#### I. CATALOG INFORMATION

- A. Discipline: <u>COMPUTER SCIENCE (CS)</u>
- B. Subject Code and Number: CS M10J
- C. Course Title: Introduction to Computer Programming Using Java
- D. Credit Course units:

Units: <u>4</u>

Lecture Hours per week: 3\_\_\_\_\_

Lab Hours per week : 3\_\_\_\_

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E. Student Learning Hours:

Lecture Hours:

Classroom hours: 52.5 - 52.5

Laboratory/Activity Hours:

Laboratory/Activity Hours 52.5 - 52.5

Total Combined Hours in a 17.5 week term: 105 - 105

- F. Non-Credit Course hours per week
- G. May be taken a total of: X 1 2 3 4 time(s) for credit
- H. Is the course co-designated (same as) another course: No X Yes If YES, designate course Subject Code & Number:
- I. Course Description:

Introduces the basic components, syntax, and semantics of the Java programming language are covered. Uses the Java computer language to introduce basic programming concepts such as algorithms, data and control structures, debugging, documentation, graphical user interface (GUI) and objectoriented programming.

J. Entrance Skills

*Prerequisite:	No X Yes Course(s)
*Corequisite:	No X Yes Course(s)
Limitation on Enrollment:	No X Yes
Recommended Preparation: CS M01and basic compute or MATH M07	No Yes X Course(s) r usage knowledge or CS M10A and MATH M06
Other:	No X Yes

K. Other Catalog Information:

# II. COURSE OBJECTIVES

Upon successful completion of the course, a student will be able to:

		Methods of evaluation will be consistent with, but not limited by, the following types or examples.
1	explain the basic organization of a computer system.	Graded assignments Quizzes Exams
2	describe and apply the Java Development Kit.	Graded assignments Programming projects Quizzes Exams
3	explore the basic components, syntax, and semantics of the Java programming language.	Graded assignments Programming projects Quizzes Exams
4	designate and identify sequential, selection, and iteration control structure.	Graded assignments Programming projects Quizzes Exams
5	define and apply the concepts of object-oriented programming.	Graded assignments Programming projects Quizzes Exams
6	design algorithms to solve programming problems.	Graded assignments Programming projects Quizzes Exams
7	express and apply composite data types such as arrays.	Graded assignments Programming projects Quizzes Exams
		Graded assignments

8	depict and apply user defined data types such as enumerations.	Programming projects Quizzes Exams
9	describe and apply graphical user interface programming.	Graded assignments Programming projects Quizzes Exams
10	illustrate and apply Java exception handling.	Graded assignments Programming projects Quizzes Exams
11	describe and apply file input and output.	Graded assignments Programming projects Quizzes Exams
12	communicate and identify good programming practice and style.	Graded assignments Programming projects Quizzes Exams

# III. COURSE CONTENT

Estimated %	stimated % Topic			
Lecture (must tot	tal 100%)			
5.00%	Introduction to Computer System	1, 2		
5.00%	Introduction to Java Programming	3		
10.00%	Flow of Control • Selection Control Structure • Iteration Control Structure	4, 12		
10.00%	Arrays • One Dimensional Array • Arrays and Methods • Arrays of Objects • Multi-Dimensional Arrays	6, 7, 12		
10.00%	Graphical User Interface Programming	6, 9, 12		
10.00%	Exceptions	10, 12		
10.00%	IO Streams • IO Streams • Text Files • Binary Files • The File Class	6, 11, 12		
	An instructor can vary the order of the topics, or add enrichment			

	topics, without a loss of continuity in the Computer Science program.	
10.00%	Java Data Types • Primitive Data Types • Variable and Assignment Statement • Expression and Arithmetic Operators • Increment and Decrement Operators • Basic Input and Output(IO)	3, 7, 8
15.00%	Object-Oriented Programming • Object and Classes • Classes and Methods • User-defined Classes • Encapsulation • Scopes and Overloading	5, 6, 12
15.00%	Advanced Object-Oriented Programming • Inheritance • Abstract Classes • Polymorphism • Interface • Vectors and Enumerations	5, 6, 9, 12
Lab (must total 10	00%)	
7.50%	Labs related to the Introduction to Java: A. Java Programming environment B. Algorithm Development C. Fundamental Data Types	1, 2, 3
7.50%	Labs related to Java Control Instructions: A. if-else statements B. switch and case statements	2, 3, 4
7.50%	Labs related to Java Iteration Instructions: A. for statements B. while statements C. do while statements	3, 4
7.50%	Labs related to Java methods: A. Variables and scope of variables B. Passing arguments C. Library classes	3, 4, 5, 6
18.50%	Labs related to classes: A. Interfaces B. Encapsulations of data C. Methods D. Constructors with parameters E. Default constructors	4, 5, 6
11.00%	Labs related to Arrays: A. Single (one dimension) B. Multidimensional C. Array lists D. Vectors	7, 8
7.50%	Labs related to File Input/Output: A. Sequential files B. Random access files	3, 6, 11, 12
7.50%	Labs related to A. Packages B. Source and class files	5
	Labs related to:	

13.00%	<ul> <li>A. Inheritance</li> <li>B. Interfaces</li> <li>C. Polymorphism</li> <li>D. Virtual function</li> <li>E. Pure virtual functions</li> <li>G. Abstract classes</li> <li>H. Exceptions</li> </ul>	5, 6, 9, 10, 12
12.50%	Labs related to Graphical User Interfaces (Gui): A. Working with swing and awt classes B. JFrame and JPanel containers C. Event Handling D. Applet and Internet programming	2, 3, 8, 9, 12

#### **IV. TYPICAL ASSIGNMENTS**

1

A. Writing assignments

Writing assignments are required. Possible assignments may include, but are not limited to:

write a Java program without a graphical user interface that calculates and displays the mortgage payment amount given the amount of the mortgage, the term of the mortgage, and the interest rate of the mortgage by the user. For example calculate the monthly payment for the amount = \$200,000, the term = 30 years, and the interest rate

= 4.50%. Your monthly payment should be \$1013.37. Insert comments in the program to document the program.

2 write a paper that describes the basic components, syntax, and semantics of the Java programming language.

write a Java Applet that draws a filled green circle at the pointer location each time the
 mouse is clicked. First, use an ACTION() handler to trap the mouse click. Next, use a
 MOUSEUP() handler.

#### B. Appropriate outside assignments

App not	propriate outside assignments are required. Possible assignments may include, but are limited to:
1	read professional publications about the Java programming in addition to the text assignments and present it in the class.
2	research and apply standard object-oriented programming features such as encapsulation, classes, constructors, destructors, inheritance, polymorphism, and member access specifications in Java programming.
3	exchange your Java project with your classmate. Evaluate and debug it. Use your sample data to test the program and detect any logic error.

#### C. Critical thinking assignments

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Critical thinking assignments are required. Possible assignments may include, but are not limited to:

evaluate incorrect Java programs and/or Java program fragments to determine what errors occur and correct the syntax and/or semantics of the problems identified. Design V.

VI.

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		and evaluate algo	rithms to	o solve problems.		
	develop an algorithm to find the prime numbers; a number which is greater than one and can only be divided by itself or one. Write a Java program to display the first one thousand prime numbers. Test and debug your program.					
	3	develop an algorit ascending order a debug the prograr	hm to re nd print n for cor	ad the following inpu the list. Translate the rectness.	t list of test s algorithm to	scores, sort them in o Java code and test and
МЕТ	HODS		N			
Meth	ods o	f instruction may i	nclude,	but are not limited	d to:	
X	Dista distai	nce Education – V nce education deli	Vhen ai very mo	ny portion of class ode (Complete DE	contact ho Addendui	ours is replaced by m, Section XV)
X	Lectu	ire/Discussion				
X	Labo	ratory/Activity				
X	Other Onlir Note Regu Ame inclu	r (Specify) ne Tutorials and gu : In compliance wi ulations, the Reha ricans with Disabil sion, effective con	uest spo th Boar pilitation ities Aco nmunica	eakers rd Policies 1600 a n Act of 1973, and t, Instruction Deliv ation for students	nd 3410, T l section 50 very shall p with disabi	itle 5 California Code of 04 and 508 of provide access, full lities.
	Optio	nal Field Trips				
	Requ	iired Field Trips				
MET Meth	HODS ods d Es: Pro Exa Ob	S OF EVALUATIO of evaluation may say Exam oblem Solving am jective Exams	N incluc X	<b>de, but are not lin</b> Classroom Discussion Reports/Papers/ Journals Projects	nited to: X	Skill Demonstration Participation Other (specify)
	Other typical assessment and evaluation methods are Quizzes, Homework problems, Multiple choice, Completion, Matching items, True/False.					
	assignment specifications Free response to program design questions.					

#### VII. **REPRESENTATIVE TEXTS AND OTHER COURSE MATERIALS**

Deitel, Harvey M., and Paul J. Deitel. <u>Java, How to Program; Early Objects</u>. 11th ed. Pearson, 2017.

Malik, D.S. <u>Java Programming: From Problem Analysis to Program Design</u>. 5th ed. Cengage, 2011.

Liang, Y. Daniel. <u>Introduction to Java Programming and Data Structures</u>. 11th ed. Pearson, 2017.

### VIII. STUDENT MATERIALS FEES

X No 🗌 Yes

#### IX. PARALLEL COURSES

College	Course Number	Course Title	Units
CSU San	CSE 292	JAVA Programming	4
Bernardino			
San Diego State	CS 107	Introduction to Computer Programming	3
Univ.			
UC Berkeley	COMPSCI 9G	JAVA for Programmers	2
UC Davis	ENG CS 30	Programming and Problem Solving	4
UC Irvine	I&C SCI/CSE 22	Introduction to Computer Science II	6
UC San Diego	CSE 11	Introduction to Computer Science and Object-	4
		Oriented Programming: Java	

## X. MINIMUM QUALIFICATIONS

#### Courses Requiring a Masters Degree:

Master's in computer science or computer engineering OR Bachelor's in either of the above AND Master's in mathematics, cybernetics, business administration, accounting or engineering OR Bachelor's in engineering AND Master's in cybernetics, engineering mathematics, or business administration OR Bachelor's in mathematics AND Master's in cybernetics, engineering mathematics, or business administration OR Bachelor's degree in any of the above AND a Master's degree in information science, computer information systems, or information systems OR the equivalent.

#### XI. ARTICULATION INFORMATION

- A. Title V Course Classification:
  - 1. This course is designed to be taken either:

Pass/No Pass only (no letter grade possible); or

X Letter grade (P/NP possible at student option)

2. Degree status:

Either X Associate Degree Applicable; or Non-associate Degree Applicable

# B. Moorpark College General Education:

1. Do you recommend this course for inclusion on the Associate Degree General Education list?

Yes: No: X If YES, what section(s)?

A1 - Natural Sciences - Biological Science

A2 - Natural Sciences - Physical Science

B1 - Social and Behavioral Sciences - American History/Institutions

B2 - Social and Behavioral Sciences - Other Social Behavioral Science

	C1 - Humanities - Fine or Performing A	rts
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C2 - Humanities - Other Humanities

D1 - Language and Rationality - English Composition

D2 - Language and Rationality - Communication and Analytical Thinking

E1 - Health/Physical Education

E2 - PE or Dance

F - Ethnic/Gender Studies

- C. California State University(CSU) Articulation:
  - 1. Do you recommend this course for transfer credit to CSU? Yes: X No:
  - 2. If YES do you recommend this course for inclusion on the CSU General Education list?

Yes: No: X If YES, which area(s)?							
A1 🗌	A2	A3 🗌	B1	B2	B3 🗌	B4	
C1 🗌	C2	D1 🗌	D2	D3 🗌	D4	D5	
 D6	D7 🗌	D8	D9	D10	E		

- D. University of California (UC) Articulation:
  - 1. Do you recommend this course for transfer to the UC? Yes: X No:
  - 2. If YES do you recommend this course for the Intersegmental General Education Transfer Curriculum (IGETC)? Yes: No: X

IGETC Area 1: English Communication

English Composition

Critical Thinking-English Composition

**Oral Communication** 

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

Mathematical	Concepts
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#### IGETC Area 3: Arts and Humanities

Arts

Humanities

- IGETC Area 4: Social and Behavioral Sciences
  - Anthropology and Archaeology
    - Economics

Ethnic Studies

Gender Studies

Geography
Interdisciplinary, Social & Behavioral Sciences
Political Science, Government & Legal Institutions
Psychology
Sociology & Criminology
IGETC Area 5: Physical and Biological Sciences (mark all that apply)
Physical Science Lab or Physical Science Lab only (none-
Sequence)
Physical Science Lab or Biological Science Lab Only (non-
sequence)
Biological Science Courses
Biological Science Lab course
First Science course in a Special sequence
Second Science course in a Special Sequence
Laboratory Activity
Physical Sciences
IGETC Area 6: Language other than English
Languages other than English (UC Requirement Only)
U.S. History, Constitution, and American Ideals (CSU
Requirement ONLY)

U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)

# XII. REVIEW OF LIBRARY RESOURCES

A. What planned assignment(s) will require library resources and use?

The following assignments require library resources:

Assignments that involve the Library's print and online resources to find current articles in newspapers, news magazines, journals etc. dealing with such topics as net neutrality and the ethical issues surrounding the uses of personal information in Java programming (software development).

B. Are the currently held library resources sufficient to support the course assignment?

YES:	Х	NO:	

If NO, please list additional library resources needed to support this course.

# XIII. PREREQUISITE AND/OR COREQUISITE JUSTIFICATION

# XIV. WORKPLACE PREPARATION

Required for career technical courses only. A career technical course/program is one with the primary goal to prepare students for employment immediately upon course/program completion, and/or upgrading employment skills.

Detail how the course meets the Secretary of Labors Commission on the Achievement of Necessary Skills (SCANS) areas. (For a description of the competencies and skills with a listing of what students should be able to do, go to:

http://www.ncrel.org/sdrs/areas/issues/methods/assment/as7scans.htm)

The course will address the SCANS competency areas:

- 1. Resources: the students will learn to use in an effective and efficient manner the various resources at their disposal to design and analyze an application program for variety of business. Resources include but are not limited to technological resources, facilities resources, economical resources, and human resources.
- 2. Interpersonal: the students will work in groups of 2 or 3 to complete a variety of classroom, on-line, and as appropriate application program while developing the necessary interpersonal skills to work professionally with programmers, clients, and government agencies.
- 3. Information: the students will use information gained from lectures, readings, and lab activities to analyze real world problems to implement it using Java programming.
- 4. Systems: the students will understand their role as an software engineer, working with a system analyst, to implement a software application, and maintain technical documents to ensure compliance with software engineering requirements.
- 5. Technology: the students will use on-line resources to search and learn about various case studies pertaining to design and implement and familiarize themselves with or review the various regulations that exist at professional level in software engineering.

The course also addresses the SCANS skills and personal qualities:

- 1. Basic Skills: the students will use reading, writing, listening, and speaking skills to complete the course assignments. Emphasis will be placed upon proper technical writing skills which will include writing algorithms, flowcharts, IPO charts and applications, proper usage of the technical vocabulary words relevant to software engineering requirements.
- 2. Thinking Skills: the students will think creatively and critically to analyze a real world problems and synthesize reasonable and appropriate solutions taking into account implementing a software.
- 3. Personal Qualities: the students will follow the software engineering code of ethics in completing all their assignments and in all their interactions with their peers, professors, industry guest speakers, and other individuals with whom they will interact on a professional basis during their field trips or site visits. This includes conducting themselves in a professional, responsible manner while exhibiting strong work ethic and the highest standards of honesty and integrity.

#### XV. DISTANCE LEARNING COURSE OUTLINE ADDENDUM

CS M10J: Not Applicable

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XVI.	GENERAL EDUCATION COURSE OUTLINE ADDENDUM
	CS M10J: Not Applicable
XVII.	STUDENT MATERIALS FEE ADDENDUM
	CS M10J: Not Applicable
XVIII.	<b>REPEATABILITY JUSTIFICATION TITLE 5, SECTION 55041</b>
	CS M10J: Not Applicable
XIX.	CURRICULUM APPROVAL Course Information: Discipline: <u>COMPUTER SCIENCE (CS)</u>
	Discipline Code and Number: CS M10J
	Course Revision Category: Outline Update
	Course Proposed By: Originating Faculty Esmaail Nikjeh 03/13/2017
	Faculty Peer: Esmaail Nikjeh 04/17/2017
	Curriculum Rep: Scarlet Relle 10/15/2017
	Department Chair:
	Division Dean: Mary Rees 04/17/2017
	Approved By: Curriculum Chair: <u>Jerry Mansfield 11/10/2017</u>
	Executive Vice President:
	Articulation Officer: Letrisha Mai 10/19/2017
	Librarian: Mary LaBarge 10/19/2017
	Implementation Term and Year:
	Approval Dates: Approved by Moorpark College Curriculum Committee: <u>11/07/2017</u>
	Approved by Board of Trustees (if applicable):
	Approved by State (if applicable): 02/16/2018