Science Foundation and the Stanford Graduate Student Fellowships. Her thesis focused on spacecraft swarming and formation flying in both planetary and asteroid orbits.

Brenton Duffy, PhD

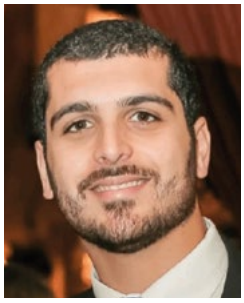
Dr. Brenton Duffy is a section supervisor in the Space Astrodynamics and Controls group at Johns Hopkins Applied Physics Laboratory. He is currently the Guidance and Controls (G&C) lead for the Interstellar Mapping and Acceleration Probe (IMAP). Prior to his current role, Dr. Duffy served as a G&C engineer for the DART and Parker Solar Probe missions and also provided mission design engineering support to a variety of civil and national security space research and mission concept development. He received his B.S. in Aerospace Engineering from North Carolina State University and his M.S. and Ph.D. in Aerospace Engineering from the George Washington University. His academic interests include dynamical systems theory, multi-body dynamics, formation flying and advanced controls theory.

Amanda Haapala, PhD

Dr. Amanda Haapala is a section supervisor and a mission design engineer in the Astrodynamics and Controls group within APL's Space Exploration Sector. She is currently supporting IMAP mission design and navigation, and is active in the development of a number of concept design studies, related to both civil and national security space. Her research interests include autonomous mission design and navigation, including autonomous path-planning and orbit station-keeping, moon-tour design, dynamical systems theory and Cislunar trajectory studies, and she is active in both software and algorithm design. Dr. Haapala received her B.A. in Physics from Towson University, and her M.S. and Ph.D. in Aerospace Engineering from Purdue University. She is a mother of two young boys, an avid nature-lover, and is passionate about outreach, both as it relates to DEIA, as well as to the mental health challenges faced by so many people living in modern society.

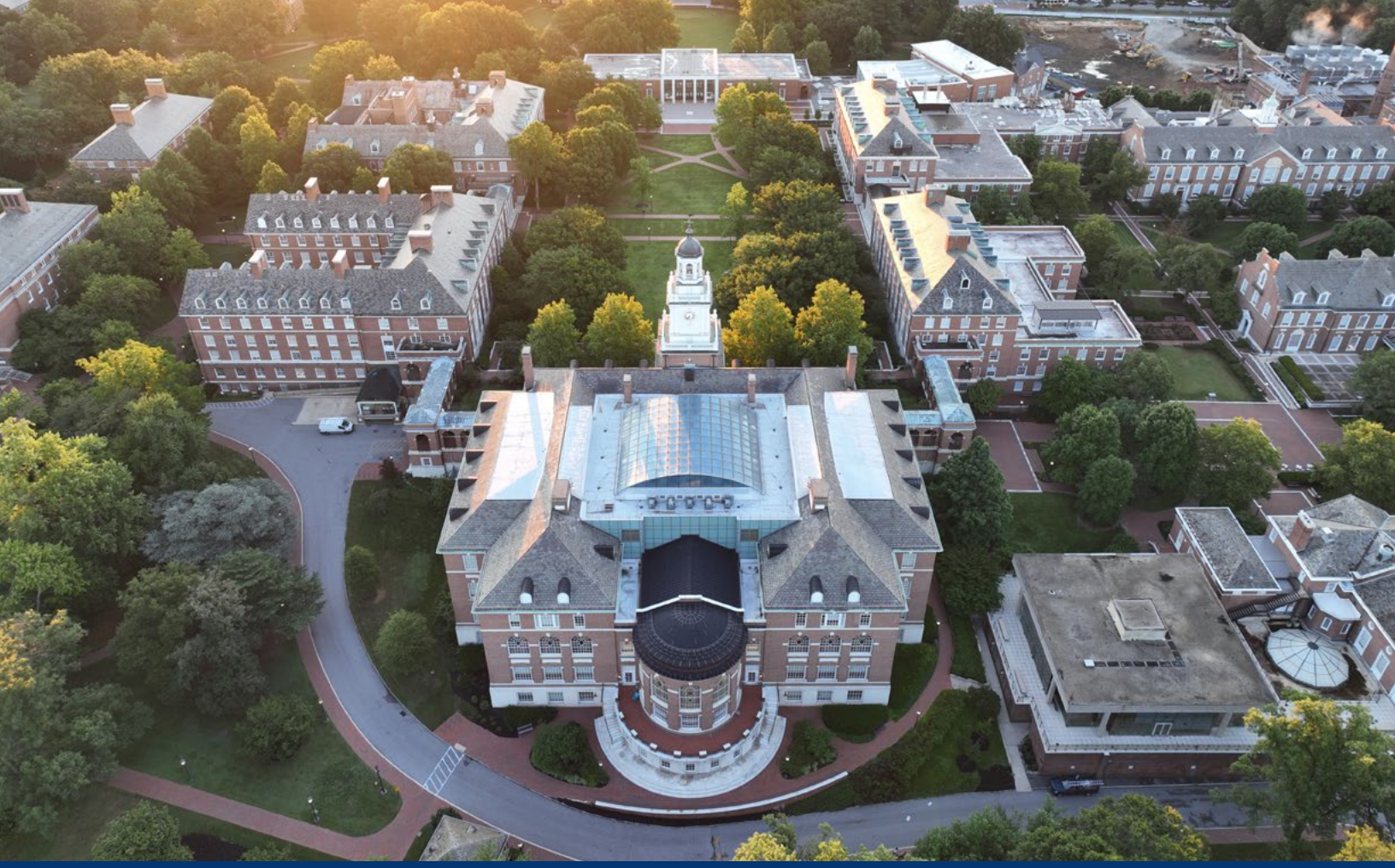
Wayne Schlei

Dr. Wayne Schlei is a Mission Design Engineer in the Astrodynamics and Controls group within APL's Space Exploration Sector and has recently held Primary Investigator roles to several cislunar dynamics research and development projects for the National Security Space Mission Area. In this role, Dr. Schlei has also assisted in the studies and proposals for several spaceflight missions—including Dragonfly and Interstellar Probe—and served as Deputy Mission Design Lead on New Horizons during the Arrokoth (Kuiper Belt Object) encounter. His personal research interests include astrodynamics, autonomous path-planning, computer science, AI/ML applications, computer graphics, visualization, dynamical systems theory, formation flight, and combinatorial optimization. Dr. Schlei earned a B.S. in Aerospace Engineering from Iowa State University, and an M.S. and Ph.D. in Aeronautics and Astronautics from Purdue University with a focus in Astrodynamics and Space Applications.



Fouad Khoury, MS

Fouad Khoury is a spacecraft mission design and navigation engineer in the Space Astrodynamics and Controls group at Johns Hopkins University's Applied Physics Laboratory (JHU/APL). At APL, he works on space missions for both the Civil Space and National Security Space communities. Prior to his current role, Fouad worked at the NASA Johnson Space Center in Houston, Texas and the Air Force Reserach Laboratory in Albuquerque, New Mexico. His research interests include spacecraft proximity operations, Cislunar mission design, and statistical orbit determination. He recieved his B.A. and M.S. in Aeronautical and Astronautical Engineering from Purdue Unviersity.



The Johns Hopkins Advantage

JOHNS HOPKINS UNIVERSITY (JHU) IS A prestigious institution consistently ranked in the top 10 and has a strong reputation in research and education. It is well-positioned to offer compelling differentiators for its continuing education programs in AI.

World-Class Faculty Expertise

The courses are taught by faculty who are distinguished in academia and have real-world experience leading AI practices at Fortune 500 companies. This blend of academic rigor and industry expertise offers students unique insights into the practical applications of AI.

Research-Driven Curriculum

The curriculum is designed based on the latest research and developments in AI, ensuring that students learn the most up-to-date and relevant information. JHU is the leading institution in research, consistently conducting nearly twice the R&D of any other university, and has maintained this unparalleled position for decades.

Prestige and Reputation

JHU is consistently ranked among the top ten universities globally. Earning a certificate from JHU carries significant weight and can enhance career opportunities for graduates by associating them with a recognized leader in education and research.

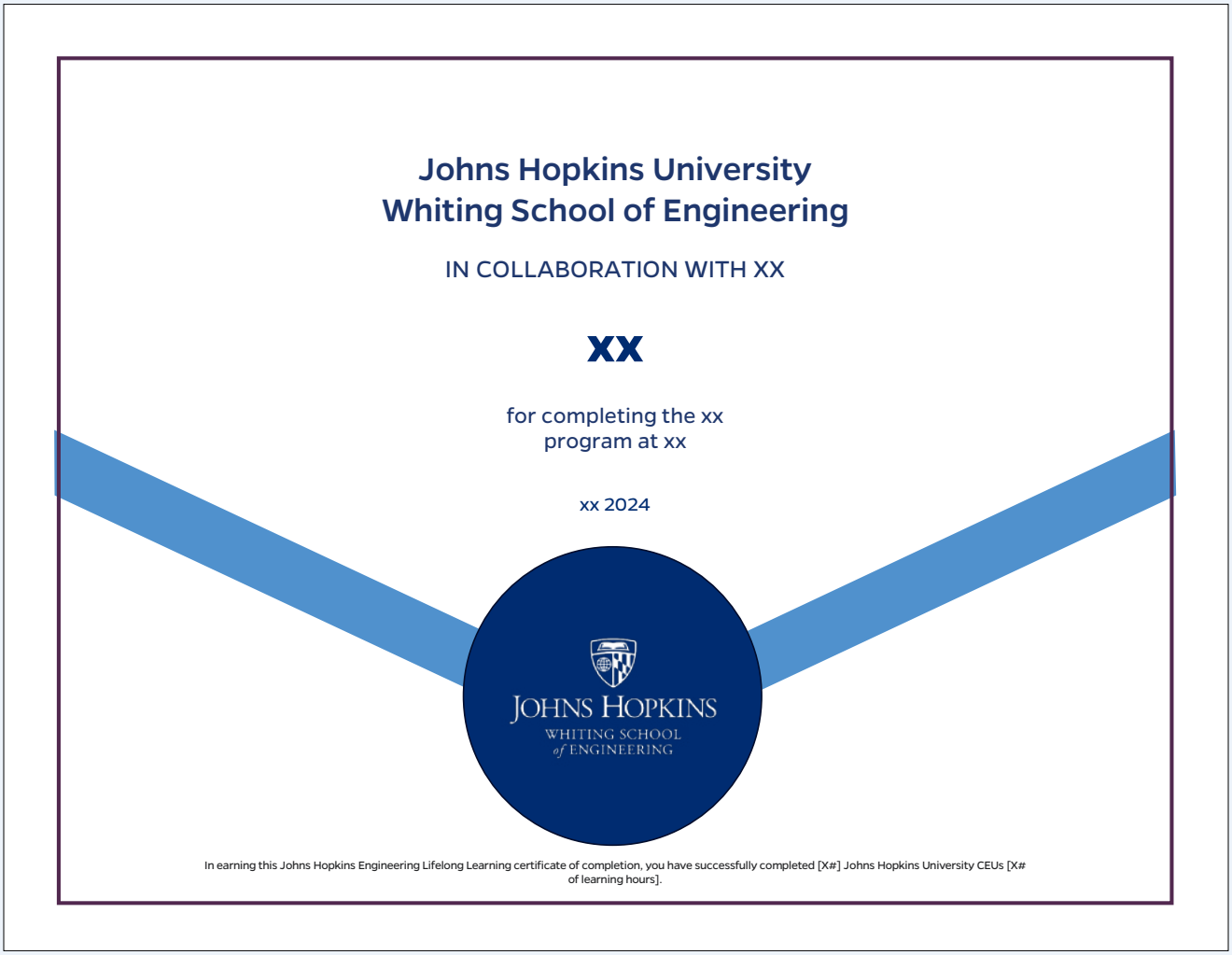
Interdisciplinary Approach

The courses leverage JHU's strengths across various disciplines, including computer science, engineering, medicine, and public policy. They offer students a holistic understanding of AI's impact across different sectors and enable them to think broadly about its applications.

★★★
#6 National University
U.S. News & World Report

★★★
#13 Best Global University
U.S. News & World Report

Certificate of Completion



All participants that successfully complete the course will receive a Digital Certificate of completion from Johns Hopkins Engineering Lifelong Learning.

Accessibility and Disability Accommodations

As Johns Hopkins University works to foster diversity and build a campus culture of inclusion, it is committed to ensuring people with disabilities enjoy full participation in the university's programs, services, and benefits. Johns Hopkins seeks the continuous improvement of accessibility on its campuses and in its activities and prohibits unlawful discrimination on the basis of disability.

New Students/Learners

To establish eligibility for disability-related accommodations and services:

1. Complete the SDS online application through our university-wide database, Accommodation Information Manager (AIM).

2. Submit documentation using the link received after you submit the application.

3. Schedule a meeting with Dayna Geary, SDS Coordinator for Lifelong Learning, to discuss your needs as well as potential accommodations and services.

Please review the Documentation Guidelines for Individuals with Disabilities for more information on supporting documentation.

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