STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

MASTER SYLLABUS

COURSE NUMBER – COURSE NAME

CYBR 273 – OPERATING SYSTEM FUNDAMENTALS

CIP Code: 11.1003

For assistance determining CIP Code, please refer to this webpage
https://nces.ed.gov/ipeds/cipcode/browse.aspx?y=55
or reach out to Sarah Todd at todds@canton.edu

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Updated by:

School of Science, Health, and Criminal Justice

Department: Cybersecurity

Semester/Year: Fall 2024

A. TITLE: Operating Sytem Fundamentals

B. COURSE NUMBER: CYBR 273

C. CREDIT HOURS: **(Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)**

 # Credit Hours: 3
 # Lecture Hours: 3 **per week**
 # Lab Hours: **per week**
Other: **per week**

Course Length: 15 **Weeks**

D. WRITING INTENSIVE COURSE: Yes ☐ No ☒

E. GER CATEGORY: **None:** ☒ **Yes:** GER
***If course satisfies more than one*:** GER

F. SEMESTER(S) OFFERED: **Fall** ☐ **Spring** ☐ **Fall & Spring** ☒

G. COURSE DESCRIPTION:

This is a project intensive course covering current operating systems with significant Cybersecurity perspectives. Projects are designed to give students an overview of operating systems, and encompass the major aspects of operating systems. Linux operating system use and administration will be covered in this course. Windows operating system administration through PowerShell will also be covered.

H. PRE-REQUISITES: **None** ☐ **Yes** ☒ **If yes, list below:**

CYBR 172 Computer Fundamentals or CYBR/CITA 170 Computer Concepts and Operating Systems

CO-REQUISITES: **None** ☒ **Yes** ☐ **If yes, list below:**

I. STUDENT LEARNING OUTCOMES: **(*see key below*)**

By the end of this course, the student will be able to:

Course Student Learning Outcome [SLO]	***Program Student Learning Outcome [PSLO]***	***GER** [If Applicable]*	***ISLO & SUBSETS***

a. Explain the architecture of an operating system	3. Use a variety of computer hardware and software and other technological tools appropriate and necessary for the performance of tasks		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
b. Explain the use of virtual machine technology	3. Use a variety of computer hardware and software and other technological tools appropriate and necessary for the performance of tasks		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
c. Describe the function of an operating system and its interaction with various hardware components	3. Use a variety of computer hardware and software and other technological tools appropriate and necessary for the performance of tasks		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
d. Explain the various types of file systems and their directory structures	3. Use a variety of computer hardware and software and other technological tools appropriate and necessary for the performance of tasks		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
e. Use file management commands	3. Use a variety of computer hardware and software and other technological tools appropriate and necessary for the performance of tasks		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
f. Apply scripts to automate task	3. Use a variety of computer hardware and software and other technological tools appropriate and necessary for the performance of tasks		2-Crit Think 2-Crit Think 5-Ind, Prof, Disc, Know Skills	CA PS Subsets Subsets
g. Specify operating system security issues and solutions	5. Analyze and resolve Cybersecurity problems through the application of systematic approaches, and complete all work in compliance with relevant policies, practices, processes, and procedures		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
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KEY	**Institutional Student Learning Outcomes [ISLO 1 – 5]**
ISLO #	**ISLO & Subsets**
1	**Communication Skills** Oral [O], Written [W]
2	**Critical Thinking** *Critical Analysis [CA] , Inquiry & Analysis [IA] , Problem Solving [PS]*
3	**Foundational Skills** *Information Management [IM], Quantitative Lit,/Reasoning [QTR]*
4	**Social Responsibility** *Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]*
5	**Industry, Professional, Discipline Specific Knowledge and Skills**

*Include program objectives if applicable. Please consult with Program Coordinator

J. APPLIED LEARNING COMPONENT: Yes ☒ No ☐

If YES, select one or more of the following categories:

☒ Classroom/Lab
☐ Internship
☐ Clinical Placement
☐ Practicum
☐ Service Learning
☐ Community Service
☐ Civic Engagement
☐ Creative Works/Senior Project
☐ Research
☐ Entrepreneurship (program, class, project)

K. TEXTS:

None

L. REFERENCES:

Various online resources such as SUNY Canton Library Books24x7 ITPro Book Database

M. EQUIPMENT: **None** ☐ **Needed:** Computer lab classroom with virtual machine software installed

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Exams/Quizzes/Assignments/Individual Projects

P. DETAILED COURSE OUTLINE:

I. Operating System History
A. Origins
B. Evolution

II. Installation
A. Downloading
B. Distributions
C. Partitioning
D. Licensing
E. Registration
F. Updating

III. Architecture
A. Shell
B. Kernel
C. File systems

IV. Common User Applications
A. Office suites
B. Internet
C. Tools
D. Networking
E. Installing peripherals

V. Server Development and Administration
A. File
B. HTTP/HTTPS
C. Mail
D. Authentication
E. Network addressing

VI. Operating Sytem Security Issues and Solutions

Q. LABORATORY OUTLINE: **None** ☒ **Yes** ☐