

Chapter and section numbers refer to Rouson, Xia & Xu (2011)
Scientific Software Design: The Object-Oriented Way, Cambridge University Press.

Day 1	Content
9:00-9:30	Registration and laptop set-up
9:30-9:45	Introductions
9:45-10:45	Chapter 1. Why object-oriented programming (OOP)?
10:45-11:00	Break
11:00-11:30	Example: Fireworks simulation via procedural programming
11:30-12:00	Section 2.1 Nomenclature, Section 2.2 Object-Oriented Analysis and Design
12:00-1:00	Lunch Break
1:00-1:30	Section 2.3 Encapsulation and Information Hiding , Section 2.4 Wrapping Legacy Software
1:30-2:00	Section 2.5 Composition, Aggregation and Inheritance, Section 2.6 Static and Dynamic Polymorphism
2:00-2:30	Student Exercise 2.1. Fireworks simulation via OOP.
2:30-2:45	Break
2:45-3:15	Student Exercise 2.2. Colored fireworks via inheritance.
3:15-3:45	Student Exercise 2.3. Multicolored fireworks via composition.
3:15-3:45	Chapter 3. Abstract data type calculus
4:15-4:30	Student Exercise 3.1 SOOP Stars

Day 2	Content
9:00-10:00	Available for Q&A
10:00-10:30	Chapter 4. Design Patterns Basics
10:30-11:30	Chapter 7. The Strategy and Surrogate Patterns
11:30-12:00	Student Exercise 7.1. Turbulent sky
12:00-1:00	Lunch break
1:00-1:30	Chapter 8. The Puppeteer Pattern
1:30-2:00	Student Exercise 8.1 Fireworks show
2:00-2:30	Chapter 6. The Abstract Calculus Pattern
2:30-3:00	Student Exercise 6.1 Integrable show
3:00-3:15	Break
3:15-3:45	Chapter 9. Factory Patterns
3:45-4:15	Student Exercise 9.1 The producer
4:15-4:30	Available for Q&A

Day 3	Content
9:00-9:45	Available for Q&A
9:45-10:00	Setting up on Carver
10:00-11:30	PSBLAS and Fortran 2003: Design Patterns and Object Oriented Sparse Matrix Computations
11:30-12:00	Student Exercise 12.1: 2D Parallel PDE
12:00-1:00	Lunch Break
1:00-2:30	Chapter 12. Parallel programming with ForTrilinos
2:30-3:30	Student Exercise 12.2: The grand finale
3:30-3:45	Break
3:45-4:15	A Coarray ADT Calculus
4:15-4:30	Feedback and open discussion