Monday - January 23

[Morning 9 - 12noon]: Purpose, Introduction, and Goals

Purpose of Seminar / Goals [30 mins]
Introductions [90 min]

(coffee break [30 mins] - interleaved at some point with the introductions)

Discussion [30 mins] Seminar goals

** Lunch **

[Afternoon 2-5pm]: Inspirational Talks

Inspirational Talk [30 mins]: Joe Kiniry, Galois, Inc.
Inspirational Talk [30 mins]: David Hardin, Collins Aerospace

(coffee break [30 mins])

Inspirational Talk [30 mins]: Alan Wassyng, McMaster University

Short Talks:
 a. Jim Woodcook (University of York) [10 mins] - A Unifying Framework for Uncertainty in Cyber-Physical Systems
 b. Andrei Munteanu (Siemens) [10 mins] - Generative Engineering: a paradigm for the development of cyber-physical systems

Free Form Discussion: 40 minutes

[[Homework]]
  Jot down (e.g., on Wiki) thoughts on the day's presentations and
  what you would like to see discussed to support the seminar goals

Tuesday - January 24

[Morning 9 - 12noon]: Inspirational Talks

Inspirational Talk [30 mins]: Stylianos Basagiannis - Validation and verification approaches for safe and secure cyber-physical systems
Inspirational Talk [30 mins]: Thierry Lecomte - Functional, Safe, Secure CPS - In contact with human beings
 (coffee break [30 mins])
Inspirational Talk [30 mins]: Paolo Masci, NASA Langley

Monica Moniz [10 min] - Research Directions: Cyber-physical Systems - a new approach to publishing your research

Short Talks:
 a. Ezio Bartocci [10 min] - Rigorous Systems Engineering of Cyber-Physical Systems
 b. Fuyuki Ishikawa [10 min] - Heterogeneous Approaches to Safety of
    Automated Driving Systems: Search-based Testing and
    Refinement-based Verification
 c. Stanley Bak [10 min] - Verification for Koopman Approximations

Free-form Discussion: 15 mins

** Lunch **

[Afternoon 2-5pm]

Inspirational Talk [30 min]: Andre Platzer, Carnegie-Mellon University

Short Talks (Topic: AI-related):
   a. Maike Schwammberger [10 min] - All Eyes on Non-functional System
      Properties; On the Formalisation and Analysis of Explainability
      and Morality for Autonomous Traffic Agents
   b. Cláudio Gomes [10 min] - Application of formal verification to the mape-k loop for self-adaptive systems
   c. Gabor Karsai [10 min] - Assurance-based Learning-enabled Cyber-Physical Systems: A project summary
   d. Wolfgang Ahrendt [10 min] - How to Prove That We Do Not Prove A Faulty Controller Safe

(coffee break [30 mins])

Guided Discussion - Gaps/Needs within the CPS community [1 hr, 20 mins]

Wednesday - January 25

[Morning 9 - 12noon]:

Inspirational Talk [30 mins]: Kristin Yvonne Rozier, Iowa State University
Short Talks (Topics: models, executable models):
    a. Peter Gorm Larsen [10 min] - Increasing Dependability of
      Cyber-Physical Systems by using Digital Twins
    b. Marjan Sirjani [10 min] - Modeling and Analysis of CyberPhysical Systems Using Actors
    c. Andrea Bombarda [10 min] - Developing a prototype of a
      mechanical ventilator controller from requirements to code with ASMETA
    d. Anne Remke [10 min] - Optimizing different flavours of
      nondeterminism in hybrid automata with random clocks

(coffee break [30 mins])

Guided Discussion - [1 hr, 20 mins]

Lunch/Afternoon/Evening: Excursion

Thursday - January 26

[Morning 9 - 12noon]:

Short talks:
a. Borzoo Bonakdarpour - Challenges and opportunities in monitoring
    distributed cyber-physical systems
b. Leo Freitas - Digital Twins for Organ Preservation Devices
c. Bill Scott - Challenges in Emerging Medical Systems
d. Einar Broch Johnsen - Dynamic model composition in digital twins
e. Michael Leuschel
ProB after 20 Years: Bringing Formal Models and Mathematics to Life

(coffee break [30 mins])

f. Nils Jansen
Data-Driven Verification for Dynamical Systems Under Uncertainty
g. Régine Laleau
Revisiting the challenges in combining requirements engineering and formal methods for CPS

Guided Discussion: [1 hr, 15 mins] Community Examples: Desired characteristics

** Lunch **

[Afternoon 2-5pm]

Informal socializing and brain-storming to prepare for discussion
Guided Discussion: Challenges / Solution Directions / Activities

Friday - January 27

[Morning 9 - 12noon]:

Wrap-up, Report Plans, Next Steps (future activities, meetings)

** Lunch **

[Departure]
[Organizer-led report information collection and drafting]