



Syllabus

CSC 206 IPv6

General Information

Date June 18th, 2019

Author Jonathan Weissman

Department Computing Sciences

Course Prefix CSC

Course Number 206

Course Title IPv6

Course Information

Catalog Description This course features extensive hands-on activities for IPv6, the protocol that's replacing IPv4 for addressing and communication worldwide, more and more each day. Topics include IPv4 and IPv6 history, IPv6 packet format, differences between IPv4 and IPv6, IPv6 address space, IPv6 address notation, types of IPv6 addresses, IPv6 addressing schemes (EUI-64, random addressing, manual addressing), IPv6 device configuration (DHCPv6, stateless autoconfiguration, stateful autoconfiguration, privacy extensions), duplicate address detection, ICMPv6, Neighbor Discovery Protocol (Router Solicitation, Router Advertisement, Neighbor Solicitation, Neighbor Advertisement), Tunneling (6RD, DS-Lite), DNS with IPv6, IPv6 security, IPv6 impact to applications, dual stacking, and more. Various tools and utilities will be used throughout the course.

Credit Hours 3

Lecture Contact Hours 3

Lab Contact Hours 0

Other Contact Hours 0

Grading Scheme Letter

Prerequisites

CSC 260

Co-requisites

None

First Year Experience/Capstone Designation

This course DOES NOT satisfy the outcomes applicable for status as a FYE or Capstone.

SUNY General Education

This course is designated as satisfying a requirement in the following SUNY Gen Ed category

None

FLCC Values

Institutional Learning Outcomes Addressed by the Course

Vitality, Inquiry, Perseverance, and Interconnectedness

Course Learning Outcomes

Course Learning Outcomes

1. Compare IPv6 to its predecessor, IPv4
2. Configure, test, and troubleshoot IPv6
3. Enable dual stacking

Outline of Topics Covered

- I. IPv4 and IPv6 history
- II. IPv6 packet format
- III. Differences between IPv4 and IPv6
- IV. IPv6 address space,
- V. IPv6 address notation,
- VI. Types of IPv6 addresses,
- VII. IPv6 addressing schemes (EUI-64, random addressing, manual addressing)
- VIII. IPv6 device configuration (DHCPv6, stateless autoconfiguration, stateful autoconfiguration, privacy extensions)
- IX. Duplicate Address Detection
- X. ICMPv6
- XI. Neighbor Discovery Protocol (Router Solicitation, Router Advertisement, Neighbor Solicitation, Neighbor Advertisement)

- XII. Tunneling (6RD, DS-Lite)**
- XIII. DNS with IPv6**
- XIV. IPv6 security**
- XV. IPv6 impact to applications**
- XVI. Dual stacking**

Program Affiliation

This course is not required as a core course in any programs.