

# INTERNET OF THINGS

## Hands-on Session 03

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2025-01-05

# AGENDA

- AWS Academy
- AWS IoT Core
- MQTT-SN

# AWS ACADEMY

# AWS ACADEMY – INVITATION MAIL


## Course Invitation



From [AWS Academy](#) on 2025-01-06 10:49

 [Details](#)  [Headers](#)  [Plain text](#)

You've been invited to participate in a class at AWS Academy . The class is called AWS Academy Learner Lab [105705]. Course role: Student

Name: 

Email: 

Username: **none**

You'll need to register with Canvas before you can participate in the class.

[Get Started](#)



# AWS ACADEMY – ACCOUNT REGISTRATION



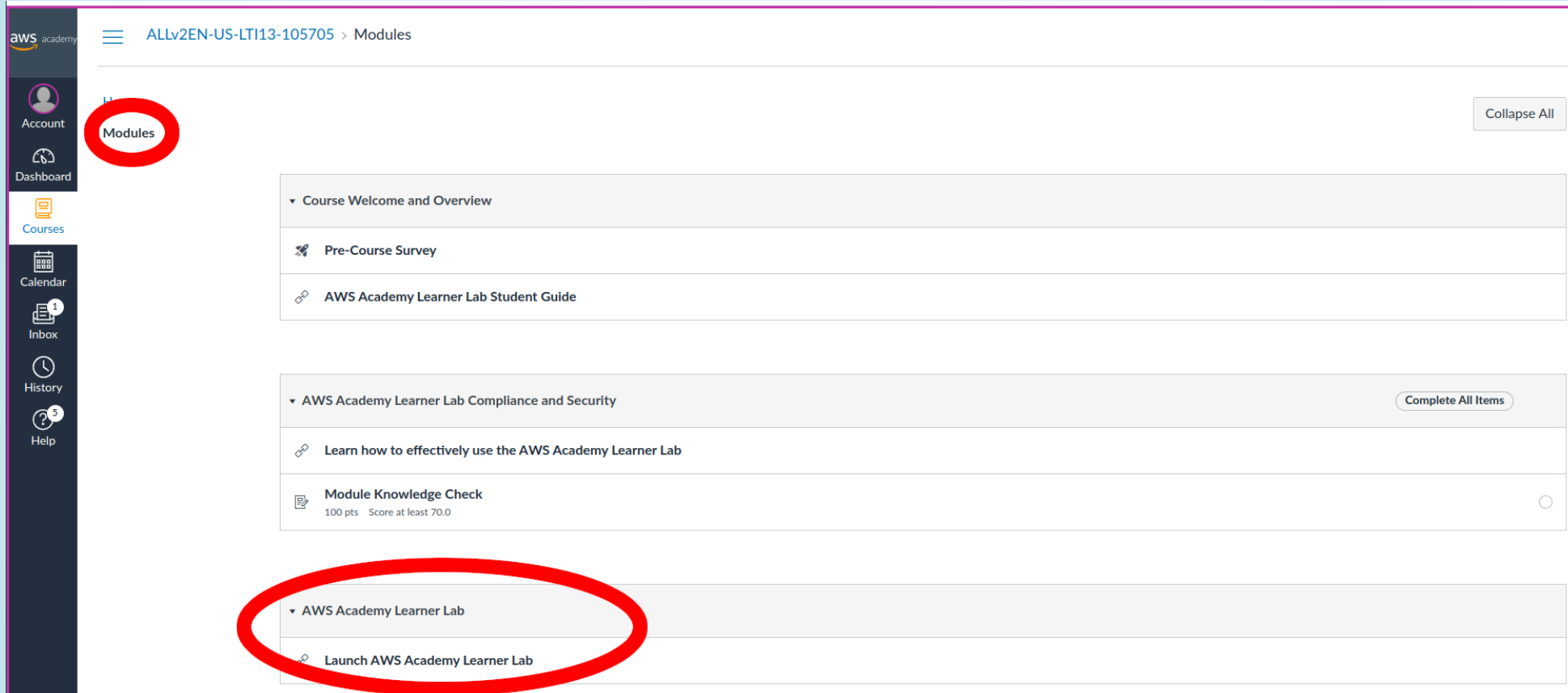
## Welcome Aboard!

You've been invited to join **AWS Academy Learner Lab [105705]**. To accept this request you need a Canvas account. Click the link below to create a Canvas account.

[I Have a Canvas Account](#)

[Create My Account](#)

# AWS ACADEMY – LEARNER LAB



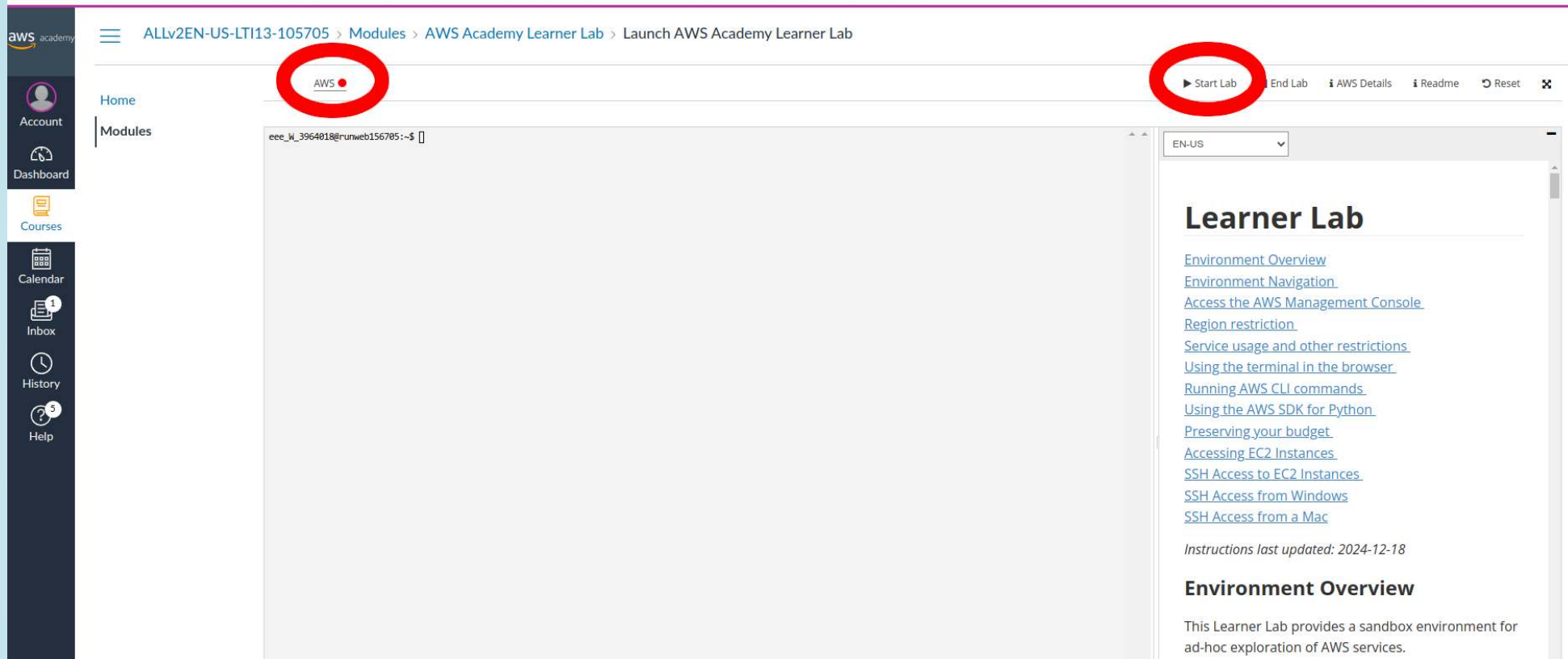
aws academy ALLv2EN-US-LTI13-105705 > Modules

Account  
Dashboard  
Courses  
Calendar  
Inbox  
History  
Help

Modules Collapse All

- ▼ Course Welcome and Overview
  - Pre-Course Survey
  - AWS Academy Learner Lab Student Guide
- ▼ AWS Academy Learner Lab Compliance and Security Complete All Items
  - Learn how to effectively use the AWS Academy Learner Lab
  - Module Knowledge Check  
100 pts Score at least 70.0
- ▼ AWS Academy Learner Lab
  - Launch AWS Academy Learner Lab

# AWS ACADEMY – LEARNER LAB START



The screenshot shows the AWS Academy Learner Lab interface. The breadcrumb navigation at the top reads: ALLv2EN-US-LTI13-105705 > Modules > AWS Academy Learner Lab > Launch AWS Academy Learner Lab. The left sidebar contains navigation options: Home, Modules, Account, Dashboard, Courses, Calendar, Inbox (with 1 notification), History, and Help (with 5 notifications). The main content area features a terminal window with the prompt `eee_wl_396401@runweb156705:~$`. A red circle highlights the 'AWS' label in the terminal's title bar. To the right of the terminal is a 'Learner Lab' sidebar with a 'Start Lab' button (circled in red) and other controls like 'End Lab', 'AWS Details', 'Readme', and 'Reset'. The sidebar lists various links: Environment Overview, Environment Navigation, Access the AWS Management Console, Region restriction, Service usage and other restrictions, Using the terminal in the browser, Running AWS CLI commands, Using the AWS SDK for Python, Preserving your budget, Accessing EC2 Instances, SSH Access to EC2 Instances, SSH Access from Windows, and SSH Access from a Mac. It also notes 'Instructions last updated: 2024-12-18' and an 'Environment Overview' section stating: 'This Learner Lab provides a sandbox environment for ad-hoc exploration of AWS services.'

# AWS IOT CORE



# GETTING STARTED

- Visit <https://docs.aws.amazon.com/iot/latest/developerguide/what-is-aws-iot.html> to learn about AWS IoT Core
- AWS IoT Core offers a MQTT Broker
- Get accustomed with the AWS IoT Device SDK in the language of your choice:
  - Node.js
  - Python
  - Java

# DEVELOP TWO DEVICES (CLIENTS)

- The first client should publish events
  - Publish events for at least two different topics
    - `sensor/1-237/temperature`
    - `sensor/1-237/humidity`
  - The published values should vary within a reasonable range (e.g., temperature between 15°C and 30°C, humidity between 30% and 85%)
- The second client should subscribe to the topics above
  - If the values for temperature and humidity are above or below a certain threshold, the client should trigger a warning
  - The warning should be published to the topic
    - `sensor/1-237/alert`

# MQTT-SN

# MQTT-SN BROKER OR GATEWAY

- The AWS IoT Core MQTT Broker only supports MQTT (over TCP)
- TCP is often too heavy-weight for constrained IoT Devices
  - ➔ MQTT-SN (over UDP) is often preferable
- Broker or gateway for MQTT-SN:
  - RSMB: Really Small Message Broker
- Gateway only:
  - Paho Eclipse Gateway

# CONNECT A CONSTRAINED DEVICE

- Modify the first client in a way that it uses MQTT-SN instead of MQTT
- The second client should remain untouched
- If you haven't configured a Gateway, you need a dedicated forwarder
- MQTT-SN clients are provided by RSMB and Paho