

BUAD Math 104 – Math & Financial Applications – Dual Credit through TC3 (Concurrent Enrollment) – 3 credits

P. Coombs, McGraw High School Business Education

Course: Math & Financial Applications	Standard 1: Career Development: Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions. Standard 2: Integrated Learning: Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings. Standard 3a: Universal Foundation Skills: Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace. Standard 3b: Career Majors Students who choose a career major will acquire the career-specific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsecondary programs.			
Performance Indicators - LWDAT	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Identify and explain the content and reporting of information on pay stubs ▪ Explain why understanding your pay stub is crucial ▪ Analyze and interpret the computation equations ▪ Evaluate the importance of calculating pay properly ▪ Prepare timecards 	<p>1. What does your pay stub really mean?</p>	<ul style="list-style-type: none"> ▪ Calculate straight time ▪ OT & Total Pay ▪ Weekly Timecards ▪ Piecework computations ▪ Determine Salary ▪ Commissions and Gross Pay ▪ Compute total graduated commission 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>Global Perspective</p> <p>Wages by education</p> <p>Thinking Critically – Substituting in Formulas</p> <p>Error Analysis</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Reinforcement Problems</p> <p>Quick Quiz</p>
<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Analyze and interpret the differences in tax tables ▪ Identify, explain, and apply taxation tables ▪ Analyze business transactions ▪ Prepare tax forms for employment 	<p>2. How would your community be affected if there were no state income tax?</p>	<ul style="list-style-type: none"> ▪ Federal Income Tax Tables ▪ Compute state taxes ▪ Determine state taxes on a graduated income basis ▪ Social Security and Medicare Taxes ▪ Calculate deduction for group insurance ▪ Calculate net pay per pay period 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>Parallel taxation with local spending</p> <p>Closing Activity and Error Analysis</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p>

Resources: Text – *Practical Business Math Procedures*, 9th Edition, Slater, McGraw Hill/Glencoe Publishing, 2009. www.busmath.gelncoe.com. Math & Financial Applications Collaborative Curriculum Development Project, January 2002 (see attached Crosswalk). The Mathematics Core Curriculum Crosswalk to Math & Financial Applications, August 2005 (See attached Activities). How Insurance Works, Smith & Wiening, AICPCU IIA, Pennsylvania, 2004.

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Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Explain and apply the use of expenditures and income ▪ Analyze the impact of transactions on your budget ▪ Compute disposable income 	<p>3. Why is it important to keep track of your expenses?</p>	<ul style="list-style-type: none"> ▪ Compute average monthly expenditures ▪ Prepare a monthly budget ▪ Compare expenses to actual spending 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>Prepare monthly budgets using excel</p> <p>Graph/Chart your results</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Alternative Assessments – Budgeting your way to luxury</p>
<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Explain and analyze the importance of adjusting accounts ▪ Describe a check register and its purpose ▪ Prepare and interpret register entries ▪ Reconcile a bank statement 	<p>4. You work, spend, and play each week – What is the impact on your checking account?</p>	<ul style="list-style-type: none"> ▪ Compute the total checking account deposit ▪ Write a check ▪ Balance a check register ▪ Reconcile a bank statement ▪ Compute online banking charges and update a check register 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>Reconcile a bank statement</p> <p>Crime Stoppers – Banking Industry</p> <p>Digital checks, digital coupons, e-money, smart cards – Internet Research</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Reconcile a bank statement</p> <p>Technology Power: Wells Fargo and NetBank</p>

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Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Explain future values and their purpose ▪ Prepare deposit and withdrawal slips ▪ Calculate and analyze compound interest ▪ Analyze the use of future values 	<p>5. What is compounding interest and how do I calculate it?</p>	<ul style="list-style-type: none"> ▪ Complete deposit slips ▪ Complete a withdrawal slip ▪ Compute a new balance ▪ Calculate simple interest ▪ Calculate compound interest ▪ Find compound interest using tables ▪ Compute future values of an ordinary annuity and an annuity due 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>Formula Applications</p> <p>Error Analysis</p> <p>History of Banking</p> <p>International Banks</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Problem Solving with errors</p>
<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Analyze and calculate sales tax ▪ Compute and analyze markdowns ▪ Analyze and calculate unit pricing ▪ Compare and contrast coupons and rebates on paper and on the web 	<p>6. Are you getting the most for your dollar?</p>	<ul style="list-style-type: none"> ▪ Compute sales tax ▪ Unit Pricing ▪ Coupons and Rebates ▪ Calculate markdowns 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>Markdown Calculations</p> <p>Problem Solving – Pick Three Items</p> <p>Sales Tax Research</p> <p>Technology Power – Octopus Cards, Ltd. – Hong Kong</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Concept Check Assessments</p>

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<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Identify what makes up a finance charge ▪ Analyze the importance of paying on time and paying off debt ▪ Compute finance charges ▪ Compare and contrast the differences in the unpaid-balance method and average daily balance method 	<p>7. If you have a \$1,000 balance on a credit card with a 15% interest rate, and you only pay the minimum amount of \$25 each month, how long will it take to pay off the debt in full? How much interest will you have paid? Can you really afford it?</p>	<ul style="list-style-type: none"> ▪ Calculate new balance on a charge account ▪ Calculate a finance charge by using the unpaid-balance method ▪ Calculate the finance charge based on the average-daily-balance method 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>www.bankrate.com</p> <p>Finance Charges – Calculations</p> <p>Rate of Exchange</p> <p>Compare and Contrast Charge Account Applications from banks and businesses</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>www.bankrate.com</p> <p>Evaluate Advertising</p> <p>Maximum Interest Rates – different states – diff. rates</p>

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<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Compute maturity values ▪ Analyze interest rates and borrowing guidelines ▪ Explain and analyze the uses of loans ▪ Calculate interest as it relates to partial years 	<p>8. How would you calculate the maturity value and simple interest rate on an installment loan?</p>	<ul style="list-style-type: none"> ▪ Compute Maturity Value ▪ Calculate the amount financed on an installment loan ▪ Calculate monthly payments, total repay, and finance charge on an installment loan ▪ Principal vs. Interest ▪ Use tables to find the annual percentage rate of a loan 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>How would life be different if loans didn't exist?</p> <p>Current Interest Rate research – Prime Rate</p> <p>Days in a month, year – what's it have to do with interest?</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Math Studio</p> <p>The Perfect Loan?</p> <p>Credit Analysis and Borrowing Power – How are they related?</p>
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<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Explain and identify the process of purchasing, leasing and/or renting a new or used vehicle ▪ Compute and analyze insurance costs ▪ Compute and analyze vehicle pricing structures 	<p>9. What can you do to prepare for a vehicle purchase?</p>	<ul style="list-style-type: none"> ▪ Compute sticker price ▪ Calculate dealer cost ▪ Calculate book value of a used vehicle ▪ Premiums for vehicle insurance ▪ Costs for operating, and maintaining a vehicle ▪ Leasing vs. buying ▪ Vehicle renting costs 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>www.kellybluebook.com & others for Ins.</p> <p>Comparing same vehicles different dealerships</p> <p>New vs. Used</p> <p>Calculating Book Values</p> <p>Pros/Cons of different makes/models</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Base Price vs. Luxury add-ons</p> <p>Excel sheet and charting comparisons and contrasts</p>

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<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Compute maturity dates and interest values ▪ Compute Closing Costs ▪ Explain and analyze allocation of monthly payments ▪ Apply and compute total housing costs ▪ Compare and contrast different mortgage lenders and the rates ▪ Explore real estate careers and earning potential 	<p>10. Buying a home can be a sound investment that makes financial sense. Why is this true? When is it not?</p>	<ul style="list-style-type: none"> ▪ Computing mortgage loans ▪ Determining monthly payments, total amount paid, and total interest charged ▪ Closing Costs ▪ Allocation of monthly payment ▪ Assessed value and real estate taxes ▪ House Insurance ▪ Calculate a homeowners premium ▪ Compute total housing costs and compare is with suggested guidelines 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>Virtual Home tours of local market</p> <p>Down payment analysis</p> <p>Mortgage calculators</p> <p>How much house can you afford?</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Error Analysis</p> <p>Real Estate Careers</p> <p>Dream Homes</p>
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<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Compare and contrast different insurance plans ▪ Compute and analyze health insurance premiums ▪ Compare and contrast annual premiums for three types of insurance 	<p>11. When will you ever use health insurance?</p>	<ul style="list-style-type: none"> ▪ Compute health insurance premiums ▪ What do we really pay for health care? ▪ Utilize tables to compute the annual premium for term life insurance ▪ Apply tables to data to compute the annual premiums for three types of life insurance. 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>PPO’s</p> <p>HMO’s</p> <p>Calculating health insurance premiums</p> <p>Research the insurance industry</p> <p>Life Insurance – Lifestyle choices and cost</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Compare/Contrast Health Insurance Plans</p> <p>Math Studio</p>

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<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Explain and identify effective yield ▪ Calculate Return on Investment ▪ Prepare VSE Portfolios ▪ Compute and record stock investments ▪ Analyze the importance of making sound investments 	<p>12. What kinds of investments are right for you?</p>	<ul style="list-style-type: none"> ▪ Compute interest on CD's ▪ Effective Annual Yield ▪ Commissions on stock investments ▪ Calculating profits and losses from the sale of investments ▪ Bond Investments 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>Quiz Bowl</p> <p>Business Notes: Growth & Income Stocks</p> <p>VSE</p> <p>Analysis of Risk and Return</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Quarterly compounding tables</p> <p>Stock Tables</p> <p>www.virtualstockexchange.com and www.cbsmarketwatch.com</p>
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<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Explain the characteristics of recruitment ▪ Prepare a training manual ▪ Calculate benefits and expenses for employees ▪ Research workplace trends and employability skills 	<p>13. What is the process for selecting a new employee?</p>	<ul style="list-style-type: none"> ▪ Recruiting prospective employees ▪ Merit increases and cost of the living increases ▪ Employee benefits ▪ Disability benefits and SS ▪ Workers compensation and unemployment insurance ▪ Travel expenses ▪ Training Costs ▪ Employer Costs 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>What are fringe benefits?</p> <p>Expense Accounts</p> <p>Workplace Trends</p> <p>Human Resources Speaker</p> <p>Employability Skills</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Training Manual Development</p>

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<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Calculate break –even point ▪ Compute percent of defective goods ▪ Explain and apply basic principles of advertising and product packaging ▪ Research and analyze different product packages and create a news and improved package 	<p>14. What part does manufacturing play in our everyday lives?</p>	<ul style="list-style-type: none"> ▪ Cost of manufacturing items ▪ Calculate break-even point ▪ Compute percent of defective goods – estimating warranty liability ▪ Using Time-studies ▪ Product Packaging 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>Create Product Packages</p> <p>Conduct our own time-studies</p> <p>Compute warranty liability</p>	<p>Case Analysis & Taxation Questions</p> <p>Taxation Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Create Product Packages</p> <p>Advertising and Packaging – the Relationship</p>
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<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Explain the characteristics of trade discounts and net pricing ▪ Prepare comparison data for trade discount methods ▪ Calculate discounts ▪ Research global market trends 	<p>15. How do market conditions and trends affect business?</p>	<ul style="list-style-type: none"> ▪ Trade discounts as related to net price ▪ Calculate net price using the complement method ▪ Trade-discount rate ▪ Cash Price as related to: Discounts based on ordinary dating ▪ Cash Price as related to: End-of-the-month dating 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>The Trade Triad</p> <p>Global Purchasing</p> <p>Trade Discount Method Comparisons</p> <p>Target & Wal-Mart vs. Local Businesses</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Global Perspective: Cost of Housing</p> <p>Chain Discounts</p>

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<ul style="list-style-type: none"> Work collaboratively with other students to problem solve and analyze cases Calculate markup, markdown, selling prices, and net profit Explain the parallels to B-E Point Analysis Research how selling has changed and stayed the same in the last 100 years Compare and Contrast similar products in different markets 	<p>16. How do you determine a set sales price? What factors affect price?</p>	<ul style="list-style-type: none"> Markup Markup as a percent of selling Net Profit Calculate selling price Solve for the mark-up rate Calculate Markdown 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>Comparison Shop online</p> <p>How has selling changed/stayed the same in the past 100 years?</p> <p>Net-Profit Rate – Thinking Critically</p> <p>Careers in Sales</p> <p>Product Placement – New business ideas for Cortland County</p>	<p>Case Analysis & Taxation Questions</p> <p>Taxation Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>The World of Business</p> <p>Analysis of Amusement Park Ticket Prices</p>
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<ul style="list-style-type: none"> Work collaboratively with other students to problem solve and analyze cases Explain the characteristics of primary data tools Calculate market share, projected sales, and net profit Create excel graphics to support market research and sales projections 	<p>17. How would society be different if marketing didn't exist?</p>	<ul style="list-style-type: none"> Primary Data tools – gathering information in opinion surveys Annual Sales Potential of new products Calculate market share Use excel to compute and graph projected sales Compare and Contrast different medium advertising rates Calculate selling prices that may produce the highest net profit 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>Use excel to compute and graph projected sales</p> <p>Compare and Contrast different medium advertising rates</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Excel graphing of pricing structures</p> <p>Design an ad</p>

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<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Discuss and explain some of the main points for the history of US taxes ▪ Explain and apply basic principles of taxation and reporting ▪ Research and analyze different mini-cases to explain and apply accounting practices to IRS reporting 	<p>18. How has warehousing and distributing changed in the last 25 years?</p>	<ul style="list-style-type: none"> ▪ Compute total storage space ▪ Calculate total inventory – FIFO, LIFO ▪ Weighted Average Inventory Method ▪ Cost of carrying inventory ▪ Shipping Costs ▪ Gas Prices and Shipping Costs 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>Calculations: Storage Space, inventory, weighted average, shipping costs</p> <p>Global Shipping and Storage</p> <p>UPC – What has it done?</p> <p>Compare/Contrast different shipping methods</p> <p>Quick Quiz</p>	<p>Case Analysis & Taxation Questions</p> <p>Taxation Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>FIFO, LIFO, Weighted Average comparisons</p> <p>Global Perspective – Storage Overseas</p>
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Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Explain the characteristics of budgeting for expenses ▪ Calculate /Estimate Costs ▪ Allocate expenses ▪ Prepare a spreadsheet to compare/ contrast sources of power 	19. How should you budget for office space, maintenance costs, and costs of utilities to maintain your business?	<ul style="list-style-type: none"> ▪ Rental Charges ▪ Total Building Maintenance Charges ▪ Equipment Rental ▪ Telephone/Utility Costs ▪ Professional Services 	Key Word Review Living in the Real World Research Tax Law Modifications Business Consultants – Who should you call? Calculating Fixed and Variable Expenses Electricity – Alternative Sources?	Case Analysis & Chapter Questions Chapter Problems and Exercises “Workshop” Activities & Case Studies Compare/Contrast Sources of Power
<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Discuss and explain depreciation – its purpose and use as well as calculations ▪ Explain and apply basic principles of depreciation ▪ Research and analyze different payroll software packages ▪ Calculate depreciation based on SL and MACRS, BV, and Acc. Depr. 	20. What is the role of accounting in any business?	<ul style="list-style-type: none"> ▪ Payroll Register ▪ Expense percentages ▪ Straight Line depreciation ▪ Book Value ▪ MACRS 	Key Word Review Living in the Real World Create a payroll register Calculations: Depreciation – SL & MACRS, Book Value and Accumulated Depreciation Research Payroll Software Determining Salvage Value of an asset	Case Analysis & Taxation Questions Taxation Problems and Exercises “Workshop” Activities & Case Studies Depreciation Tables Calculations

Resources: Text – *Practical Business Math Procedures*, 9th Edition, Slater, McGraw Hill/Glencoe Publishing, 2009. www.busmath.gelncoe.com. Math & Financial Applications Collaborative Curriculum Development Project, January 2002 (see attached Crosswalk). The Mathematics Core Curriculum Crosswalk to Math & Financial Applications, August 2005 (See attached Activities). How Insurance Works, Smith & Wiening, AICPCU IIA, Pennsylvania, 2004.

BUAD Math 104 – Math & Financial Applications – Dual Credit through TC3 (Concurrent Enrollment) – 3 credits
 P. Coombs, McGraw High School Business Education

Course: Math & Financial Applications	Standard 1: Career Development: Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions. Standard 2: Integrated Learning: Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings. Standard 3a: Universal Foundation Skills: Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace. Standard 3b: Career Majors Students who choose a career major will acquire the career-specific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsecondary programs.			
Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Explain the characteristics financial Statements ▪ Prepare financial stmts. ▪ Calculate COGS, BS equation, Ni /NL ▪ Compare & Contrast income statements for % change 	21. What accounting records are necessary for every business?	<ul style="list-style-type: none"> ▪ Compute total assets, liabilities and owner’s equity ▪ Balance Sheets ▪ COGS ▪ Income Statements ▪ Compare & Contrast income statements for % change 	Key Word Review Living in the Real World $A = L + OE$ $R - E = NI \text{ or } NL$ Key formulas COGS Compare/Contrast Income Statements Prepare Financial Statements	Case Analysis & Chapter Questions Chapter Problems and Exercises “Workshop” Activities & Case Studies Financial Statements COGS Analysis
<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Discuss and explain some of the main points of corporate taxation ▪ Calculate tax, costs and yields ▪ Research and analyze commission tables ▪ Calculate expansion costs 	22. How do we interpret and make decisions based on the accounting records?	<ul style="list-style-type: none"> ▪ Taxable Income and Corporate Income Tax ▪ Selling expenses and net proceeds from stocks and bonds ▪ Commercial Loans ▪ Cost and Yield of a Treasury Bill ▪ Cost and Yield for Commercial Paper ▪ Expansion costs 	Key Word Review Living in the Real World Corporate Income Tax Calculations Financial Manager Speaker Research credible Websites Commission Tables Prime Rates on Loans	Case Analysis & Taxation Questions “Workshop” Activities & Case Studies Calculation Tables for Stocks/Bonds, Commercial Paper, Commercial Notes, and Yield T-Bill Investments - VSE

BUAD Math 104 – Math & Financial Applications – Dual Credit through TC3 (Concurrent Enrollment) – 3 credits
 P. Coombs, McGraw High School Business Education

<p>Course: Math & Financial Applications</p>	<p>Standard 1: Career Development: Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions. Standard 2: Integrated Learning: Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings. Standard 3a: Universal Foundation Skills: Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace. Standard 3b: Career Majors Students who choose a career major will acquire the career-specific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsecondary programs.</p>			
<p>Performance Indicators</p>	<p>Essential Questions</p>	<p>Essential Knowledge & Skills</p>	<p>Classroom Ideas</p>	<p>Assessment Ideas</p>
<ul style="list-style-type: none"> ▪ Work collaboratively with other students to problem solve and analyze cases ▪ Explain GDP and CPI ▪ Calculate GDP and CPI ▪ Allocate revenue and expenses ▪ Analyze a budget ▪ Research Inflation Trends 	<p>23. How does corporate planning affect short-and long-term planning? What are the economic considerations?</p>	<ul style="list-style-type: none"> ▪ Inflation Rate ▪ Compute GDP ▪ Calculate CPI ▪ Commodity ▪ Allocate Revenue and Expenses ▪ Analyze a budget 	<p>Key Word Review</p> <p>Living in the Real World</p> <p>A Century of Research on Inflation</p> <p>What formula do I use?</p> <p>Inflation Trends</p> <p>GDP</p> <p>CPI</p> <p>www.bls.gov Bureau of Labor Statistics</p>	<p>Case Analysis & Chapter Questions</p> <p>Chapter Problems and Exercises</p> <p>“Workshop” Activities & Case Studies</p> <p>Error Analysis</p> <p>Reinforcement Problems</p>

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Course: Math & Financial Applications	Standard 1: Career Development: Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions. Standard 2: Integrated Learning: Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings. Standard 3a: Universal Foundation Skills: Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace. Standard 3b: Career Majors Students who choose a career major will acquire the career-specific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsecondary programs.			
Performance Indicators	Essential Questions	Essential Knowledge & Skills	Classroom Ideas	Assessment Ideas
<ul style="list-style-type: none"> ▪ Work collaboratively with area insurance agencies to learn about the insurance industry ▪ Analyze the different aspects of insurance ▪ Comprehend and analyze the different types of insurance that will affect them in the next five years ▪ Create research and portfolio documents to use as a reference ▪ Create essays for a national scholarship contest ▪ Comprehend the differences in insurances for personal use ▪ Communicate with area insurance agencies clearly and professionally ▪ Explore job shadowing and business/career opportunities with area insurance agencies 	<p>What is InVEST and how will it help me in the future?</p>	<ul style="list-style-type: none"> ▪ What is InVEST? ▪ What is insurance? ▪ How is insurance sold? ▪ What is underwriting? ▪ How is insurance service provided? ▪ How are claims handled? ▪ What is found in an insurance policy? ▪ What is personal insurance? ▪ What is commercial insurance? ▪ What happens at an insurance agency day-to-day? – Company Tour ▪ How are premiums determined? ▪ What is life insurance? ▪ What is the purpose and function of an insurance trade association? ▪ Scholarship Writing – InVEST ▪ Job Shadowing 	<p>Classroom speakers on each topic at left - See attached schedule – classroom speakers from area insurance agencies – dates are tentative</p> <p>Do You Know? Auto Insurance Premiums and Auto Theft Home Burglary Emergency Phone Lists – InVEST Insurance Tips – Fact Finding</p> <p>Wall Street Journal Research – Classroom Edition provided by Dryden Mutual Insurance Company</p> <p>Field Trips 1. Syracuse I-Day 2. IIABNY – Syracuse 3. McNeil Agency Tour – Cortland</p> <p>Seminars Speakers – Schedule updated each August in Ithaca</p> <p>Internet Research of area agencies</p> <p>Job Shadowing</p> <p>Mock Job Interviews</p> <p>End of Year – Dessert/Thank You Reception for all McGraw InVEST Partners</p>	<p>Speaker day responsibilities for planning and introductions, closings and thanks</p> <p>Internet Research</p> <p>Rubrics for Insurance Tips</p> <p>InVEST Portfolio</p> <p>Scholarship Writing for InVEST national awards</p> <p>Job Shadowing</p> <p>Mock Interviews</p>

*New InVEST speaker schedule will be included after August 2009 meeting in Ithaca.

Learning Standards for Career Development and Occupational Studies

Standard 1: Career Development

Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions.

Standard 2: Integrated Learning

Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings.

Standard 3a: Universal Foundation Skills

Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace.

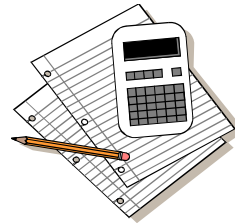
Standard 3b: Career Majors

Students who choose a career major will acquire the career-specific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsecondary programs.

BUAD Math 104 – Math & Financial Applications – Dual Credit through TC3 (Concurrent Enrollment) – 3 credits
P. Coombs, McGraw High School Business Education

Math & Financial Applications

Collaborative Curriculum Development Project



Course outline was developed as part of a collaborative curriculum development project involving business/marketing education staff from the following New York State school districts:

Albany City School District
Averill Park Central School District
Ballston Spa Central School District
Bethlehem Central School District
Brockport Central School District
Burnt Hills – Ballston Lake Central School District
East Greenbush Central School District
Fort Plain Central School District
Guilderland Central School District
North Colonie Central School District
Salem Central School District
Schodack Central School District
Valley Stream Central High School District
Wappingers Central School District
Waterford-Halfmoon Union Free School District

January 2002

Course
Outline

Resources: Text – *Practical Business Math Procedures*, 9th Edition, Slater, McGraw Hill/Glencoe Publishing, 2009. www.busmath.gelncoe.com. Math & Financial Applications Collaborative Curriculum Development Project, January 2002 (see attached Crosswalk). The Mathematics Core Curriculum Crosswalk to Math & Financial Applications, August 2005 (See attached Activities). How Insurance Works, Smith & Wiening, AICPCU IIA, Pennsylvania, 2004.

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MATH & FINANCIAL APPLICATIONS

COURSE DESCRIPTION:

Math & Financial Applications is a 1-unit *specialized* interdisciplinary business course related to the mathematics learning standards. This course is designed to prepare students for both college level business programs and to understand the complex financial world they will encounter during their lives. As outlined in Commissioner’s Regulations 100.5(a)(7)(iv), for students who have successfully passed the required Math A Regents examination and upon local educational agency approval, a *specialized course* may be used to fulfill one of the three units of mathematics required for the Regents diploma.

CONTENT/CONCEPT	PS = Problem Solving RP = Reasoning & Proof CM = Communication		CN = Connections R = Representation		
	PS	RP	CM	CN	R
I. PAYROLL	5, 8	1, 5, 8, 10	1-13		
A. Terminology and Procedures					
B. Compensation Plans: Salary, Hourly, Piecework, Commission, Overtime, Gross vs. Net Pay,	1	7		1, 2	1
C. Deductions Taxes, FICA, Fed Tax, State Tax, Voluntary Deduction, and Mandatory Deductions	4	7		3, 4	1
D. Benefits/Cost: Job Benefit Analysis					
E. Tax Preparation, Federal & State Tax Preparation	3, 5, 7, 9	2, 11, 12		3, 4	1-3
F. Health Insurance Cost Benefits Analysis	7, 9	6, 11		6, 7	1
		2, 11, 12		6,7	1
II. INTEREST	2, 3	1, 7, 8, 10, 11	1-13		1-5
A. Simple Interest Formula			1, 2, 3-6	1	
B. Compound Interest Formula				2, 6, 7	
C. Maturity Dates				2, 6, 7	
D. Time Calculations				2, 3, 6, 7	
E. Finding the Time or Rate				2, 3, 6, 7	
F. Compounds – Daily, Monthly, Quarterly, Semiannually and Annual		5, 6		3, 6, 7	
G. Calculate effective rate (APR)				3, 6, 7	
III. CREATING FORMULAS	3, 4, 8	1, 2, 7, 10	1-13	1-4, 6, 7	1,2
A. Using calculators or software applications					
B. Basic Formula Creation and use with software applications		4			
C. Generate Tables and Graphs using software applications, <i>i.e. Bar, Line, Pie, Picture, X-Y, Stock Trends, Scatter</i>		4			
IV. BUDGETING/DEPRECIATION		1, 2, 6, 7			

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A. Budget Construction/Analysis	5	3, 4, 5, 8, 9	1, 2, 3-6	1, 2, 3, 6, 7	1-5
B. Forecasting for needs and goals	1	3, 4, 5, 8, 9	1-13	1, 2, 3, 6, 7	1-5
C. Methods of Depreciation	1		1, 2, 3-6	1, 2, 3, 6, 7	1-5
1. Straight Line Method					
2. Double Declining Balance					
3. Sum of the Years Digits					
D. Reasons for Depreciation	9, 10		1, 12		
E. Guidelines from IRS – Method Determination		5	1, 2, 7-9, 13	1, 3, 6, 7	

BUAD Math 104 – Math & Financial Applications – Dual Credit through TC3 (Concurrent Enrollment) – 3 credits
 P. Coombs, McGraw High School Business Education

CONTENT/CONCEPT					
V. LOANS/BANKING A. Terminology and Procedures B. Electronic Banking and Software Applications C. Types of Checking Accounts D. Interpreting Account Records E. Mortgages, Rates, Term Calculations, Amortization, Cost F. Types of Mortgages – Variable, Fixed, Balloon, Private, FHA, Home Equity, VA, Sunny Mae and Fanny Mae G. Second Mortgage H. Students Loans/Financial Aid I. Owning vs. Renting Real Property J. Auto Purchasing vs. Auto Leasing K. Personal Loans	8, 10	1, 2	C through K 1-13 1, 10-13 1, 2, 13	1 1-4, 6, 7 1-4, 6, 7 1-4, 6, 7 1-4, 6, 7 1-4, 6, 7	1-3 1-5 4 1-5 1-5 1-5 1-5
VI. ANNUITIES A. Types of Annuities and Calculations 1. Ordinary Annuities (Mortgage Payment) 2. Forborne Annuity 3. Deferred Annuity (Tax Shelter Annuity) 4. Periodic Payment of an Annuity	4-10	1, 2, 5, 6, 8, 11	1-13	2-4, 6, 7	1-5
VII. CREDIT A. Checking Your Credit Rating B. Theft and Protecting your credit Online C. Factors Affecting Credit Ratings D. Interest on Credit Cards, Term, Fees, and Additional Charges E. Alternative to Credit Cards, Debit Cards, Prepaid Cards	4, 5, 8	1, 2, 7	2-13 1, 4, 5, 6, 7-13	6 1, 2, 6, 7 1, 2, 6, 7	7 7 1-5

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VIII. INVESTMENT A. Real Estate – Residential vs. Commercial B. Mutual Funds C. Stocks D. Common Stock E. Preferred Stock F. Bonds G. Retirement Planning – 401K, 403 B, IRA, Roth IRA H. Retirement and Estate Planning I. Tax Implications J. Dividends and Capital Gains K. Gains and Losses (ROI) L. Reading and Interpreting Market Quotations M. Treasury Bills N. Individuals Net Worth	1, 3, 5, 6, 8, 9	1, 2, 5, 7, 8, 12	1, 2, 3-6, 13	6, 7 1-3 1-3 1-3 1-3 1-3 1-3 1, 2 2, 3 2, 3 2, 3 2, 3 2, 3 2, 3	1-5
IX. FINANCIAL STATEMENT ANALYSIS A. Financial Reports and Ratios B. Income Statement C. Balance Sheet D. Charts and Graphs Representing Data E. Probability F. Economic Statistics, CPI, Inflation Rate	3, 4, 8 7, 9	1, 2, 7, 8 5, 9 5, 9 12	1-13	1-4, 6, 7	1-5 7 7

CONTENT/CONCEPT					
X. US CURRENCY VS. FOREIGN CURRENCY A. International Money Conversions B. Global Investments C. Risk/Benefit Analysis of Foreign Investment	1, 3, 8, 9, 10	1, 2, 5, 7	1-13	1-4, 6, 7	1, 7

The Mathematics Core Curriculum
 Crosswalk to
 Math & Financial Applications
 August 2005

BUAD Math 104 – Math & Financial Applications – Dual Credit through TC3 (Concurrent Enrollment) – 3 credits

P. Coombs, McGraw High School Business Education

This document was developed as part of a collaborative curriculum development project involving business and marketing education staff from the following New York State school districts:

Waterford Halfmoon School District
Stamford Central School District
Monticello Central School District

Purpose:

This document shows the connections between Mathematics Core Curriculum as prescribed by the New York State Department of Education and the Math & Financial Applications curriculum.

Intent:

It is the intent of this document to provide sufficient evidence that the Math & Financial Applications course meets all of the Process Strands required by the New York State Department of Education while introducing specialized content in the study of financial mathematics.

Method:

The Mathematics Core Curriculum and the Math & Financial Applications curriculum were used as the framework for this document and are both cross referenced.

Commissioner’s Regulation 100.5 (b)(7)(iv)

Specialized Courses

Students first entering grade nine in 2001 and thereafter shall meet the commencement level New York State learning standards by successfully completing twenty-two units of credit and five New York State assessments distributed as specified in (a) through (k) below. After passing the required New York State assessment or approved alternative in mathematics, science and English language arts, the remaining units of credit required in that discipline may be in specialized courses. A specialized course is a course that meets the requirements of a unit of credit as defined in section 100.1 (a) of this Part and the New York State commencement learning standards as established by the commissioner. A specialized course develops the subject in greater depth and/or breadth and/or may be interdisciplinary. Successful completion of one unit of study in the interdisciplinary specialized course may be awarded only one unit of credit but may be used to meet the distribution requirements in more than one subject.

Mathematics Problem Solving Strand

- P.S. 1 - 2: Build new mathematical knowledge through problem solving
- P.S. 3 - 4: Solve problems that arise in mathematics and in other contexts
- P.S. 5 - 7: Apply and adapt a variety of appropriate strategies to solve problems
- P.S. 8 - 10: Monitor and reflect on the process of mathematical problem solving

Math & Financial Applications Activities

Students will:

- utilize spreadsheet and charting applications to solve problems
- develop and maintain a payroll register
- obtain the information necessary to properly compute payroll
- use a chart or graph to show trends in payroll
- calculate total fringe benefits and net job benefits
- analyze job benefits of selected job offerings
- calculate commissions (straight, graduated, etc...)
- develop spreadsheets to compute and monitor health insurance cost benefits
- determine maturity dates of notes and loans
- solve for all four elements of the simple interest formula
- compare and contrast a variety of compounding methods

Resources: Text – *Practical Business Math Procedures*, 9th Edition, Slater, McGraw Hill/Glencoe Publishing, 2009. www.busmath.gelncoe.com. Math & Financial Applications Collaborative Curriculum Development Project, January 2002 (see attached Crosswalk). The Mathematics Core Curriculum Crosswalk to Math & Financial Applications, August 2005 (See attached Activities). How Insurance Works, Smith & Wiening, AICPCU IIA, Pennsylvania, 2004.

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- utilize a spreadsheet to create “what if” budget scenarios
- generate tables using a variety of depreciation methods
- develop and maintain a variety of banking/investment records
- compare and contrast different types of mortgage products
- analyze the financial impact of various mortgage options
- compare and contrast the cost/benefits of renting vs. owning real property
- develop a spreadsheet that projects long term impact of student loans
- develop a financial plan to critique and compare a variety of annuity options
- collaborate on developing a financial plan to eliminate consumer debt
- calculate and determine the most cost efficient method of obtaining goods/services
- read and interpret stock market data to determine trends
- utilize financial data to determine investment opportunities
- collaborate to develop a savings and retirement plan for a variety of life stages
- utilize spreadsheets to develop and chart a variety of financial statements
- analyze financial statements and make modifications to a budget
- complete a ratio analysis of financial statements
- interpret and analyze current economic data and calculate projections
- perform a risk benefit analysis of foreign investments

Mathematics

Reasoning and Proof Strand

- RP 1: Recognize reasoning and proof as fundamental aspects of mathematics
- RP 2 - 4: Make and investigate mathematical conjectures
- RP 5 - 8: Develop and evaluate mathematical arguments and proofs
- RP 9 - 12: Select and use various types of reasoning and methods of proof

Math & Financial Applications Activities

Students will:

- predict federal and state tax liability given a variety of payroll scenarios
- predict tax liabilities from a variety of life events i.e. inheritance, marriage, additional dependents, loss of job
- forecast the costs and financial impact of a change in health care providers
- illustrate and explain the time value of money concept
- incorporate verification elements when utilizing spreadsheets and charts
- critique charts and graphs to determine bias or misrepresentation
- use a variety of methods to calculate depreciation
- choose the appropriate depreciation method for business or personal tax advantages
- estimate the effect of a salary or wage change on a personal budget
- compare and contrast the true cost of a variety of mortgage options
- collaborate and defend the selection of a particular mortgage option
- project the capacity to finance post secondary education via loans, financial aid and savings
- construct an argument that will support or refute annuities as an investment option
- compare and contrast the different methods of calculating credit card interest, finance charges and fees

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- investigate and evaluate the true costs of using credit
- develop, verify and defend a cost/benefit analysis of different investment options
- critique a financial advisor's recommendations for validity
- build charts and graphs from financial statements to assess the financial health of companies within the same industry
- analyze a variety of economic indicators to predict changes in CPI, GDP, GNP, etc....
- use currency valuation conversions to project the purchasing power of the dollar vs. other currencies

Mathematics

Communication Strand

- CM 1 - 2: Organize and consolidate their mathematical thinking through communication
CM 3 - 6: Communicate their mathematical thinking coherently and clearly to peers, teachers, and others
CM 7 - 9: Analyze and evaluate the mathematical thinking and strategies of others
CM 10 - 13: Use the language of mathematics to express mathematical ideas precisely

Math & Financial Applications Activities

Students will:

- build and explain a payroll register
- construct and present to peers, teachers, and others a graphical representation of health insurance cost/benefits analysis
- listen to and critique a peer's presentation on federal and state tax preparation
- develop the appropriate mathematical process to determine compensation in a commission scenario
- explain the concept of compound interest and build a spreadsheet to demonstrate the power of compounding
- support the concept of saving early and the power of the time value of money
- develop savings scenarios to be utilized by other students in computing interest
- demonstrate competency in calculating annual percentage rate (APR) and make a presentation illustrating the importance of APR in both borrowing and savings
- select the appropriate financial formula and/or functions to solve financial problems
- use the appropriate spreadsheet application to forecast revenue and expenses
- provide the rationale for forecasting changes in revenues and expenses based on changes in economic conditions
- evaluate a peer's presentation relating to depreciation methodology
- utilize the appropriate formatting options to accurately represent generated data
- demonstrate check register maintenance and complete a reconciliation process manually and electronically
- present an analysis of renting versus leasing a vehicle
- critique peers presentations on student loans and financial aid options
- read and analyze advertisements pertaining to mortgage options
- make a presentation on the use of annuities in retirement planning
- illustrate how a credit rating is determined and provide a plan for protecting their credit rating
- present organized mathematical ideas illustrating the tax implications of 401k, 403B, IRA, Roth IRA...
- use changes in the elements of the balance sheet equation to illustrate the impact they have on net worth in a variety of scenarios
- communicate clearly their understanding of national trade deficit calculations and the impact on a variety of businesses and industries

BUAD Math 104 – Math & Financial Applications – Dual Credit through TC3 (Concurrent Enrollment) – 3 credits
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**Mathematics
Connections Strand**

- CN 1 - 2: Recognize and use connections among mathematical ideas
CN 3- 5: Understand how mathematical ideas interconnect and build on one another to produce a coherent whole
CN 6 - 8: Recognize and apply mathematics in contexts outside of mathematics

Math & Financial Applications Activities

Students will:

- build a payroll register that illustrates the impact of changes in FICA to both the employer and the employee
- classify and compute payroll deductions and illustrate their impact on net pay
- calculate and illustrate a variety of compound interest scenarios and the final impact on the principle
- build a spreadsheet illustrating the manipulation of the time element in the interest formula to account for borrowing for days, months or years
- analyze future value and present value functions for their similarities and differences
- analyze the impact of actuarial tables on the premium rate for insurance
- utilize amortization functions to build an amortization schedule for the purchase of a home or an automobile
- compare a monthly billing cycle of credit card versus debit card use accounting for applicable fees and finance charges
- prepare a comparison of interest income (savings and treasury bills) versus dividend income and the tax implication related to each

Mathematics

Representation Strand

- R1 - 3: Create and use representations to organize, record, and communicate mathematical ideas
R4 - 5: Select, apply, and translate among mathematical representations to solve problems
R6 - 8: Use representations to model and interpret physical, social, and mathematical phenomena

Math & Financial Applications Activities

Students will:

- use a chart or graph to show trends in payroll
- develop spreadsheets to monitor health insurance cost benefit and build related graph
- analyze the financial impact of various mortgage options and graph the results
- students will calculate various depreciation scenarios and select the appropriate chart type to present results
- create a table representing checking account options available at various local banks (comparing interest rates and bank fees)
- create a graph that illustrates the increase in personal bankruptcy filings as the result of the misuse of credit
- research and analyze Federal Reserve data related to treasury bill interest rates and the expected outcomes of rate adjustments
- graphically illustrate the historical inflation rate of a foreign country and its impact on their economic development