**Software Instructions Document**

**Introduction**

Welcome to the software instructions document for establishing a robust cybersecurity framework using Wireshark, MATLAB, SPAN, and Python. These tools are essential for capturing and analyzing network traffic to detect and differentiate anomalous patterns induced by intentional attacks within your department's network.

**1. Wireshark (Packet Analyzer)**

Wireshark is a powerful packet analyzer used for capturing and analyzing network traffic. Follow these steps to utilize Wireshark effectively:

*Installation:* Download and install Wireshark from the official website (https://www.wireshark.org/).

*Capturing Network Traffic:* Open Wireshark and select the appropriate network interface for capturing departmental network traffic.

*Start Capture:* Click on the "Start" button to begin capturing network traffic.

*Stop Capture:* Click on the "Stop" button to stop capturing network traffic.

*Save Capture*: Save the captured network traffic in a suitable file format (e.g., PCAP) for further analysis.

**2. MATLAB**

MATLAB is a versatile programming and numeric computing platform. Here's how to use MATLAB for statistical analysis of network traffic:

*Installation:* Install MATLAB on your system following the instructions provided by MathWorks (https://www.mathworks.com/).

*Data Import:* Import the captured network traffic data into MATLAB for analysis.

*Statistical Analysis:* Utilize MATLAB's built-in functions and tools for statistical analysis of the network traffic data.

*Baseline Identification:* Use MATLAB to identify baseline network traffic patterns, which will serve as a reference for detecting anomalies.

**3. SPAN (Switch Port Analyzer)**

SPAN is a switch-specific tool used for monitoring and analyzing network traffic. Here's how to configure and use SPAN effectively:

*Configuration:* Configure SPAN on the network switch to copy Ethernet frames passing through specific switch ports.

*Monitoring:* Use SPAN to monitor network traffic and capture data from designated switch ports.

*Data Transmission:* Send the captured network traffic data to the appropriate destination for further analysis.

**5. Python**

Python is a widely-used programming language with extensive libraries for data analysis. Here's how to use Python for statistical analysis of network traffic:

*Installation:* Install Python on your system from the official website (https://www.python.org/).

*Statistical Analysis:* Utilize Python libraries such as NumPy, Pandas, and SciPy for statistical analysis of the network traffic data.

*Script Execution:* Write Python scripts to perform customized statistical analysis tasks tailored to your project requirements.

**Conclusion**

By following these instructions, you can effectively utilize Wireshark, MATLAB, SPAN, and Python to capture, analyze, and identify anomalous patterns in network traffic, enabling timely detection of malicious activities within your department's network.