

## **NASA / Nevada Space Grant Curriculum Development (CD) to Train Future Space Science and Engineering Workforce for Nevada Space Industry**

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Funded by NASA/Nevada Space Grant, Curriculum Development (CD) program, we have made substantial progresses in training space science and engineering workforce for future Nevada space industry. We have developed four (4) undergraduate/graduate courses:

- EE416/ECG616 Space Sensors and Instruments (offered Summer 2021)
- ECG716 Space Systems (Offered Summer 2022)
- EE415/ECG615 Spacecraft and Payload Engineering (Offered Fall 2022 as EE495/ECG695-1002 special topics)
- EE411/ECG611 Quantum Space Science (Being offered currently in Spring 2023 as EE495/ECG695-1003 special topics)

We have trained more than 12 undergraduate and graduate students, including 2 women students. Most students belong to under-represented minority groups. They enrolled in the above courses and/or EE and ME Senior Design capstone courses. As of Spring 2023, we have an interdisciplinary team with 8 students from Electrical and Computer Engineering, and Mechanical Engineering.

Our curriculum development has substantial lab research components. We have been conducting following CubeSat related projects:

- 6 degree of freedom CubeSat test platform
- 12 degree of freedom CubeSat test platform for constellation flight
- Snapdragon SBC in Android environment for satellite sensing and control
- Optical imaging and tracking
- LiDAR distance measurement
- Release / redocking mechanisms
- Quantum space instruments
- ...

For most laboratory projects, we have successfully demonstrated their operations. Three conference papers have been presented / accepted, and more will come. We will show pictures and live videos in the state-wide program review presentation. Our students will present posters. We plan to further develop our curriculum and hands-on training program, and train workforce for Nevada space industry.