

## Washtenaw Community College Comprehensive Report

### CPS 271 Object Features of C++ Effective Term: Spring/Summer 2025

#### Course Cover

**College:** Business and Computer Technologies

**Division:** Business and Computer Technologies

**Department:** Computer Science & Information Technology

**Discipline:** Computer Science

**Course Number:** 271

**Org Number:** 13420

**Full Course Title:** Object Features of C++

**Transcript Title:** Object Features of C ++

**Is Consultation with other department(s) required:** No

**Publish in the Following:** College Catalog , Time Schedule , Web Page

**Reason for Submission:** Three Year Review / Assessment Report, Course Change

**Change Information:**

**Consultation with all departments affected by this course is required.**

**Outcomes/Assessment**

**Objectives/Evaluation**

**Rationale:** Updating for Canvas

**Proposed Start Semester:** Winter 2025

**Course Description:** In this course, students will continue the study of C++ by learning the object-oriented features of the language. Topics include classes, constructors and destructors, operator overloading, pointers, dynamic allocation of memory, inheritance, polymorphism, file manipulation, templates, and exceptions.

#### Course Credit Hours

**Variable hours:** No

**Credits:** 4

**Lecture Hours: Instructor:** 60 **Student:** 60

**Lab: Instructor:** 0 **Student:** 0

**Clinical: Instructor:** 0 **Student:** 0

**Total Contact Hours: Instructor:** 60 **Student:** 60

**Repeatable for Credit:** NO

**Grading Methods:** Letter Grades

Audit

**Are lectures, labs, or clinicals offered as separate sections?:** NO (same sections)

#### College-Level Reading and Writing

College-level Reading & Writing

#### College-Level Math

No Level Required

#### Requisites

**Prerequisite**

CPS 171 minimum grade "C+"

## **General Education**

### **General Education Area 7 - Computer and Information Literacy**

Assoc in Arts - Comp Lit

Assoc in Applied Sci - Comp Lit

Assoc in Science - Comp Lit

## **Request Course Transfer**

### **Proposed For:**

## **Student Learning Outcomes**

1. Identify appropriate uses of pointers, objects and classes.

### **Assessment 1**

Assessment Tool: Outcome-related departmental exam questions

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 70% of the students will score 70% or higher.

Who will score and analyze the data: Departmental faculty

2. Identify appropriate uses of the C++ standard libraries (i.e. string and iostream)

### **Assessment 1**

Assessment Tool: Outcome-related departmental exam questions

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 70% of the students will score 70% or higher.

Who will score and analyze the data: Departmental faculty

3. Identify appropriate uses of advanced C++ topics.

### **Assessment 1**

Assessment Tool: Outcome-related departmental exam questions

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 70% of the students will score 70% or higher.

Who will score and analyze the data: Departmental faculty

4. Demonstrate sound software engineering techniques by developing a working software program.

### **Assessment 1**

Assessment Tool: Outcome-related portfolio of software programs

Assessment Date: Fall 2024

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 70% of the students will score 70% or higher.

Who will score and analyze the data: Departmental faculty

### Course Objectives

1. Demonstrate proficiency in pointer manipulation.
2. Demonstrate proficiency in allocating dynamic memory and freeing up memory resources.
3. Demonstrate proficiency using class inheritance and polymorphism.
4. Demonstrate proficiency using constructors and destructors.
5. Demonstrate proficiency in using operator overloading and friend.
6. Demonstrate proficiency in using the standard string class.
7. Demonstrate proficiency in using the iostream class for text and binary files.
8. Demonstrate proficiency in using C++ exceptions.
9. Demonstrate proficiency in using basic templates.
10. Create a program that is logical, easy to understand, and properly indented.
11. Create a program that is compiled successfully.
12. Create a program that is executed to solve a stated problem.

### New Resources for Course

#### Course Textbooks/Resources

Textbooks  
Manuals  
Periodicals  
Software

#### Equipment/Facilities

Computer workstations/lab

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
<b>Faculty Preparer:</b> <i>Khaled Mansour</i>	<i>Faculty Preparer</i>	<i>Jan 18, 2024</i>
<b>Department Chair/Area Director:</b> <i>Scott Shaper</i>	<i>Recommend Approval</i>	<i>Jan 22, 2024</i>
<b>Dean:</b> <i>Eva Samulski</i>	<i>Recommend Approval</i>	<i>Jan 23, 2024</i>
<b>Curriculum Committee Chair:</b> <i>Randy Van Wagnen</i>	<i>Recommend Approval</i>	<i>Jan 09, 2025</i>
<b>Assessment Committee Chair:</b> <i>Jessica Hale</i>	<i>Recommend Approval</i>	<i>Jan 22, 2025</i>
<b>Vice President for Instruction:</b> <i>Brandon Tucker</i>	<i>Approve</i>	<i>Jan 30, 2025</i>

## Washtenaw Community College Comprehensive Report

### CPS 271 Object Features of C++ Effective Term: Fall 2019

#### Course Cover

**Division:** Business and Computer Technologies

**Department:** Computer Instruction

**Discipline:** Computer Science

**Course Number:** 271

**Org Number:** 13420

**Full Course Title:** Object Features of C++

**Transcript Title:** Object Features of C ++

**Is Consultation with other department(s) required:** No

**Publish in the Following:** College Catalog , Time Schedule , Web Page

**Reason for Submission:**

**Change Information:**

**Consultation with all departments affected by this course is required.**

**Rationale:** This course will be update because of the assessment of the course

**Proposed Start Semester:** Winter 2019

**Course Description:** In this course, students will continue the study of C++ by learning the object-oriented features of the language. Topics include classes, constructors and destructors, operator overloading, pointers, dynamic allocation of memory, inheritance, polymorphism, file manipulation, templates, and exceptions.

#### Course Credit Hours

**Variable hours:** No

**Credits:** 4

**Lecture Hours: Instructor: 60 Student: 60**

**Lab: Instructor: 0 Student: 0**

**Clinical: Instructor: 0 Student: 0**

**Total Contact Hours: Instructor: 60 Student: 60**

**Repeatable for Credit:** NO

**Grading Methods:** Letter Grades

Audit

**Are lectures, labs, or clinicals offered as separate sections?:** NO (same sections)

#### College-Level Reading and Writing

College-level Reading & Writing

#### College-Level Math

No Level Required

#### Requisites

**Prerequisite**

CPS 171 minimum grade "C+"

#### General Education

**General Education Area 7 - Computer and Information Literacy**

Assoc in Arts - Comp Lit  
Assoc in Applied Sci - Comp Lit  
Assoc in Science - Comp Lit

## **Request Course Transfer**

### **Proposed For:**

## **Student Learning Outcomes**

1. Identify appropriate use of Arrays and Dynamic Memory.

### **Assessment 1**

Assessment Tool: Departmental exam

Assessment Date: Fall 2021

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 70% of the students will score 70% or higher

Who will score and analyze the data: Departmental faculty

2. Identify appropriate uses of objects and classes.

### **Assessment 1**

Assessment Tool: Departmental exam

Assessment Date: Fall 2021

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 70% of the students will score 70% or higher

Who will score and analyze the data: Departmental faculty

3. Identify appropriate uses of the C++ standard libraries (i.e. string and iostream)

### **Assessment 1**

Assessment Tool: Departmental exam

Assessment Date: Fall 2021

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 70% of the students will score 70% or higher

Who will score and analyze the data: Departmental faculty

4. Identify appropriate uses of advanced C++ topics.

### **Assessment 1**

Assessment Tool: Departmental exam

Assessment Date: Fall 2021

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 70% of the students will score 70% or higher

Who will score and analyze the data: Departmental faculty

5. Demonstrate sound software engineering techniques in developing a working software program.

#### **Assessment 1**

Assessment Tool: A Portfolio of software programs submitted by students will be blind graded.

Assessment Date: Fall 2021

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Departmentally developed rubric

Standard of success to be used for this assessment: 70% of the students will score 70% or higher

Who will score and analyze the data: Departmental faculty

#### **Course Objectives**

1. Demonstrate proficiency in processing Arrays.
2. Demonstrate proficiency in pointer manipulation.
3. Demonstrate proficiency in allocating dynamic memory and freeing up memory resources.
4. Demonstrate proficiency using class inheritance.
5. Demonstrate proficiency using constructors and destructors.
6. Demonstrate proficiency using polymorphism.
7. Demonstrate proficiency in using friend functions and classes.
8. Demonstrate proficiency in using operator overloading.
9. Demonstrate proficiency in using the standard string class.
10. Demonstrate proficiency in using the iostream class for text and binary files.
11. Demonstrate proficiency in using C++ exceptions.
12. Demonstrate proficiency in using the various cast operators including dynamic cast.
13. Demonstrate proficiency in using basic templates.
14. Create a program that is logical, easy to understand, and properly indented to solve a stated problem.
15. Create a program that solves a stated problem and compiles properly.
16. Create a program that executes properly to solve a stated problem.

#### **New Resources for Course**

#### **Course Textbooks/Resources**

Textbooks  
Manuals  
Periodicals  
Software

#### **Equipment/Facilities**

<b><u>Reviewer</u></b>	<b><u>Action</u></b>	<b><u>Date</u></b>
<b>Faculty Preparer:</b> <i>Khaled Mansour</i>	<i>Faculty Preparer</i>	<i>Jan 10, 2019</i>
<b>Department Chair/Area Director:</b> <i>Philip Geyer</i>	<i>Recommend Approval</i>	<i>Mar 11, 2019</i>
<b>Dean:</b> <i>Eva Samulski</i>	<i>Recommend Approval</i>	<i>Mar 15, 2019</i>
<b>Curriculum Committee Chair:</b> <i>Lisa Veasey</i>	<i>Recommend Approval</i>	<i>Apr 02, 2019</i>

**Assessment Committee Chair:**

*Shawn Deron*

*Recommend Approval*

*Apr 03, 2019*

**Vice President for Instruction:**

*Kimberly Hurns*

*Approve*

*Apr 07, 2019*