

# Lab Session: Testnet Swap

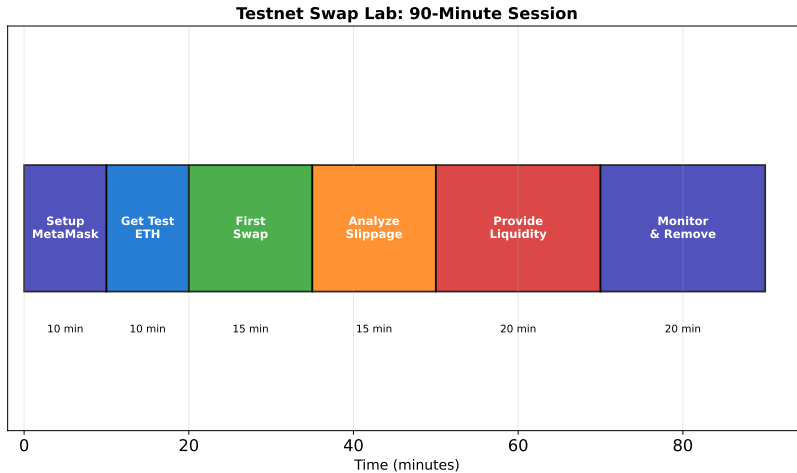
BSc Blockchain, Crypto Economy & NFTs

Course Instructor

Module E: DeFi Ecosystem

By the end of this lab session, you will be able to:

- Set up MetaMask wallet on Sepolia testnet
- Execute token swaps on Uniswap
- Analyze and understand slippage
- Provide and remove liquidity from AMM pools
- Track impermanent loss in practice



*Hands-on DeFi experience with zero financial risk*

# Step 1: Setup MetaMask

## Actions:

- 1 Install MetaMask browser extension
- 2 Create new wallet and save seed phrase
- 3 Enable test networks in settings
- 4 Switch to Sepolia Test Network

## Safety Reminders:

- Testnet funds have NO real value
- Never share seed phrase
- Do NOT send real ETH to testnet address

## Step 2: Acquire Testnet ETH

### Sepolia Faucets:

- <https://sepoliafaucet.com>
- <https://sepoliafaucet.alchemy.com>

### Process:

- 1 Copy Sepolia address from MetaMask
- 2 Paste into faucet and complete captcha
- 3 Request 0.5-1 testnet ETH
- 4 Wait for transaction confirmation

## Step 3: Execute First Swap

**Goal:** Swap 0.1 ETH for USDC on Uniswap

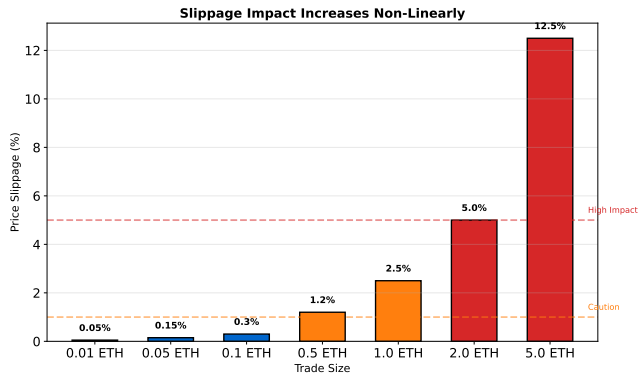
**Process:**

- 1 Connect wallet at <https://app.uniswap.org>
- 2 Select ETH to USDC swap
- 3 Enter amount and review rate
- 4 Confirm in MetaMask

**Record:**

- Exchange rate received
- Gas fee paid
- Transaction hash

# Understanding Slippage



*Larger trades face exponentially higher slippage - AMM fundamental*

## Step 4: Analyze Slippage

### Experiment (DO NOT execute):

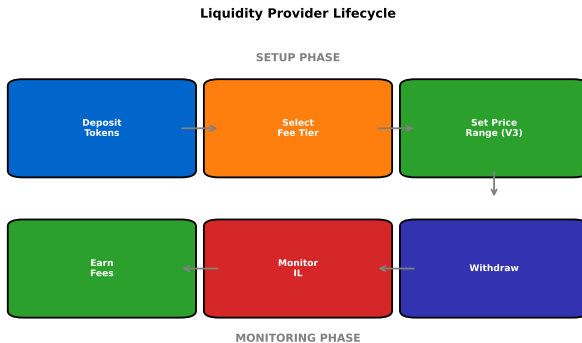
- 1 Quote 0.01 ETH swap - note price
- 2 Quote 0.1 ETH swap - note price
- 3 Quote 1 ETH swap - note price
- 4 Compare the three rates

### Questions:

- How does price change with swap size?
- What causes non-linear slippage?
- How does pool liquidity affect slippage?



# Liquidity Provider Lifecycle



*LPs earn fees but face impermanent loss risk*

## Step 5: Provide Liquidity

**Goal:** Become a liquidity provider

**Process:**

- 1 Click "Pool" tab on Uniswap
- 2 Select ETH/USDC pair
- 3 Choose fee tier (0.3% recommended)
- 4 Enter token amounts
- 5 Approve and confirm transaction

**Record:**

- ETH and USDC deposited
- Fee tier selected
- Initial position value

## Step 6: Monitor and Remove Liquidity

### After providing liquidity:

- Check pool share percentage
- Monitor fees earned
- Execute a swap to see fees accrue

### Remove Liquidity:

- 1 Click on your position
- 2 Select "Remove Liquidity"
- 3 Confirm withdrawal
- 4 Compare final amounts to initial deposit

## Submit:

### ① Lab Report (3-4 pages):

- Swap details and exchange rates
- Slippage analysis observations
- LP position and impermanent loss calculation
- Reflection on DeFi user experience

### ② Supporting Evidence:

- Transaction hashes (Etherscan links)
- Screenshots of key steps

# Key Takeaways

- Testnets enable risk-free DeFi experimentation
- Slippage increases non-linearly with trade size
- Liquidity providers earn fees but face impermanent loss
- DEX UX has improved but remains more complex than CEX
- Understanding mechanics is essential before using real funds