**Objective:**

Understand and experiment with the basics of MCP by integrating a simple AI chatbot with an external data source using MCP.

**Lab Structure:**

**Time Allocation:**

|  |  |
| --- | --- |
| Activity | Time |
| Brief intro & setup | 5 minutes |
| Hands-on: Launching MCP client & server | 5 minutes |
| Hands-on: Configure a basic tool | 5 minutes |
| Hands-on: Invoke tool from LLM/chatbot | 10 minutes |
| Demo & wrap-up | 5 minutes |

**Lab Guide:**

1. **Introduction (5min):**
   * Explain what MCP is and show its real-world use (slide recap).
   * Discuss the flow: LLM ⇄ MCP Client ⇄ MCP Server ⇄ External API.
2. **Setup (5min):**
   * Students install Python and a sample MCP server (e.g., FastMCP or reference open-source).
   * Start a sample MCP client (command-line or web UI).
3. **Configure a Tool (5min):**
   * Show a simple tool (e.g., “get\_current\_time” or “fetch\_motivational\_quote” API).
   * Register this as an MCP server tool.
4. **Invoke Tool from Chatbot (10min):**
   * Students type a query in the LLM/chatbot UI.
   * Observe how the chatbot calls the MCP server and returns live results (e.g., current time or a quote).
   * Experiment by enabling/disabling the tool and noting changes in the chatbot’s abilities.
5. **Wrap-up and Discussion (5min):**
   * Ask students: What other tools might be valuable?
   * Discuss how MCP facilitates modular, future-proof AI integrations.

**Sample Lab Checklist:**

* [ ] MCP server running (Python/Node sample given)
* [ ] MCP client connected
* [ ] Tool registered (e.g., time/quote lookup)
* [ ] Students witnessed live invocation via chatbot

**Note:** For actual implementation, lab instructors can adapt code and tools to local infrastructure, and use open-source MCP server/client projects as starting points[[4]](#fn4)[[2]](#fn2).

This approach gives students both conceptual and practical understanding of MCP, readying them for deeper projects or integration tasks in AI-driven applications.

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1. <https://modelcontextprotocol.io/introduction>

1. <https://www.philschmid.de/mcp-introduction>

1. <https://www.descope.com/learn/post/mcp>

1. <https://github.com/microsoft/mcp-for-beginners>