SEC542

GWAPT Certification
Web Application Penetration Tester

www.giac.org/gwapt

Web App Penetration Testing and Ethical Hacking

Six-Day Program
36 CPEs
Laptop Required

Who Should Attend

- General security practitioners
- Penetration testers
- Ethical hackers
- Web application developers
- Website designers and architects

You Will Be Able To

- Apply a detailed, four-step methodology to your web application penetration tests: reconnaissance, mapping, discovery, and exploitation
- Analyze the results from automated web testing tools to validate findings, determine their business impact, and eliminate false positives
- Manually discover key web application flaws
- Use Python to create testing and exploitation scripts during a penetration test
- Discover and exploit SQL Injection flaws to determine true risk to the victim organization
- Create configurations and test payloads within other web attacks
- Fuzz potential inputs for injection attacks
- Explain the impact of exploitation of web application flaws
- Analyze traffic between the client and the server application using tools such as the Zed Attack Proxy and Burp Suite to find security issues within the client-side application code
- Manually discover and exploit Cross-Site Request Forgery (CSRF) attacks
- Use the Browser Exploitation Framework (BeEF) to hook victim browsers, attack client software and the network, and evaluate the potential impact that XSS flaws have within an application
- Perform a complete web penetration test during the Capture the Flag exercise to bring techniques and tools together into a comprehensive test

"SEC542 is high-quality training that I can apply to my job right away. The labs in this class are the best I've encountered so far."

-Rosselle Mariotti Jones, Bonneville Power Administration

Web applications play a vital role in every modern organization. However, if your organization doesn't properly test and secure its web apps, adversaries can compromise these applications, damage business functionality, and steal data. Unfortunately, many organizations operate under the mistaken impression that a web application security scanner will reliably discover flaws in their systems.

SEC542 helps students move beyond push-button scanning to professional, thorough, and high-value web application penetration testing.

Customers expect web applications to provide significant functionality and data access. Even beyond the importance of customer-facing web applications, internal web applications increasingly represent the most commonly used business tools within any organization. **Unfortunately, there is no "patch Tuesday" for custom web applications, and major industry studies find that web application flaws play a major role in significant breaches and intrusions.** Adversaries increasingly focus on these high-value targets either by directly abusing public-facing applications or by focusing on web apps as targets after an initial break-in.

Modern cyber defense requires a realistic and thorough understanding of web application security issues. Anyone can learn to sling a few web hacks, but effective web application penetration testing requires something deeper.

SEC542 enables students to assess a web application's security posture and convincingly demonstrate the impact of inadequate security that plagues most organizations.

In this course, students will come to understand major web application flaws and their exploitation. Most importantly, they'll learn a field-tested and repeatable process to consistently find these flaws and convey what they have learned to their organizations. Even technically gifted security geeks often struggle with helping organizations understand risk in terms relatable to business. Much of the art of penetration testing has less to do with learning how adversaries are breaking in than it does with convincing an organization to take the risk seriously and employ appropriate countermeasures. The goal of SEC542 is to better secure organizations through penetration testing, and not just show off hacking skills. This course will help you demonstrate the true impact of web application flaws through exploitation.

In addition to high-quality course content, SEC542 focuses heavily on in-depth, hands-on labs to ensure that students can immediately apply all they learn.

In addition to having more than 30 formal hands-on labs, the course culminates in a web application pen test tournament, powered by the SANS NetWars Cyber Range. This Capture-the-Flag event on the final day brings students into teams to apply their newly acquired command of web application penetration testing techniques in a fun way that hammers home lessons learned.

SANS
www.sans.org/SEC542

SANS Technology Institute
www.sans.edu

sapere aude
www.sans.org/cyber-guardian

Bundle OnDemand
WITH THIS COURSE
www.sans.org/ondemand

542.1 HANDS ON: Introduction and Information Gathering

Understanding the attacker's perspective is key to successful web application penetration testing. The course begins by thoroughly examining web technology, including protocols, languages, clients and server architectures, from the attacker's perspective. We will also examine different authentication systems, including Basic, Digest, Forms and Windows Integrated authentication, and discuss how servers use them and attackers abuse them.

Topics: Overview of the Web from a Penetration Tester's Perspective; Exploring the Various Servers and Clients; Discussion of the Various Web Architectures; Discovering How Session State Works; Discussion of the Different Types of Vulnerabilities; Defining a Web Application Test Scope and Process; Defining Types of Penetration Testing; Heartbleed Exploitation; Utilizing the Burp Suite in Web App Penetration Testing

542.2 HANDS ON: Configuration, Identity, and Authentication Testing

The second day starts the actual penetration testing process, beginning with the reconnaissance and mapping phases. Reconnaissance includes gathering publicly available information regarding the target application and organization, identifying the machines that support our target application, and building a profile of each server, including the operating system, specific software and configuration. The discussion is underscored through several practical, hands-on labs in which we conduct reconnaissance against in-class targets.

Topics: Discovering the Infrastructure Within the Application; Identifying the Machines and Operating Systems; Secure Sockets Layer (SSL) Configurations and Weaknesses; Exploring Virtual Hosting and Its Impact on Testing; Learning Methods to Identify Load Balancers; Software Configuration Discovery; Exploring External Information Sources; Learning Tools to Spider a Website; Scripting to Automate Web Requests and Spidering; Brute Forcing Unlinked Files and Directories; Discovering and Exploiting Shellshock

542.3 HANDS ON: Injection

This section continues to explore our methodology with the discovery phase. We will build on the information started the previous day, exploring methods to find and verify vulnerabilities within the application. Students will also begin to explore the interactions between the various vulnerabilities.

Topics: Python for Web App Penetration Testing; Web App Vulnerabilities and Manual Verification Techniques; Interception Proxies; Zed Attack Proxy (ZAP); Burp Suite; Information Leakage, and Directory Browsing; Username Harvesting; Command Injection; Directory Traversal; SQL Injection; Blind SQL Injection; Local File Inclusion (LFI); Remote-File Inclusion (RFI); JavaScript for the Attacker

SANS

SEC542 Training Formats

(subject to change)

Live Training
www.sans.org/security-training/by-location/all

Summit Events
www.sans.org/summit

Mentor Training
www.sans.org/mentor

Private Training
www.sans.org/onsite

vLive
www.sans.org/vlive

Simulcast
www.sans.org/simulcast

OnDemand
www.sans.org/ondemand

SelfStudy
www.sans.org/selfstudy

542.4 HANDS ON: JavaScript and XSS

On day four, students continue exploring the discovery phase of the methodology. We cover methods to discover key vulnerabilities within web applications, such as Cross-Site Scripting (XSS) and Cross-Site Request Forgery (CSRF/XSRF). Manual discovery methods are employed during hands-on labs.

Topics: Cross-Site Scripting (XSS); Cross-Site Request Forgery (CSRF); Session Flaws; Session Fixation; AJAX; Logic Attacks; Data Binding Attacks; Automated Web Application Scanners; w3af; XML and JSON

542.5 HANDS ON: CSRF, Logic Flaws, and Advanced Tools

On the fifth day, we launch actual exploits against real-world applications, building on the previous three steps, expanding our foothold within the application, and extending it to the network on which it resides. As penetration testers, we specifically focus on ways to leverage previously discovered vulnerabilities to gain further access, highlighting the cyclical nature of the four-step attack methodology.

Topics: Metasploit for Web Penetration Testers; The sqlmap Tool; Exploring Methods to Zombify Browsers; Browser Exploitation Framework (BeEF); Walking Through an Entire Attack Scenario; Leveraging Attacks to Gain Access to the System; How to Pivot Our Attacks Through a Web Application; Understanding Methods of Interacting with a Server Through SQL Injection; Exploiting Applications to Steal Cookies; Executing Commands Through Web Application Vulnerabilities

542.6 HANDS ON: Capture the Flag

On day six, students form teams and compete in a web application penetration testing tournament. This NetWars-powered Capture-the-Flag exercise provides students an opportunity to wield their newly developed or further-honed skills to answer questions, complete missions, and exfiltrate data, applying skills gained throughout the course. The style of challenge and integrated-hint system allows students of various skill levels to both enjoy a game environment and solidify the skills learned in class.

"As a developer, SEC542 is exactly the kind of course I needed. It showed us what the bad guys look for, which helps protect our software."

-Derrick Jackson, Magellan Midstream