CCIE Enterprise Infrastructure (EI) Syllabus

Module 1
Foundation & Core Concepts
- **Review of CCNP EI Concepts**
  - OSPF (v2 & v3)
  - EIGRP
  - BGP
  - Redistribution & Route Filtering
  - Policy-Based Routing (PBR)
- **Enterprise Infrastructure Architecture**
  - Understanding Enterprise Networks
  - Hierarchical Network Design
  - Modular Design (Campus, WAN, Branch, Data Center)
- **Introduction to SD-WAN Architecture**
  - Overview of SD-WAN Architecture
  - Controllers, Edge Devices, Policies
  - WAN Connectivity (MPLS, Internet, etc.)

Module 2
Advanced Routing & Core Services
- **Advanced BGP**
  - BGP Attributes and Path Selection
  - Route Reflectors, Confederations
  - BGP Multipath, BGP PIC (Prefix Independent Convergence)
  - BGP Route Aggregation and Filtering
- **Advanced OSPF & EIGRP**
  - OSPF Advanced Features (NSSA, Stub Areas, LSA Types)
  - EIGRP Advanced Techniques (Stub Routing, Named Mode)
  - Redistribution between Routing Protocols
- **Infrastructure Services**
  - DHCP, DNS, NAT, HSRP, VRRP, GLBP

Module 3
 Layer 2 Technologies & MPLS
- **Switching Concepts**
  - Spanning Tree Protocol (STP, RSTP, MST)
  - EtherChannel, VLANs, Trunking, Private VLANs
  - VXLAN, FabricPath
- **MPLS**
  - MPLS Architecture & Concepts
  - MPLS VPNs, VRF Lite
  - Label Distribution Protocol (LDP)
  - MPLS Traffic Engineering (TE)

Module 4
 SDN, SD-WAN, Automation & Programmability
- **Software-Defined Networking (SDN)**

- SD-Access, SDN Controllers
  - Cisco DNA Center Overview
  - Network Virtualization & Overlays (VXLAN, LISP)
- **SD-WAN Deep Dive**
  - SD-WAN Orchestration, Policy Management, Tunneling
  - Zero-Touch Provisioning (ZTP), Security, Application-Aware Routing
- **Network Automation & Programmability**
  - Network Automation Tools (Python, NETCONF, RESTCONF)
  - Network Management with Ansible, Puppet, Chef
  - Model-Driven Telemetry & Automation
  - Cisco DevNet Labs (optional for programming concepts)

Module 5
Security, QoS, Multicast & Final Lab Preparation
- **Security Concepts**
  - IPsec VPNs, DMVPN, GETVPN
  - Cisco TrustSec, MACsec, 802.1X
  - Control Plane Policing (CoPP), Infrastructure Protection
  - AAA, TACACS+, RADIUS
- **QoS**
  - QoS Models (DiffServ, IntServ)
  - Queuing Mechanisms (CBWFQ, LLQ)
  - QoS Design for Voice & Video
- **Multicast**
  - Multicast Routing, PIM-SM, PIM-SSM
  - Multicast VLAN Registration (MVR)
- **Final CCIE Lab Exam Preparation**
  - Full-Length Mock Labs
  - Time Management Strategies
  - Troubleshooting Scenarios & Best Practices
  - Review & Revision of Key Topics

Module 6
- Complete a few full mock labs
- Work on the troubleshooting section of the lab exam
- Build confidence through scenario-based lab exercises