

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

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**

- enumi**Daily Checklist** (daily_checklist.pdf) - 47 pages
- 0. enumi**Quick Reference** (quick_reference_commands.pdf) - 6 pages
- 0. enumi**VS Code Settings** (vscode_learning_settings.json) - IDE config
- 0. enumi**Progress Tracker** (progress_tracker.md) - Digital journal
- 0. enumi**This 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

- enumi**Print** 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 (lamine 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**

**enumiKeep open** in VS Code throughout immersion

0. **enumiUpdate** at end of each day (15-20 minutes)
0. **enumiFill in** all tables, ratings, and reflection prompts
0. **enumiTrack** actual hours vs. planned hours
0. **enumiDocument** all experiments and results
0. **enumiUse** for detailed capstone tracking on Day 14
0. **enumiComplete** 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. **enumiCopy VS Code settings** (2 minutes)
0. 

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

**enumiPrint daily checklist** (5 minutes)

#### 0. Open `daily_checklist.pdf`

- Print 47 pages, single-sided
- Staple or bind

#### enumi**Print quick reference** (3 minutes)

#### 0. Open `quick_reference.commands.pdf`

- Print 6 pages
- Laminate if possible
- Pin to wall or keep near keyboard

#### enumi**Open progress tracker** (2 minutes)

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

#### enumi**Verify environment** (10 minutes)

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

#### enumi**Organize 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**

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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

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## 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

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## 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/`
  - 0. `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           |
|-----------------------------------|----------|--------------------|-----------------|
| <code>daily_checklist.pdf</code>  | 47 pages | Task checklist     | Print once      |
| <code>quick_reference.pdf</code>  | 6 pages  | Command reference  | 20+ /day        |
| <code>vscode_settings.json</code> | 14 KB    | IDE config         | Setup once      |
| <code>progress_tracker.md</code>  | 18 KB    | Progress journal   | Daily 15-20 min |
| <code>immersion_guide.pdf</code>  | 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-psy/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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