SINCLAIR COMMUNITY COLLEGE
DAYTON, OHIO

DEPARTMENT SYLLABUS FOR COURSE IN

MAT 1120 – Business Mathematics
(3 SEMESTER HOURS)

1. COURSE DESCRIPTION: Review of arithmetic, mathematics of finance, mathematics of trade, payroll, taxes, insurance and elementary statistics.

2. COURSE OBJECTIVES: To provide students with an understanding of the mathematical skills and concepts required to be successful in business.

3. PREREQUISITE: DEV 0035 or DEV 0054 or Satisfactory score on Sinclair Community College English Placement Test.

4. ASSESSMENT In accordance with the department Assessment Policy, each of the four tests and the comprehensive final exam must account for 75% of the final grade. The MyMathLab homework must account for 15% of the final grade. The instructor determines how to allocate the remaining 10% of the final grade which can include any combination of attendance, quizzes (take-home, in-class and/or surprise), paper-pencil homework, etc. The department strongly recommends that some form of written work count as part of this portion of the grade.

5. TEXT: **Business Mathematics**, 12th Edition
Clendenen, Salzman, Miller
Prentice Hall
Adopted: Fall 2012

6. CALCULATOR POLICY: A scientific (non-graphing) calculator is required.

7. PREPARED BY: Glen Lobo on behalf of the MAT 1120 Committee
Effective: Fall 2016

SINCLAIR COMMUNITY COLLEGE
DAYTON, OHIO

CLASS SCHEDULE FOR COURSE IN
MAT 1120 – BUSINESS MATHEMATICS
(3 SEMESTER HOURS)

CLASSES MEETING THREE TIMES A WEEK

Lecture	Sections	Topics
1	--- 3.1	Introduction & Review of Arithmetic Writing Decimals and Fractions as Percents
2	3.2 3.3	Finding the Part Finding the Base
3	3.4	Finding the Rate
4	3.5	Increase and Decrease Problems
5	5.1 5.2	Checking Accounts and Check Registers Checking Services and Credit Card Transactions
6	5.3	Bank Statement Reconciliation
7		***Review for Test 1***
8		**Test 1 covering Chapters 1, 2, 3 & 5**
9	6.1 6.2	Gross Earnings: Wages and Salaries Gross Earnings: Piecework and Commissions
10	6.3	Social Security, Medicare, and Other Taxes
11	6.4	Income Tax Withholding
12	13.1	Property Tax
13	13.2	Personal Income Tax
14	13.2 13.4	Personal Income Tax Motor Vehicle Insurance
15	13.4 13.5	Motor Vehicle Insurance Life Insurance
16		**Holiday/ Catch up Day**
17		***Review for Test 2***
18		**Test 2 covering Chapters 6 & 13 (excluding 13.3)**
19	7.1 7.2	Invoices and Trade Discounts Single Discount Equivalents
20	7.3	Cash Discounts: Ordinary Dating Method
21	8.1	Markup on Cost

MAT 1120 – BUSINESS MATHEMATICS
THREE TIMES A WEEK SECTIONS CLASS SCHEDULE (*continued*)

Lecture	Sections	Topics
22	8.2	Markup on Selling Price[1]
23	8.3	Markdown
24	8.4	Turnover and Valuation of Inventory[2]
25		**Holiday/ Catch up Day**
26		***Review for Test 3***
27		**Test 3 covering Chapters 7 (excluding section 7.4) & 8**
28	9.1	Basics of Simple Interest
29	9.2	Finding Principal, Rate and Time
30	10.1	Compound Interest
31	10.1 10.2	Compound Interest Interest Bearing Accounts and Inflation[3]
32	10.3	Present Value and Future Value
33	11.1	Annuities and Retirement Accounts[4]
34	11.2	Present Value of an Ordinary Annuity
35	11.3	Sinking Funds (Finding Annuity Payments)
36		**Holiday/ Catch up Day**
37		***Review for Test 4***
38		**Test 4 covering Chapters 9, 10 & 11**
39	12.1	Open-End Credit and Charge Cards
40	12.2	Installment Loans
41	12.4	Personal Property Loans
42	12.5	Real Estate Loans
43	16.1	Frequency Distributions and Graphs
44	16.1 16.2	Frequency Distributions and Graphs Mean, Median, and Mode
45	16.2	Mean, Median, and Mode
Finals Week		
2 Class Periods		***Review for Final Exam***
1 Class Period		**Comprehensive Final Exam**

Footnotes

1. For **Section 8.2**, omit Objective 7.
2. For **Section 8.4**, omit Objective 8.
3. For **Section 10.2**, only cover Objectives 2 and 3.
4. For **Section 11.1**, omit Objective 3.

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CLASS SCHEDULE FOR COURSE IN
MAT 1120 – BUSINESS MATHEMATICS
(3 SEMESTER HOURS)

CLASSES MEETING TWICE A WEEK

Lecture	Sections	Topics
1	--- 3.1	Introduction & Review of Arithmetic Writing Decimals and Fractions as Percents
2	3.2 3.3 3.4	Finding the Part Finding the Base Finding Rate
3	3.5 5.1	Increase and Decrease Problems Checking Accounts and Check Registers
4	5.2 5.3	Checking Services and Credit Card Transactions Bank Statement Reconciliation
		Review for Test 1
5		***Review for Test 1*** **Test 1 covering Review of Arithmetic & Chapters 3 & 5**
6	6.1 6.2	Gross Earnings: Wages and Salaries Gross Earnings: Piecework and Commissions
7	6.3 6.4	Social Security, Medicare, and Other Taxes Income Tax Withholding
8	6.4 13.1	Income Tax Withholding Property Tax
9	13.2 13.4	Personal Income Tax Motor Vehicle Insurance
10	13.4 13.5	Motor Vehicle Insurance Life Insurance
		Review for Test 2
11		**Holiday/ Catch up Day**
12		***Review for Test 2*** **Test 2 covering Chapters 6 & 13 (excluding 13.3)**
13	7.1 7.2	Invoices and Trade Discounts Single Discount Equivalents
14	7.3 8.1	Cash Discounts: Ordinary Dating Method Markup on Cost

MAT 1120 – BUSINESS MATHEMATICS
TWICE A WEEK SECTIONS CLASS SCHEDULE (*continued*)

Lecture	Sections	Topics
15	8.2 8.3	Markup on Selling Price[1] Markdown
16	8.3 8.4	Markdown Turnover and Valuation of Inventory[2]
17		**Holiday/ Catch up Day**
18		***Review for Test 3*** **Test 3 covering Chapters 7 (excluding section 7.4) & 8**
19	9.1 9.2	Basics of Simple Interest Finding Principal, Rate and Time
20	9.2 10.1	Finding Principal, Rate and Time Compound Interest
21	10.1 10.2	Compound Interest Interest Bearing Accounts and Inflation[3]
22	10.3 11.1	Present Value and Future Value Annuities and Retirement Accounts[4]
23	11.2 11.3	Present Value of an Ordinary Annuity Sinking Funds (Finding Annuity Payments)
24		**Holiday/ Catch up Day**
25		***Review for Test 4*** **Test 4 covering Chapters 9, 10 & 11**
26	12.1	Open-End Credit and Charge Cards
27	12.2 12.4	Installment Loans Personal Property Loans
28	12.4 12.5	Personal Property Loans Real Estate Loans
29	16.1	Frequency Distributions and Graphs
30	16.2	Mean, Median, and Mode
Finals Week		
1 Class Period		***Review for Final Exam***
1 Class Period		**Comprehensive Final Exam**

Footnotes

1. For **Section 8.2**, omit Objective 7.
2. For **Section 8.4**, omit Objective 8.
3. For **Section 10.2**, only cover Objectives 2 and 3.
4. For **Section 11.1**, omit Objective 3.

Notes For The Instructor

1. A **Review of Arithmetic** worksheet has been prepared by the department and should be used for the Review of Arithmetic part of the syllabus on the first day of classes. Additional material from Chapters 1 & 2 of the textbook may be covered if time permits. The **Review of Arithmetic** worksheet is attached to the end of this syllabus and is available on in the Mathematics Community Group portal in **eLearn**.

2. Holiday/Catch-up Days have been included in the schedules to account for lost class days due to Holidays or for other unforeseen reason. If these class days are available then the instructor must use the time to either catch-up or reinforce material in the syllabus or to cover additional material that is listed in item 5 below.

3. MyMathLab is required in all sections of MAT 1120. MyMathLab is an interactive website where students are able to do their graded homework among other things. Among the other things, the entire textbook is available online and is supplemented by multimedia content. More information about MyMathLab can be found on *page xv* of the textbook as well as at http://www.MyMathLab.com/. In order for students to use the materials at MyMathLab they must first register. To do so they will need a MyMathLab student access code and an instructor's Course ID. The department will create Master Course Shells each semester which the instructor should copy, and customize as appropriate for his/her section. The Master Course Shell for the traditional sections has 38 homework assignments, one *Review of Arithmetic* assignment, and one assignment for each of the 37 sections that make up the syllabus for the course. The Course IDs for the Master Course Shells can be obtained from the Department Office prior to the start of the quarter.

4. **The comprehensive final exam must be a 50-minute exam and will consist of two parts. The first part will be a four-question multiple choice test that will be prepared by the department and delivered to the instructor around the middle of the semester. This part will be based on the material covered for Tests 1, 2 3 & 4 and must be worth 40% of the final exam grade. The student should be able to complete the first part of the final exam in 20 minutes. The second part will be prepared by the instructor and should only cover the material that is covered after Test 4. This part must be worth 60% of the final exam grade and should be about 30 minutes long.**

5. There are packets of tables available in the Department Office (room 1-341) that corresponds to the tables needed for Test 2, Test 4 & the Final Exam. These are available for instructors to use in their classes when giving quizzes or tests. Students are not allowed to write on the table packets or take the table packets home. Please return the table packets to the Department Office when you are finished using them, and please be sure they are free of markings. **The tables are also available in electronic form in the Mathematics Community Group portal in eLearn.** The electronic form of the tables can be copied to your course shell in **eLearn** and given to students. The tables for Test 2 and the final exam also include the formulas that the students are not responsible for memorizing.

6. The optional topics listed below may be covered only if class time was not lost due to holidays or for other unforeseen reason and the instructor is not behind on the syllabus:
   - **Section 8.2**: *Objective 7*: Finding the selling price for perishables.
   - **Section 10.2**: *Objectives 4, 5 & 6*: Define inflation and the consumer price index, Examine the effect of inflation on spendable income & Understand the role of the government related to inflation.
   - **Section 11.1**: *Objective 3*: Find the amount of an annuity due.

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MAT 1120 – Business Mathematics
(3 SEMESTER HOURS)

Syllabus for the 12-week course offered at the Correctional Facilities

Weekly Schedule

Week	Sections	Topics
Week 1	---	Introduction & Review of Arithmetic
	3.1	Writing Decimals and Fractions as Percents
	3.2	Finding the Part
	3.3	Finding the Base
	3.4	Finding the Rate
	3.5	Increase and Decrease Problems ***Out of Class Study (OCS)***
Week 2	---	***Review for Test 1***
	---	**Test 1 covering *Review of Arithmetic* & Sections 3.1, 3.2, 3.3 & 3.4**
	5.1	Checking Accounts and Check Registers ***(OCS)***
Week 3	6.1	Gross Earnings: Wages and Salaries
	6.2	Gross Earnings: Piecework and Commissions
	6.3	Social Security, Medicare, and Other Taxes
	5.2	Checking Services and Credit Card Transactions ***(OCS)***
Week 4	6.4	Income Tax Withholding
	13.1	Property Tax
	13.2	Personal Income Tax
	13.3	Motor-Vehicle Insurance
	5.3	Bank Statement Reconciliation ***(OCS)***
Week 5	---	***Review for Test 2***
	---	**Test 2 covering Chapters 6 & Sections 13.1, 13.2 & 13.3**
	13.5	Life Insurance ***(OCS)***
Week 6	7.1	Invoices and Trade Discounts
	8.1	Markup on Cost
	7.2 & 8.3	Single Discount Equivalents & Markdown ***(OCS)***

Weekly Schedule *(continued)*

Week	Sections	Topics
Week 7	9.1	Basics of Simple Interest
	9.2	Finding Principal, Rate and Time
	10.1	Compound Interest
	10.2	Interest Bearing Accounts and Inflation[1] ***(OCS)***
Week 8	10.3	Present Value and Future Value
	11.1	Annuities and Retirement Accounts[2]
	11.2	Present Value of an Ordinary Annuity
	11.3	Sinking Funds (Finding Annuity Payments) ***(OCS)***
Week 9	---	***Review for Test 3***
	---	**Test 3 covering Sections 7.1, 8.1, 9.1, 9.2, 10.1, 10.3, 11.1 & 11.2**
	12.1	Open-End Credit and Charge Cards ***(OCS)***
Week 10	12.2	Installment Loans
	12.4	Personal Property Loans
	12.5	Real Estate Loans
	16.1	Frequency Distributions and Graphs ***(OCS)***
Week 11	---	***Review for Test 4***
	---	**Test 4 covering Sections 12.2, 12.4 & 12.5**
	16.2	Mean, Median, and Mode ***(OCS)***
Week 12	---	**OCS Presentation**

Footnotes

1. For **Section 10.2**, only cover Objectives 2 and 3.
2. For **Section 11.1**, omit Objective 3.

Notes for the Instructor:

- This course will be taught over 12 weeks with 3 contact hours per week and students are required to do the equivalent of 1 contact hour (per week) of *Out of Class Study (OCS)*.
- For each week's *OCS*, the instructor should collect an assignment for grading. The instructor will determine the assignment, *for example: 2 problems from the textbook*.
- There is **no comprehensive final exam** for this format of MAT 1120. Instead students will do a *OCS Presentation*. The instructor should determine the nature of this presentation, *for example: the student will present a solution to a problem*.
- Each of the 4 tests should account for 20% of the final grade. The *OCS Assignments* should account for 5% of the final grade. The OCS presentation should account for 10% of the final grade. The instructor will determine the remaining 5% of the final grade.
- **This syllabus is an addendum to the Departmental Syllabus for MAT 1120.**

MAT 1120 FORMULAS

TO THE INSTRUCTOR

- Copies of all the tables necessary to solve the problems in the text are available to you in the Math Department Office. These copies are for the use of your students when taking quizzes, tests and the final exam. The students may not take these tables home. At the end of the semester, please return the copies to the Math Department so that they may be used again.
- Electronic versions of the tables can also be obtained from the Mathematics Department portal in **eLearn**.

COURSE FORMULAS

CHAPTERS 1 – 3 & 5

Students are responsible for all formulas in Chapters 1 – 3 & 5.

CHAPTERS 6 & 13

Students are responsible for all formulas in Chapters 6 and 13 **except the following**:

Social Security/Medicare/State Disability Insurance Rates (Section 6.3)

FICA 6.2% of the first $110,000 earned in the year
Medicare 1.45% of all earnings
The FICA and Medicare rates for self-employed individuals are double the rates for other employees (which are listed above).

SDI 1.00% of the first $31,800 earned in the year

Standard Deduction Amounts (Section 13.2)

$5,700 for single people
$11,400 for married people filing jointly or qualifying widow(er)
$5,700 for married people filing separately
$8,350 for head of household

Personal Exemption Allowance Amount (Section 13.2): $3,650

CHAPTERS 7 – 11

Students are responsible for all formulas in Chapters 7 – 11.

CHAPTER 12

Students are responsible for all formulas in Chapters 12 (excluding 12.3) **except the following**:

Approximate APR Formula (Page 504)

$$\text{Approx. APR} = \frac{24 \times \text{Finance Charge}}{\text{Amount Financed} \times \left(1 + \text{Total \# of Payments}\right)}$$

Formula Used when using the table to find the APR

$$\frac{\text{Finance Charge} \times 100}{\text{Amount Financed}}$$

CHAPTER 16

Students are responsible for all formulas in Chapter 16.

Rounding

- Rounding of whole numbers is covered in *Section 1.1*: *Objective 2 (pages 3 & 4)* of the textbook.
- Front-end rounding is covered in *Section 1.1*: *Objective 4 (pages 4 & 5)* of the textbook
- Rounding of decimal numbers is covered in *Section 1.3*: *Objective 2 (pages 23 & 24)* of the textbook.

Exercise 1: Round each of the following whole numbers as indicated.

Number	Nearest Ten	Nearest Hundred	Nearest Thousand	Front End Rounding
3,073	3,070	3,100	3,000	3,000
56,845	56,850	56,800	57,000	60,000
36				
571				
2,354				
16,798				
204,518				

Exercise 2: Round each of the following decimal numbers as indicated.

Number	Nearest Tenth	Nearest Hundredth	Nearest Thousandth	Nearest Whole Number
4.2175	4.2	4.22	4.218	4.0
31.6491	31.6	31.65	31.650	32.0
4.5473				
27.0254				
0.8915				
0.4592				
171.9999				

Rounding Monetary Amounts

- When writing (American) monetary amounts it is customary to **always write** two digits after the decimal (as in $32.46, for example) unless the amount is a whole dollar amount, in which case one may omit the fractional part (as in $32, for example) or one may include the fractional part by writing two zeros after the decimal (as in $32.00, for example)
- Monetary amounts that are less than a dollar, like 32 cents for example, may be either written as $0.32 or 32¢.

Exercise 3: Round each of the following dollar amounts as indicated.

Dollar Amount	Nearest Cent
$4.454	$4.45
$0.397	$0.40
$0.009	
$12.999	
$569.735	
$99.995	
$0.002	

Dollar Amount	Nearest Dollar
$7.49	$7.00
$0.50	$1.00
$46.30	
$18.94	
$999.71	
$489.45	
$489.54	

Converting Decimals to Fractions

- Converting decimals to fractions is covered in *Section 2.5*: *Objective 1 (page 75)* of the textbook.

Examples:

1. $0.7 = \frac{7}{10}$

2. $0.46 = \frac{46}{100} = \frac{23 \times 2}{50 \times 2} = \frac{23}{50}$

3. $2.25 = \frac{225}{100} = \frac{9 \times 25}{4 \times 25} = \frac{9}{4}$.
   It is also acceptable to write your answer as a mixed number. That is, $\frac{9}{4} = 2\frac{1}{4}$.

Exercise 4: Rewrite each of the following decimal numbers as fractions:

1. $3.6 =$ _____
2. $0.0045 =$ _____
3. $0.6 =$ _____
4. $25.265 =$ _____
5. $8.13 =$ _____
6. $4.015 =$ _____
7. $0.9845 =$ _____
8. $17.68 =$ _____
9. $0.116 =$ _____
10. $4.32 =$ _____

Converting Fractions to Decimals

- Converting fractions to decimals is covered in *Section 2.5*: *Objective 2 (pages 75 & 76)* of the textbook.
- For this course, however, it is expected that students are able to convert a fraction to a decimal with the aid of a calculator.
- Appendix B at the end of the textbook covers *Basic Calculators*.

Exercise 5: Rewrite each of the following decimal numbers as fractions:

1. $\frac{5}{8} =$ 0.625
2. $\frac{17}{7} =$ $\approx 2.4285714 \approx 2.43$ **Round your answer to two places after the decimal.**
3. $2\frac{3}{16} =$ 2.1875
4. $\frac{3}{5} =$ _____
5. $\frac{7}{13} =$ _____ **Round your answer to three places after the decimal.**
6. $\frac{2}{7} =$ _____ **Round your answer to nearest hundredth.**
7. $\frac{31}{16} =$ _____
8. $5\frac{7}{32} =$ _____
9. $\frac{344}{345} =$ _____ **Round your answer to two places after the decimal.**
10. $3\frac{1}{21} =$ _____ **Round your answer to nearest tenth.**