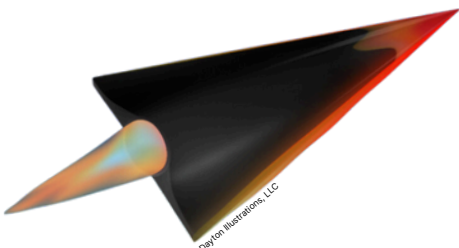


Virtual Hypersonic Workshop: January 2026 Course Outline

Jan. 6–7, 2026 | Virtual

Time	Module/Topic
Day 1 – Jan. 6 12–12:45 p.m.	Module 1 History of Hypersonic Flight and Design — This introductory module will be used to help motivate the current interest in hypersonic flight as we focus on what has been accomplished in the past 70 years and current aircraft.
12:45–1:30 p.m.	Module 2 Hypersonic Aerothermodynamics — This may be the most important module as it provides an overarching connection between all the materials topics discussed in the remaining modules. It will provide the necessary vocabulary to understand hypersonic flight and the technical problems associated with it. This section will be used to point to materials solutions and remaining gaps of knowledge in UHTCs, CMCs, C/C. The thermal protection systems (TPS) are discussed. Candidate materials are discussed (parts of Module 3). Some background on refractory metals is provided.
1:30–1:40 p.m.	Break: 10 minutes
1:40–2:25 p.m.	Module 2 cont.
2:25–3:10 p.m.	Module 4 Introduction to Mechanical Properties of Ceramics — The module focuses on the fundamentals of mechanical testing and data distribution manipulation. It provides context for understanding motivation to make ceramic composites
3:10–3:30 p.m.	Review: Class Wrap Up
Day 2 – Jan. 7 12–1 p.m.	Module 6 Applications of Thermal and Mechanical Properties — This section links the mechanical properties and thermal properties with a focus on thermal shock, ablative coatings, and the space shuttle TPS.
1–2 p.m.	Module 8 Ceramic Matrix Composites (CMCs) — Module 8 focuses on composites including carbon/carbon and ceramic matrix composites and their manufacture. Comparison of CMC properties to monolithic ceramics (Module 4) is also discussed
2–2:10 p.m.	Break: 10 minutes
2:10–3:10 p.m.	Module 7 Materials for RF and IR Performance for Hypersonic Applications — Development of the key requirements and materials properties for RF and IR windows will be discussed.
3:10–3:30 p.m.	Review: Class Wrap Up



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