2025 Space Workshop Schedule

•Good to Bring (optional)

- Laptop, USB Connector if laptop doesn't have one

• Location

- **ECSS 2.201**: Day 1 and Day 2
- **ROW:** Day 3 – CHESS (Center for HARSH ENVIRONMENTS SEMICONDUCTOR SYSTEMS) Lab

• Speakers

Speakers	Department	Topic
Dr. Kangkook Jee	Computer Science	Satellite and Communication
Dr. Ovidiu Daescu		Space debris and De-orbit Systems
Dr. Manuel Quevedo-Lopez	Material Science Engineering	Introduction to CHESS research Physical and Structural Considerations
Dr. Robert Baumann		

• Day 1 Schedule

Time	Sessions	Description
Day 1: Monday, July 9, 2025, **Location:** ECSS 2.201		
09:00 – 10:30 AM	Session 1	Opening remark and workshop logistics (8:30 ~ 9:00 AM) • Dr. Ovidiu Daescu & Dr. Kangkook Jee My Space Journey (Dr. Kangkook Jee) • How has a system security geek become a space enthusiast? • A brief story on Dr. Kangkook Jee's space exploration
10:30 – 11:00 AM	Break	
11:00 – 12:30 AM	Session 2	Introduction to small satellite in LEO (Dr. Kangkook Jee) • Introduction to basic concepts • Small satellite operational lifecycles Small satellite components (Dr. Kangkook Jee) • CubeSat design and specification overview • Basic components for small satellite (CubeSat)
12:30 – 1:30 PM	Lunch (Jason's Deli)	

1:30 – 3:00 PM	Session 3	[Hands-on] Building your own CubeSat I
		(Agastya Bose, Timothy Sweet)
		• CubeSatSim v2.0
		  ○ Introduction (building guide)
		  ○ Hardware component assembly
		• Software image installation

3:00 – 3:30 PM	Break	
3:30 – 5:00 PM	Session 4	Tracking satellite using the UTD ground station (Dr. Kangkook Jee) • Tracking small satellite trajectories • Scheduling satellite communication with UTD ground station • Decoding downloaded satellite telemetries

• Day 2 Schedule

Time	Sessions	Description
Day 2: Tuesday, July 8, 2025, **Location:** ECSS 2.201		

08:30 – 10:00 AM	Session 1	[Hands-on] Building your own CubeSat II
		• Ground station set-up
		  ○ Hardware component assembly
		  ○ Software Image setup
		• **Lab1:** CubeSatSim and Ground station, the first encounter

10:30 – 11:00 AM	Break	
11:00 – 12:30 AM	Session 2	Satellite software and programming interface (Dr. Kangkook Jee) • Intro to On-Board Computer (OBC) and ground system overview and programing interface • Overview of commercial and open-source solutions
12:30 – 1:30 PM	Lunch (Panera Bread)	
1:30 – 3:00 PM	Session 3	CubeSat telemetry study with FoxTelem • **Lab 2:** CubeSatSim V2.0 - Advanced Telemetry Activity
3:00 – 3:30 PM	Break	
3:30 – 5:00 PM	Session 4	Basic RF communication and antenna basics (Dr. Kangkook Jee) • Modulation and Demodulation: APRS, FSK, BPSK, SSTV, CW • Space RF communication • **(Optional) Lab3:** Scheduling satellite communication passes with UTD Ground Station

• Day 3 Schedule

Time	Sessions	Description
- Day 3: Wednesday, June 12, 2024, **Location:** ROW, CHESS Lab (Session 1, 2); ECSS 2.201 (Session 3, 4)		
08:30 – 10:00 AM	Session 1	**Welcome to CHESS – a quick overview** (Dr. Robert Baumann) **Impact of Radiation Effects on Satellite Electronics** (Dr. Robert Baumann) • **Basic Theory/Mechanisms** ○ Why worry about rad effects? ○ Radiation basics and Stopping power ○ FET/BJT as the building blocks of ALL hardware ○ Dose Effects (DDD, TID) and Single Event Effects ○ What Dose Effects and SEE do in real products • **Practical Implications** ○ Why shielding is not a complete solution ○ Designing for success
10:30 – 11:00 AM	Break	
11:00 – 12:30 AM	Session 2	[Hands-on] Experimenting CubeSatSim under X-ray radiations
12:30 – 1:30 PM	Lunch (Velvet Taco*)	
1:30 – 3:00 PM	Session 3	Space debris and De-orbit systems (Dr. Ovidiu Daescu) • Space and orbital debris • Space governance • De-orbit systems
3:00 – 3:30 PM	Break	
3:30 – 5:00 PM	Session 4	Workshop closing (Dr. Kangkook Jee) • Student discussion • Participant survey • Closing remarks

* Need students input for menus.