

Detailed Outline

I. Welcome and Introduction	10 min
II. Basics of Building and Linking	20 min
(a) Static and shared libraries; RPATH vs. LD_LIBRARY_PATH	
(b) Build systems overview: autotools, CMake, make, and interpreted language builds.	
III. Spack Basics (Hands-on)	45 min
(a) Downloading and bootstrapping Spack	
(b) Installing & uninstalling packages	
(c) Querying what packages are available and installed	
IV. Core Spack Concepts	15 min
(a) Combinatorial versioning and hashing	
(b) Spack specs, dependencies, and concretization	
— <i>Break</i> —	30 min
V. Spack environments (Hands-on)	45 min
(a) Defining an environment, activating, and deactivating environments	
(b) Reproducible application deployment with Spack environments	
VI. Spack configuration (Hands-on)	45 min
(a) Configuration scopes and hierarchy	
(b) Config options: compilers, repositories, package preferences, package requirements	
— <i>Lunch</i> —	60 min
VII. Creating Packages with Spack (Hands-on)	60 min
(a) Creating package files: metadata, dependencies, version URLs	
(b) How to write and debug custom build/install recipes	
VIII. Binary packages and CI (Hands-on)	30 min
(a) Spack mirrors: source mirrors, binary mirrors	
(b) Continuous integration (CI) pipelines for maintaining Spack mirrors.	
— <i>Break</i> —	30 min
IX. Spack stacks (Hands-on)	60 min
(a) Defining a combinatorial software stack	
(b) Alternate definitions by system architecture	
(c) Generate custom module files for the deployment	
X. Developer workflows (Hands-on)	30 min
(a) Building Spack packages from local source	
(b) Codeveloping multiple Spack packages	