

2025-11-01

# 14-Day Full Immersion

## Learning Plan

### Supporting Materials Guide

### DIP-SMC-PSO Project

#### Learning Goals

- **Time Investment:** 112-140 hours (8-10 hours/day)
- **Target Outcome:** 70-85% project understanding
- **Skill Goal:** Ability to contribute code
- **Materials:** 30 episodes, 30 cheatsheets, 6 controllers

## Contents

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## section Overview

This guide explains how to use the 14-Day Full Immersion Learning Plan supporting materials. The plan compresses 125-150 hours of learning into an intensive 14-day program.

### subsection What You'll Achieve

#### Expected Outcomes After 14 Days

- **Understanding:** 70-85% of project architecture and algorithms
- **Skills:** Run and modify all 6 controller implementations
- **Capabilities:**
  - Execute PSO optimization independently
  - Write tests for new features
  - Generate publication-quality plots
  - Contribute code to the project

### subsection Materials Provided

enumiDaily Checklist (`daily_checklist.pdf`) - 47 pages

0. enumiQuick Reference (`quick_reference_commands.pdf`) - 6 pages
0. enumiVS Code Settings (`vscode_learning_settings.json`) - IDE config
0. enumiProgress Tracker (`progress_tracker.md`) - Digital journal
0. enumiThis Guide (`immersion_guide.pdf`) - You're reading it!

## section Material Details

### subsection 1. Daily Checklist (PRINT THIS)

#### daily\_checklist.pdf - 47 Pages

**Purpose:** Hour-by-hour breakdown for all 14 days

#### Contents:

- 0. Morning/Afternoon/Evening time blocks
  - Checkboxes for all tasks
  - Daily reflection prompts
  - Understanding ratings (1-10 scale)
  - Notes sections for observations
  - Completion certificate on final page

## How to Use

enumiPrint this document (47 pages, single-sided recommended)

0. enumi**Keep** at your desk throughout entire 14 days
0. enumi**Check off** items as you complete them
0. enumi**Fill in** reflection questions each evening
0. enumi**Track** understanding ratings daily
0. enumi**Sign** completion certificate on Day 14

### Critical

The daily checklist is your primary navigation tool. Don't skip the evening reflections - they consolidate learning and identify gaps.

## subsection 2. Quick Reference Commands (PRINT THIS)

### quick\_reference\_commands.pdf - 6 Pages

**Purpose:** Command reference for common operations

#### Contents:

- 0● Essential simulation commands (6 controllers)
  - PSO optimization commands
  - Testing commands (pytest, coverage)
  - HIL simulation commands
  - Documentation building (Sphinx)
  - Git workflow commands
  - Project recovery commands
  - Troubleshooting tips
  - Keyboard shortcuts

## How to Use

enumi**Print** this document (laminate recommended for durability)

0. enumi**Place** near keyboard or pin to wall
0. enumi**Copy-paste** commands (don't type from scratch)
0. enumi**Refer** to it 20+ times per day
0. enumi**Use** as terminal cheat sheet

### Pro Tip

The most-used commands are on page 1. Keep this page visible at all times during immersion. You'll save hours by copy-pasting instead of typing.

### subsection 3. VS Code Workspace Settings

#### vscode\_learning\_settings.json

**Purpose:** Optimized IDE configuration for learning

**Features:**

- 0● Python configuration (linting, type checking)
  - Testing integration (pytest, coverage)
  - Enhanced code navigation (breadcrumbs, sticky scroll)
  - Git integration (inline diffs, decorations)
  - Auto-save every 5 seconds (lose less work)
  - Markdown preview optimization
  - YAML/JSON validation
  - Recommended extensions list

### Installation

enumiCopy file to .vscode/settings.json in project root:

0. cp .ai\_workspace/edu/immersion\_schedule/  
vscode\_learning\_settings.json  
.vscode/settings.json

enumiRestart VS Code

0. enumiInstall recommended extensions (see comments in JSON)
0. enumiCustomize as you discover preferences

### Key Features

- 0● **F12** - Jump to definition (use 20+ times/day)
- **Breadcrumbs** - Always know where you are in code
- **Sticky Scroll** - Keep context visible while scrolling
- **Test Explorer** - Run pytest directly from sidebar
- **Git Decorations** - See changes inline

#### subsection 4. Progress Tracker (DIGITAL ONLY)

##### progress\_tracker.md - Digital Journal

**Purpose:** Comprehensive daily progress journal

##### Contents:

- 14 daily tracking pages
- Materials consumed checklists
- Hands-on activities tracking
- Experiment results tables
- Performance metrics
- Detailed capstone project tracking (6 phases)
- Final 14-day reflection
- Post-immersion continued learning tracker

#### How to Use

enumi**Keep open** in VS Code throughout immersion

0. enumi**Update** at end of each day (15-20 minutes)
0. enumi**Fill in** all tables, ratings, and reflection prompts
0. enumi**Track** actual hours vs. planned hours
0. enumi**Document** all experiments and results
0. enumi**Use** for detailed capstone tracking on Day 14
0. enumi**Complete** final reflection after Day 14

##### Note

This file is designed for digital use only. Do NOT print it - update it directly in VS Code or your favorite markdown editor.

#### section Quick Start - Day 1 Morning

##### subsection 30-Minute Setup Checklist

0. enumi**Copy VS Code settings** (2 minutes)
0. 

```
cp .ai_workspace/edu/immersion_schedule/
    vscode_learning_settings.json
    .vscode/settings.json
```

enumi**Print daily checklist** (5 minutes)

- 0. Open `daily_checklist.pdf`
  - Print 47 pages, single-sided
  - Staple or bind

#### enumiPrint quick reference (3 minutes)

- 0. Open `quick_reference_commands.pdf`
  - Print 6 pages
  - Laminate if possible
  - Pin to wall or keep near keyboard

#### enumiOpen progress tracker (2 minutes)

0. `code .ai_workspace/edu/immersion_schedule/progress_tracker.md`

#### enumiVerify environment (10 minutes)

0. `python --version # Should show 3.9+`  
`pip install -r requirements.txt`  
`python simulate.py --ctrl classical_smcl --plot`  
`streamlit run streamlit_app.py`

#### enumiOrganize workspace (5 minutes)

- 0. Place printed checklist on left side of desk
  - Place quick reference on right side
  - Keep VS Code with progress tracker open
  - Have terminal ready for commands

### subsection Daily Workflow Template

<b>Morning</b>	Check daily checklist, start Streamlit, review yesterday's notes
<b>Afternoon</b>	Follow checklist tasks, run experiments, take breaks every 50 min
<b>Evening</b>	Update progress tracker, reflect on learnings, preview next day

### section Printing Recommendations

#### subsection Daily Checklist

- **Pages:** 47
- **Format:** Single-sided (easier to write), stapled
- **Paper:** Standard 8.5x11" or A4
- **Location:** At desk throughout 14 days
- **Cost:** \$2-3 at print shop

#### subsection Quick Reference

- **Pages:** 6

- **Format:** Poster size (optional) or standard
- **Paper:** Cardstock for durability
- **Enhancement:** Laminate for long-term use
- **Location:** Pin to wall or keep near keyboard
- **Cost:** \$1 (or \$5-10 if laminated)

#### subsection This Guide

- **Pages:** 12
- **Format:** Digital or print
- **Purpose:** Reference guide for materials usage
- **Read:** Before starting Day 1

### section Success Metrics

#### subsection After 14 Days, You Will

##### Knowledge (70-85% Understanding)

Explain all 6 controller algorithms  
Understand PSO optimization process  
Navigate codebase confidently  
Interpret benchmark results  
Modify configurations safely

##### Skills (Can Contribute Code)

Run and modify simulations  
Implement simple controller variants  
Write tests for new features  
Generate publication-quality plots  
Use git workflow properly

#### subsection Gaps After 14 Days

##### Requires 2-3 More Months (1-2 hours/day)

- Design novel controllers from scratch
- Deep Lyapunov stability proofs
- Publish research papers
- Production deployment expertise

## section **Troubleshooting**

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### subsection **Can't Print Checklist?**

- enumiOpen PDF in browser
- 0. enumiUse browser print (Ctrl+P)
- 0. enumiExport to different format if needed
- 0. enumiTry online PDF print services

### subsection **VS Code Settings Not Working?**

- 0. enumiVerify file is at `.vscode/settings.json` in project root
- 0. enumiCheck syntax (must be valid JSON)
- 0. enumiRestart VS Code
- 0. enumiCheck for conflicting extensions

### subsection **Commands Not Working?**

- 0. enumiVerify you're on Windows (use `python` not `python3`)
- 0. enumiCheck you're in project root: `D:\Projects\main\`
- 0. enumiEnsure dependencies installed: `pip install -r requirements.txt`
- 0. enumiCheck Python version: `python --version` (should be 3.9+)

### subsection **Progress Tracker Too Detailed?**

- 0. enumiSkip tables/metrics if not relevant
- 0. enumiFocus on reflections and understanding ratings
- 0. enumiCustomize sections as needed
- 0. enumiUse it as lightly or heavily as you prefer

## section **Next Steps After Day 14**

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### subsection **Immediate Actions**

- 0. enumiArchive your filled-out materials:  

```
0.     mkdir academic/logs/immersion_2026/
      cp progress_tracker.md academic/logs/immersion_2026/
```

enumiScan filled checklist for digital backup

- 0. enumiReview capstone project results
- 0. enumiCelebrate completion!

### subsection **Continued Learning Path**

- 0. enumi**Weeks 3-4:** Tutorial 01 (`docs/guides/getting-started.md`)

0. enumi**Months 2-3:** 1-2 hours/day maintenance
0. enumi**Ongoing:** Use podcasts during commute for reinforcement
0. enumi**Contribution:** Join research tasks (.ai\_workspace/planning/research/)
0. enumi**Mastery:** 2-3 months total from Day 14

## section File Manifest

File	Size	Purpose	Usage
daily_checklist.pdf	47 pages	Task checklist	Print once
quick_reference.pdf	6 pages	Command reference	20+/day
vscode_settings.json	14 KB	IDE config	Setup once
progress_tracker.md	18 KB	Progress journal	Daily 15-20 min
immersion_guide.pdf	12 pages	Guide to materials	Reference

## section Contact & Support

### subsection If You Get Stuck

- 0 Check .ai\_workspace/guides/ for operational guides
  - Review docs/NAVIGATION.md for documentation
  - Use /recover command if you hit token limits
  - Consult CLAUDE.md for project conventions

### subsection For Questions

- Open GitHub issue: <https://github.com/theSadeQ/dip-smc-pso/issues>
- Review FAQ: docs/guides/faq.md

## section Final Words

### You're Ready!

You now have everything needed for an intensive 14-day learning journey. The materials are designed to maximize learning efficiency and minimize decision fatigue.

#### Remember:

- The goal is 70-85% understanding, not perfection
- Take breaks every 50 minutes (Pomodoro technique)
- Don't skip the evening reflections
- Ask for help when stuck (see Contact section)
- Celebrate small wins daily

Good luck with your immersion! You'll be amazed at how much you can learn in 14 focused days.

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**Ready to start your immersion?**

**Begin with Day 1 setup, print your materials, and dive in!**

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