



**BAKER COLLEGE**  
**STUDENT LEARNING OUTCOMES**

**ITS2330 Linux III**  
**3 Semester Credit Hours**

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**Student Learning Outcomes and Enabling Objectives**

1. Demonstrate the skills and knowledge related to starting and maintaining a Linux system.
  - a) Customize system SysV-init system, alternate bootloaders and firmware startup.
  - b) Create system backups and install programs from source.
  - c) Perform system recovery from kernel or root drive failures.
  - d) Measure and troubleshoot resource usage and predict future resource needs.
  - e) Notify users on system-related issues.
2. Demonstrate the skills and knowledge related to the Linux kernel and filesystem.
  - a) Identify Linux kernel components.
  - b) Perform runtime management, troubleshooting and compilation.
  - c) Operate and maintain the Linux filesystem.
  - d) Create and configure Linux filesystem options.
3. Demonstrate the ability to configure advanced storage devices.
  - a) Configure RAID on Linux and manage a RAID array.
  - b) Implement iSCSI, test and tune storage devices.
  - c) Work with the logical volume manager.
4. Demonstrate the skills and knowledge related to working with networking configuration and system maintenance.
  - a) Perform basic network configuration and backup operations.
  - b) Perform advanced network configuration
  - c) Troubleshoot network issues.
5. Demonstrate the ability to configure Email services and DNS.

- a) Maintain E-mail servers.
  - b) Manage E-mail delivery and mailbox access.
  - c) Perform basic DNS server configuration.
  - d) Maintain DNS Zones and secure a DNS server.
6. Demonstrate the ability to configure HTTP services and file sharing.
- a) Perform basic Apache configuration and Apache configuration for HTTPS.
  - b) Implement Squid as a caching proxy and Nginx as a Web server.
  - c) Perform Samba server and NFS server configurations.
  - d) Manage FTP Servers.
  - e) Configure Linux network routing.
7. Demonstrate the skills and knowledge related to managing network clients and system security.
- a) Configure DHCP and PAM authentication.
  - b) Identify LDAP client usage and configure an OpenLDAP server.
  - c) Perform Secure Shell (SSH) and security tasks.
  - d) Configure OpenSSH and OpenVPN.

## **Big Ideas and Essential Questions**

### **Big Ideas**

- Linux system startup.
- Maintaining the Linux file system.
- Mastering the kernel.
- Administering advanced storage devices
- Navigating network services.
- Organizing email services.
- Directing DNS.
- Offering Web services.
- Sharing files.
- Managing network clients.
- Setting up system security.

## Essential Questions

1. How does the Linux boot process differ between using GRUB legacy or GRUB2 bootloader?
2. What are the different types of initialization scripts used by Linux distributions?
3. How would you recover a Linux system that fails to boot?
4. How do you maintain and monitor a Linux system daily?
5. What is a Linux kernel and the parts that make up the kernel?
6. How do you monitor and troubleshoot a Linux kernel?
7. What utilities are used to maintain the Linux filesystem?
8. How do you configure RAID and logical volumes to protect data?
9. How do you configure network settings from command-line or using Network Manager?
10. What is the mail transfer agent (MTA) and the packages used?
11. How is the BIND package used to set up DNS services?
12. What is the process of adding an Apache, Squid and nginx Web server?
13. How can you share files in network environments using Samba, NFS and FTP servers?
14. How is DHCP configured with PAM and OpenLDAP to provide authentication?
15. What intrusion detection systems and secure connection programs protect from internal and external hackers?

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These SLOs are approved for experiential credit.

**Effective: Summer 2021**