CSIT 176: COMPUTER ORGANIZATION & ARCHITECTURE

1. Course Information

Subject
CSIT - Computer Science/ Information Technology

Course Number
176

School
Science, Technology, Engineering, Mathematics

Course Title
Computer Organization & Architecture

2. Hours

Semester Hours
3.00000

Lecture
3

Lab
0

Practicum
0

3. Catalog Description

For display in the online catalog
This course examines the structure and functions of the components comprising a contemporary computer system. The student will learn the fundamental elements in a computer system including the processor, memory, and interfaces to external components and systems. Additional topics include digital circuits, Boolean algebra, addressing modes, input/output and arithmetic. The course will use an assembly language to strengthen and reinforce the concepts. Open lab time required.

4. Requisites

Prerequisites
CSIT 165

Corequisites
None

5. Course Type

Course Fee Code
3

Course Type for Perkins Reporting
vocational (approved for Perkins funding)

6. Justification

Describe the need for this course
This is a required course in all Computer Science AS and AAS degrees.

7. General Education

Will the college submit this course to the statewide General Education Coordinating Committee for approval as a course, which satisfies a general education requirement?
No

If the course does not satisfy a general education requirement, which of the following does it satisfy:
Program-specific requirement

8. Consistency with the Vision and Mission Statements, the Academic Master Plan, and the strategic initiatives of the College

Please describe how this course is consistent with Ocean County College's current Vision Statement, Mission Statement, Academic Master Plan, and the strategic initiatives of the College:

	Add item
1	Offer comprehensive educational programs that develop intentional learners of all ages and ensure the full assessment of student learning in these programs. (Mission Statement)
2	Foster educational innovation through effective teaching-learning strategies, designed to develop and nurture intentional learners who are informed and empowered. (Vision Statement)
3	Employ technology and learning outcomes assessment to ensure student success in an increasingly diverse and complex world. (Vision Statement)
4	Prepare students for entrance into the workforce and/or for successful transfer to other educational institutions. (Academic Master Plan)
5	Seek to empower students through the mastery of intellectual and Practical Skills. (Academic Master Plan)
6	Challenge students to transfer information into knowledge and knowledge into action. (Academic Master Plan)

9. Related Courses at Other Institutions

Comparable Courses at NJ Community Colleges
Institution
Brookdale CC

Course Title
Computer Architecture Using Assembly Language

Course Number
COMP135

Number of Credits
3

Institution
Rowan College at Burlington County

Course Title
Computer Organization

Course Number
CSE 225

Number of Credits
3

Institution
Camden County College

Course Title
Computer Organization

Course Number

CSC-240

Number of Credits

3

Institution

Middlesex County College

Course Title

Computer Architecture and Assembly Language

Course Number

CSC 233

Number of Credits

4

Institution

County College of Morris

Course Title

Computer Architecture and Assembly Language

Course Number

CMP-230

Number of Credits

3

Institution

Passaic County CC

Course Title

Computer Organization and Architecture

Course Number

CIS 236

Number of Credits

3

Institution

Raritan Valley CC

Course Title

Computer Architecture & Assembly Language

Course Number

CISY 256

Number of Credits

4

Transferability of Course

Georgian Court University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
Elective, 3 credits	EC (ELECTIVE CREDIT)	

Kean University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
CPS2390, COMPUTER ASSEMBLY LANG, 3 credits	Major	

Monmouth University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
CS286, Computer Architecture I, 3 Credits	Major	

Rowan University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
CS06205, Computer Organization, 3 Credits	Major	

Rutgers - New Brunswick, Mason Gross School of the Arts

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
		Will not transfer

Stockton University

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
COMPUTER SCIENCE & INFO SYS, ELECTIVE, 3 credits	General Ed. (Computer Science)	

10. Course Learning Outcomes

Learning Outcomes

	Students who successfully complete this course will be able to:
CLO1	Discuss the history of the digital computer
CLO2	Use binary and hexadecimal number systems
CLO3	Explain Boolean and logical operators, basic digital logic circuits, and design simple circuit using digital logic gates
CLO4	Describe the representation of numeric data
CLO5	Describe the concept of an instruction set architecture
CLO6	Write programs and subroutines in Assembly Language that use various classes of machine instructions
CLO7	Explain Input/Output (I/O) fundamentals: handshaking and buffering
CLO8	Explain the operation of interrupts
CLO9	Explain addressing modes

11. Topical Outline

(include as many themes/skills as needed)

	Major Themes/ Skills	Assignments (Recommended but not limited to)	Assessments (Recommended but not limited to)	Course Learning Outcome(s)
TO1	History of Computer Architectures 1) Languages and Virtual machines 2) Evolution of computers	Hands-on; In-class & Lab exercises, Programing Projects	Quizzes; Exam, Programing Projects	CLO1

TO2	Data Representation 1) Data types 2) Number systems 3) Mathematical and logical operations	Hands-on; In-class & Lab exercises, Programing Projects	Programming Exercises; Exam, Programing Projects	CLO2
TO3	Digital Logic 1) Logic gates 2) Boolean algebra 3) Logic circuits 4) Digital logic simulators	Hands-on; In-class & Lab exercises, Programing Projects	Programming Exercises; Exam, Programing Projects	CLO3
TO4	Computer Systems 1) Processors 2) Memory 3) Storage 4) Input/Output 5) Interrupts	Hands-on; In-class & Lab exercises, Programing Projects	Programming Exercises; Exam, Programing Projects	CLO3, 5
TO5	Assembly Language 1) Overview of architecture of different machines 2) Data type representation on different machines 3) Instruction Formats 4) Integral operations 5) Addressing modes 6) The use of carry, borrow and overflow flags 7) Creating assembly language programs	Hands-on; In-class & Lab exercises, Programing Projects	Programming Exercises; Exam, Programing Projects	CLO3, 4, 5, 6, 7, 8, 9
TO6	Assembly Language – Advanced Concepts 1) Subroutines 2) Parameter passing 3) Recursion	Hands-on; In-class & Lab exercises, Programming Projects	Programming Exercises; Exam, Programing Projects	CLO3, 4, 5, 6, 7, 8, 9

12. Methods of Instruction

In the structuring of this course, what major methods of instruction will be utilized?

Class lecture, discussion, demonstrations, lab assignments, programs and online presentations.

13. General Education Goals Addressed by this Course (this section is to fulfill state requirements)

Information

_____

_____

_____

Technological Competency
Yes

Related Course Learning Outcome
All

Related Outline Component
All

Assessment of General Education Goal (Recommended but not limited to)
Programming Exercises; Exam

_____

_____

_____

_____

_____

_____

_____

Independent/Critical Thinking
Yes

Related Course Learning Outcome
All

Related Outline Component
All

Assessment of General Education Goal (Recommended but not limited to)
Programming Exercises; Exam

14. Needs

Instructional Materials (text etc.):
Textbook and/or open educational resources, Assembly Language Programming Software, Logic Gate Simulation Software and/or actual Integrated Circuits

Technology Needs:
Computer lab equipped with necessary software to accommodate each student

Human Resource Needs (Presently Employed vs. New Faculty):
(Presently Employed vs. New Faculty): Faculty (Fulltime, Adjunct and Lecturers)

Facility Needs:
Computer lab equipped with necessary software to accommodate each student. Ideally a computer-equipped podium with a connect projector (for demonstrations)

15. Grade Determinants

The final grade in the course will be the cumulative grade based on the following letter grades or their numerical equivalents for the course assignments and examinations

A: Excellent

B+: Very Good

B: Good

C+: Above Average

C: Average

D: Below Average

F: Failure

I: Incomplete

R: Audit

For more detailed information on the Ocean County College grading system, please see Policy #5154.

16. Board Approval

History of Board approval dates
Board of Trustees Approval Date: February 28, 2011

Board of Trustees Approval Date: March 26, 2012
Approval of Form: September 2017
Board of Trustees Approval Date: March 26, 2020