

# Utica High School

## Math 4 Syllabus

Miss. Yinger (Room 203)

### **Course Description:**

Math IV is an algebra-based, application-oriented, technology dependent course that requires Algebra I and Geometry as a prerequisite. The course addresses college preparatory mathematics topics from Advanced Algebra, Statistics, Probability, Pre-Calculus, and Calculus under seven financial umbrellas: Banking, Investing and Modeling a Business, Employment and Income Taxes, Automobile Ownership, Independent Living, Retirement Planning, and Household Budgeting. Students use a variety of problem solving skills and strategies in real-world contexts. The mathematics topics contained in this course are introduced, developed, and applied in an as-needed format in the financial settings covered.

### **Grading Policy:**

Each student's grade will be determined by the following criteria:

- Tests/Quizzes
- Homework/Classwork
- Activities/Projects
- Participation
- Binder Checks (a three ring binder and dividers are required for this class).
- A.L.E.K.S.

This will be a point's based system.

### **Grading Scale:**

90 - 100 = A      80 - 89 = B

70 - 79 = C      60 - 69 = D      0 - 59 = F

### **Class Rules:**

Be Respectful

Be Prepared

Be on Time

Be Attentive

\*\*\*\*\* All school rules will also be enforced\*\*\*\*\*

### **Class Procedures:**

1. Make sure your name, the date, and the class period are on all assignments.
2. Assignments are to be turned in at the beginning of class or they are late.
3. iPads are to be charged and ready to use on a regular basis.
4. Focus during class discussion and work on assignments/activities when time is given.
5. Miss. Yinger dismisses class, not the bell (everyone needs to be seated when the bell rings).
6. All cell phones must be left in lockers per school policy. Failure to comply with this school rule; student will be sent to the office.

### **Attendance:**

**Tardiness:** Students are expected to arrive on time for class. The third time a student is tardy during a grading period they will receive a lunch detention. The fourth tardy they will receive a Wednesday detention. A fifth tardy in a grading period they will receive a referral to the office for a Saturday School, In-School Suspension, or Suspension.

**Absences:** make up work due to an excused absence must be made up promptly. The time allotted for makeup work shall not exceed one day more than the period of absence. **It is the responsibility of the pupil to arrange for and to complete the necessary work.** Work missed through truancy or unexcused absence cannot be accepted for credit.

### **Homework Policy:**

- Assignments must be turned in on time for full credit

- Late assignments will receive half credit for the first day late. Each day after that, the full amount that can be received will be reduced by 10%. (i.e. second day late – worth up to 40%, third day late - worth up to 30%, etc.)
- Some assignments will be taken to be graded and others will be marked for completion.

### **Activity/Project Policy:**

Students are expected to remain on task when given time for activities and projects. Any student who abuses the time given for activities/projects will no longer be given the opportunity to participate in the activity or project. Students who lose the privilege to participate will be given an alternative assignment to complete.

### **Testing Policy:**

Students will be able to retake a test for any chapter. The retake test will not be the same test but it will cover the same material as the original. Every student that wished to retake a test must complete the necessary remediation's. This could include but is not limited to completing missing homework assignments throughout the chapter, reteaching sessions to cover important skills, or completing alternative assignments as necessary.

### **Cheating:**

Cheating includes: plagiarism, copying someone else's work or allowing someone to copy your work.

First Offense: The student(s) will receives a zero on the assignment, test, or quiz.

Second Offence: The student(s) will be reported to the office and disciplinary action will take place.

### **Denial of Credit Policy:**

Semester course: Any student who accumulates more than eight (8) incidents of a zero (0) for that class period, for that day, and every day in excess of eight (8) days.

Full-year course: Any student who accumulates more than sixteen (16) incidents per class of non-professional absences in a year-long course, excused or unexcused will receive a zero (0) for that class period, for that day and every day excess of the sixteen (16) days.

## Course Outline:

\*Note: quizzes are not in the outline

### Chapter 1: Discretionary Expenses

Section 1.1	Discretionary and Essential Expenses <ul style="list-style-type: none"> <li>Gross income, disposable income, essential expense, discretionary expense, statistics, data, measures of central tendency, mean, median, mode, subscript, index, outlier, skewed data set, frequency.</li> </ul>
Section 1.2	Travel Expenses <ul style="list-style-type: none"> <li>Cumulative and relative frequency, spreadsheet, cell, relative cumulative frequency, percentile, percentile rank.</li> </ul>
Section 1.3	Entertainment Expenses <ul style="list-style-type: none"> <li>Dispersion, Range, Mean deviation, mean absolute deviation, variance, standard deviation.</li> </ul>
Section 1.4	Vacation Expenses <ul style="list-style-type: none"> <li>Raw data, normal curve, standard score, z-score, normal distribution, bell curve, asymptomatic, tails.</li> </ul>
Section 1.5	Personal Expenses <ul style="list-style-type: none"> <li>Univariate and bivariate data, scatter plot, trend, correlation, casual relationship, explanatory and response variable, lurking variable, linear regression analysis, linear regression equation, independent and dependent variable, domain, interpretation, extrapolation, correlation coefficient.</li> </ul>
Review Day	Review Chapter 1
Test	Chapter 1 Test

## Chapter 2: Banking Services

Section 2.1	<p>Checking Accounts</p> <ul style="list-style-type: none"><li>• Checking account, check, electronic funds transfer (ETF), payee, drawer, check clearing, deposit slip, direct deposit, automated teller machine (ATM), personal identification number (PIN), hold, endorse, canceled, insufficient funds, overdraft protection, maintenance fee, interest, single and joint account, check register, debits, credits.</li></ul>
Section 2.2	<p>Reconcile a Bank Statement</p> <ul style="list-style-type: none"><li>• Account number, bank statement, statement period, starting balance, ending balance, outstanding deposits and checks, balancing, reconciling.</li></ul>
Section 2.3	<p>Savings Account</p> <ul style="list-style-type: none"><li>• Savings account, interest rate, principal, simple interest, simple interest formula, statement savings, minimum balance, money market account, certificate of deposit (CD), maturity, arithmetic sequence, common difference, finite, infinite.</li></ul>
Section 2.4	<p>Explore Compound Interest</p> <ul style="list-style-type: none"><li>• Compound interest, annual and semiannual compounding, quarterly and daily compounding, crediting.</li></ul>
Section 2.5	<p>Compound Interest Formula</p> <ul style="list-style-type: none"><li>• Compound interest formula, annual percentage yield (APY)</li></ul>
Section 2.6	<p>Continuous Compounding</p> <ul style="list-style-type: none"><li>• Limit, function, rational function, continuous compounding, exponential base (e), continuous compound interest formula.</li></ul>
Section 2.7	<p>Future Value of Investments</p> <ul style="list-style-type: none"><li>• Future value of a single deposit investment, periodic investment, biweekly, future value of a periodic deposit investment.</li></ul>

Section 2.8	Present Value of Investments <ul style="list-style-type: none"> <li>• Present value, present value of a single deposit investment, present value of a periodic deposit investment.</li> </ul>
Review Day	Review Chapter 2
Test	Chapter 2 Test

### Chapter 3: Consumer Credit

Section 3.1	Introduction to Consumer Credit <ul style="list-style-type: none"> <li>• Credit, debtor, creditor, asset, earning power, credit rating, credit reporting agency, FICO score, installment plan, down payment, deferred payment, layaway plan, default.</li> </ul>
Section 3.2	Loans <ul style="list-style-type: none"> <li>• Promissory note, principal, annual percentage rate, cosigner, life insurance, prepayment privilege, prepayment penalty, wage assignment, wage garnishment, balloon payment, lending institution, collateral, payday loan.</li> </ul>
Section 3.3	Student Loans <ul style="list-style-type: none"> <li>• Career school, Free application for Federal Student AID (FAFSA), Student aid report (SAR), expected family contribution (EFC), federal loan, private loan, federal direct subsidized loan (Stafford), defer.</li> </ul>
Section 3.4	Loan Calculations and Regression <ul style="list-style-type: none"> <li>• Monthly payment calculator, loan length formula, cubic function, cubic regression equation.</li> </ul>
Section 3.5	Credit Cards <ul style="list-style-type: none"> <li>• Credit card, impulse buying, revolving charge account, charge card, Truth-in-Lending Act, Schumer Box, fair debt collection practices, Fair Credit Billing Act, debit card, Electronic Funds Transfer Act, average daily balance.</li> </ul>
Section 3.6	Credit Card Statement

	<ul style="list-style-type: none"> <li>Billing cycle, credit card statement, account number, credit line, available credit, billing date, payment due date, transactions, debit/credit, previous balance, payments/credits, new purchases, late charge, finance charge, new balance, minimum payment, average daily balance, number of days in billing cycle, monthly periodic rate.</li> </ul>
Section 3.7	<p>Average Daily Balance</p> <ul style="list-style-type: none"> <li>Average daily balance, credit calendar, billing date, minimum payment warning box, negative amortization (NegAm)</li> </ul>
Review Day	Review Chapter 3
Test	Chapter 3 Test

#### Chapter 4: Automobile Ownership

Section 4.1	<p>Classified Ads</p> <ul style="list-style-type: none"> <li>Sales tax, domain, piecewise function, split function, cusp.</li> </ul>
Section 4.2	<p>Automobile Transactions</p> <ul style="list-style-type: none"> <li>Measures of central tendency, upper and lower quartiles, subscripts, interquartile range (IQR), stem-and-leaf plot, bow-and-whisker plot, box plot, modified box plot.</li> </ul>
Section 4.3	<p>Automobile Insurance</p> <ul style="list-style-type: none"> <li>Liable, negligent, premium, claim, liability insurance, bodily injury liability (BI), property damage liability (PI), uninsured/underinsured motorist protection (UMP), personal injury protection (PIP), no-fault insurance, comprehensive insurance, collision insurance, car-rental insurance, emergency road service insurance, surcharge, deductible.</li> </ul>
Section 4.4	Probability: The Basis of Insurance

	<ul style="list-style-type: none"> <li>Actuary, probability, event, two-way table, conditional probability, independent event, associated events, Venn diagram.</li> </ul>
Section 4.5	Linear Automobile Depreciation <ul style="list-style-type: none"> <li>Depreciate, appreciate, straight line depreciation, slope, straight line depreciation equation, expense function, fixed expense, variable expense.</li> </ul>
Section 4.6	Historical and Exponential Depreciation <ul style="list-style-type: none"> <li>Historical data and depreciation, exponential decay and depreciation, exponential regression, geometric sequence and progression, common ratio.</li> </ul>
Section 4.7	Driving Data <ul style="list-style-type: none"> <li>Trip odometer, speedometer, fuel economy measurement, mpg, km/L, English standard system, metric system, distance formula, currency exchange rate.</li> </ul>
Section 4.8	Driving Safety Data <ul style="list-style-type: none"> <li>Reaction time, reaction distance, breaking distance, total stopping distance.</li> </ul>
Section 4.9	Accident Investigation Data <ul style="list-style-type: none"> <li>Skid mark, shadow skid mark, anti-lock braking system (ABS), yaw mark, skid speed formula, drag factor, braking efficiency, skid distance, chord, middle ordinate, projectile motion, trajectory.</li> </ul>
Review Day	Review Chapter 4
Test	Chapter 4 Test

## Chapter 5: Employment Basics

Section 5.1	Look For Employment <ul style="list-style-type: none"> <li>Employment and recruitment agency, employer and applicant paid, fee paid, resume, form W-4 Employee's withholding allowance certificate, benefits, and discount.</li> </ul>
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Section 5.2	Pay Periods and Hourly Rates <ul style="list-style-type: none"> <li>• Direct deposit, hourly rate, regular hours, overtime hours and hourly rate, time-and-a-half overtime, double-time pay, gross pay, minimum wage.</li> </ul>
Section 5.3	Commissions, Royal Ties, and Piecework Pay <ul style="list-style-type: none"> <li>• Commission, royalty, pieceworker, piecework rate.</li> </ul>
Section 5.4	Employee Benefits <ul style="list-style-type: none"> <li>• Insurance, paid vacation and holiday time, retirement plans, stock ownership plans, childcare leave, family and individual health care, pension, unemployment insurance, base period, worker's compensation.</li> </ul>
Section 5.5	Social Security and Medicare <ul style="list-style-type: none"> <li>• Social Security, Federal Insurance Contributions Act (FICA), FICA tax, Social Security tax, Medicare tax, maximum taxable income, Social Security number.</li> </ul>
Review Day	Review Chapter 5
Test	Chapter 5 Test

## Chapter 6:

Section 6.1	Tax Tables, Worksheets, and Schedules <ul style="list-style-type: none"> <li>• Property and Sales Tax, taxable income, income tax, internal revenue service (IRS), single and married filing jointly or separately, qualifying widow(er), head of household, constraint, inequality restraint.</li> </ul>
Section 6.2	Modeling Tax Schedules <ul style="list-style-type: none"> <li>• Flat and proportional tax, progressive tax, tax bracket, regressive tax schedule.</li> </ul>
Section 6.3	Income Statements <ul style="list-style-type: none"> <li>• Gross and net pay, take-home pay, paycheck, pay stub, Form W-4, withholding tax, Form W-2, Form 1099, tax deferred contribution, cafeteria plan, flexible spending account (FSA)</li> </ul>
Section 6.4	Forms 1040 EZ and 1040A

	<ul style="list-style-type: none"> <li>Form 1040EZ, Form 1040A, Form 1040, dependent, exemption, adjusted gross income, itemizing, standard deduction.</li> </ul>
Section 6.5	Form 1040 and Schedules A and B <ul style="list-style-type: none"> <li>Voluntary compliance, Form 1040, Schedule B and A, tax credit, tax avoidance, tax evasion, threshold.</li> </ul>
Review Day	Review Chapter 6
Test	Chapter 6 test

### Chapter 7: Independent Living

Section 7.1	Finding a Place to Live <ul style="list-style-type: none"> <li>Tenant, Landlord, furnished and unfurnished, lease, expires, evict, single and multiple-family home, condominium, application and security deposit.</li> </ul>
Section 7.2	Reading a Floor Plan <ul style="list-style-type: none"> <li>Floor plan, scale, area, congruent, apothem, perimeter, Monte Carlo method, volume, British Thermal Units (BTU's)</li> </ul>
Section 7.3	Mortgage Application Process <ul style="list-style-type: none"> <li>Mortgage, market value, property and real estate tax, addressed value, down payment, fixed rate mortgage, adjustable rate mortgage, foreclose, private mortgage and homeowner's insurance, escrow, front-end and back-end ratio, debt-to-income ratio, balloon and interest only mortgage.</li> </ul>
Section 7.4	Purchasing a Home <ul style="list-style-type: none"> <li>Recurring and non-recurring costs, closing and closing costs, earnest money deposit, attorney and origination fee, title and title search, points, origination and discount points, prepaid interest, arrears, transfer tax, amortization table, initial rate, adjustment period, hybrid ARM.</li> </ul>
Section 7.5	Mortgage Points <ul style="list-style-type: none"> <li>Mortgage points, breakeven, negative points.</li> </ul>

Section 7.6	Rentals, Condominiums, and Cooperatives <ul style="list-style-type: none"> <li>• Condominium, board of directors, maintenance fee, co-op apartment, cooperative, landominium, equity.</li> </ul>
Section 7.7	Home Maintenance and Improvement <ul style="list-style-type: none"> <li>• Trigonometry, legs, hypotenuse, pitch, rise, run, similar, proportion, means, extremes, angles of elevation, tangent, sine, cosine, Inverse trigonometric functions.</li> </ul>
Review Day	Review Chapter 7
Test	Chapter 7 Test

### Chapter 10: Planning for Retirement

Section 10.1	Retirement Income From Savings <ul style="list-style-type: none"> <li>• Semi-retired, retirement, pre-tax dollars, after-tax investments, individual retirement account (IRA), traditional IRA, tax-deferred, Roth IRA, tax-exempt, 401k, SEP plan, SIMPLE plan, 403b.</li> </ul>
Section 10.2	Social Security Benefits <ul style="list-style-type: none"> <li>• Old-Age, Survivors, and Disability insurance (OASDI), Social Security benefit, full retirement age, social security statement and credit.</li> </ul>
Section 10.3	Pensions <ul style="list-style-type: none"> <li>• Deferred compensation, pension, defined benefit plan, vested, single life annuity, qualified joint and survivor annuity, lump-sum payment, Pension Benefit Guaranty Corporation (PBGC), Employee Retirement Income Security Act (ERISA), Pension Protection Act, Cost of Living Adjustment (COLA), Consumer Price Index (CPI)</li> </ul>
Section 10.4	Life Insurance <ul style="list-style-type: none"> <li>• Beneficiary, premium, mortality table, face value, term life insurance, group term life insurance, level term insurance, decreasing term insurance, increasing term insurance, permanent life</li> </ul>

	insurance, whole life insurance, cash value, universal life insurance, variable life insurance, greater integer function, expected value .
Section 10.5	Investment Diversification <ul style="list-style-type: none"> <li>• Diversify, volatility, aggressive investment, conservative investment, liquidity, speculative stock.</li> </ul>
Review Day	Review Chapter 10
Test	Chapter 10 Test

## Chapter 11: Prepare a Budget

Section 11.1	Utility Expenses <ul style="list-style-type: none"> <li>• Utilities, meter, watts, watt-hour, kilowatt-hour (kWh), cubic foot, ccf, rationale function.</li> </ul>
Section 11.2	Electronic Utilities <ul style="list-style-type: none"> <li>• Electronic utilities</li> </ul>
Section 11.3	Charting a Business <ul style="list-style-type: none"> <li>• Budget Chart, budget check-off chart, budget line graph, sectors, central angles.</li> </ul>
Section 11.4	Cash Flow and Budgeting <ul style="list-style-type: none"> <li>• Cash flow analysis, pro-rate, envelope accounting system, frequency budget plan, year-long expense budget plan, net worth, assets, liabilities, debt reduction plan, debt-to-income ratio.</li> </ul>
Section 11.5	Budget Matrices <ul style="list-style-type: none"> <li>• Array, rectangular array, matrix, budget matrix, dimensions, entry, element, zero matrix, corresponding elements, scalar, scalar multiplication.</li> </ul>
Review Day	Review Chapter 11
Test	Chapter 11 Test

## Chapter 8: Stock Market

Section 8.1	<p>Business Organization</p> <ul style="list-style-type: none"> <li>Capital, sole proprietorship, profit, personally liable, partnership, techniques, observational and experimental studies, uses and misuses, corporation, shares of stock, shareholders, limited liability, private corporation, public corporation.</li> </ul>
Section 8.2	<p>Stock Market Data</p> <ul style="list-style-type: none"> <li>Stock market, trades, NYSE, NASDAQ, Sales in 100s, 52-week high, 52-week low, net change, after-hours trading.</li> </ul>
Section 8.3	<p>Stock Market Data Charts</p> <ul style="list-style-type: none"> <li>Stock chart, stock bar chart, candlestick chart.</li> </ul>
Section 8.4	<p>Trends in Stock Closing Prices</p> <ul style="list-style-type: none"> <li>Smoothing techniques, simple moving average (SMA), lagging indicators, fast moving average, slow moving average, crossover</li> </ul>
Section 8.5	<p>Stock Market Ticker</p> <ul style="list-style-type: none"> <li>Dow Jones Industrial Average (DJIA), ticker, stock symbol, and shares traded, ticker symbol, trading price, directional arrow, total value of a trade, uptick, downtick, money flow, positive and negative money flow, daily money flow, net money flow.</li> </ul>
Section 8.6	<p>Stock Transactions</p> <ul style="list-style-type: none"> <li>Portfolio, round lot, odd lot, gross capital gain, gross capital loss.</li> </ul>
Section 8.7	<p>Stock Transaction Fees</p> <ul style="list-style-type: none"> <li>Stockbroker, broker fee, commission, discount broker, full service broker, at the market, limit order, net proceeds</li> </ul>
Section 8.8	<p>Stock Splits</p> <ul style="list-style-type: none"> <li>Stock split, outstanding shares, market capitalization or market cap, traditional stock split, reverse stock split, penny stock, fractional part of a share</li> </ul>
Section 8.9	<p>Dividend Income</p>

	<ul style="list-style-type: none"> <li>• Dividend, dividend income, income stock, yield, growth stock, preferred stock, common stock, corporate bond, face value, matures</li> </ul>
Review and Test	Review and Test over Chapter 8