H.G. Heinrich Parachute Systems Short Course

COURSE SYLLABUS

Part 1 - Online Lectures - accessible asynchronously, between June 7, 2021, and July 7, 2021:

Introduction
Welcome to the HG Heinrich Parachute System Short Course (Potvin)
Para-literature and Definitions (Potvin)

Design
Design Considerations - parachute applications overview (Wolf; Narrated by Potvin)
Gliding parachute design (Underwood)

Deployment, inflation and landing
Deployment (Wolf; narrated by Potvin)
Inflation I: Phenomenology & Reefing (Potvin)
Inflation II: Estimators, Scaling and Modeling (Potvin)
Impact & Shock Attenuation (Wolf; narrated by Potvin)

Parachute testing
Testing overview (Wolf; narrated by Fields)
Drop Testing Measurements & Analysis 1 & 2 & 3 (Watkins)
Wind tunnel testing (Cruz)

Design problem
Presentation of the design problem (Cruz)
Design problem Q&A (Cruz)
Design problem Debrief (Cruz)

Mechanics & Aerodynamics
Materials & Stress/load analysis (Wolf; narrated by Potvin)
Flight mechanics (Cruz)
Aerodynamics – Steady (Underwood)
Aerodynamics – Unsteady (Underwood)
Introduction to FSI (Underwood)

Systems & Applications
Gliding Chute Applications (Underwood)
Inflatable Aerodynamic Decelerators (Cruz)
Supersonic Parachutes (Underwood)
Parachutes for space exploration (Underwood)
Introduction to guided aerial delivery systems (Fields)
Motorized parafoils & paragliders (Fields)

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Part 2 - Live online Q&A sessions (to last between 60 and 90 minutes)

DRAFT – Dates and times, and topics and hosts, to be confirmed at a later date.

Times *per* US East Coast time.

1) Monday 6/7 – NOON - General Q&A; Short brief on the *Design Problem* (Hosts – Potvin & Cruz + all instructors)

2) Wednesday 6/9 – 2PM - General Q&A; Design & Case Studies; Systems & Applications (Hosts – Hennings & Underwood)

3) Friday 6/11 – 9AM - General Q&A; Mechanics & Aerodynamics (Hosts – Cruz & Underwood)

4) Monday 6/14 – NOON - General Q&A; Parachute Testing (drops and wind tunnel) (Hosts – Watkins & Fields & Hennings)

5) Wednesday 6/16 – 2PM - General Q&A: Deployment, inflation and landing (Potvin & Watkins)

6) Friday 6/18 – 9AM - General Q&A; *Design Problem* debrief. (Cruz + all instructors?)

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