



Clojure Course Syllabus

Clojure/core's 3-day Clojure Course

WHO IS THIS FOR?

This course is for anyone who has an interest in learning more about functional programming in general, and Clojure in particular. Although the course is geared toward participants with some level of programming experience, it does not assume any existing knowledge of Clojure.

Daily sessions alternate between lectures and lab work, and you should expect several hours of direct programming practice with instructors circling through participants to answer questions and encourage new practices.

DAY 1: Syntax, Semantics, Environment

- Introduction
- Overview of the course
- Clojure Rationale
- Evaluation and the REPL
 - Basic Syntax
 - Discoverability of the environment
 - Files and Directories
- Functions
 - Motivation
 - Functions
 - Invoking functions
 - Naming functions
 - `let`
 - Multi-arity functions

- Variadic functions
- apply
- Closures
- Invoking Java code
- Anonymous function reader macro
- Names and Namespaces
 - Namespace Concepts
 - ns macro
 - Private Vars
 - Namespace Introspection
- Collections
 - Overview
 - Sequential
 - Associative
 - Destructuring
 - Sequences and the sequence library

DAY 2: Control, Concurrency, Polymorphism

- Flow Control
 - Introduction
 - Iteration
 - loop and recur
 - Exceptions
- Concurrency

- Introduction
- Conceptual Model
- Var
- Atom
- Ref
- Agent
- Uniform State Transition Model
- Future
- Promise
- Polymorphism
 - Motivation
 - Protocols
 - Protocol dispatch
 - Reifying protocols
 - Extending protocols to types
 - Records
 - Types
 - Multimethods

DAY 3: Macros, ClojureScript, and JVM

- Macros
 - Overview
 - Writing Macros

- Encapsulating Patterns
- Common Macros
- Motivation
- ClojureScript
 - ClojureScript Motivation
 - ClojureScript Compilation
 - ClojureScript Programming
 - ClojureScript Examples
 - Additional Resources
- Life on the JVM
 - Overview
 - Passing Data to/from Java
 - Performance Tuning
 - AOT Compilation
 - Mixing Clojure and Java
 - Consuming Java from Clojure
 - Consuming Clojure from Java
 - Clojure in Java Framework