# Financial Literacy

# Overview

## What is financial literacy?

Financial literacy is the ability to understand and effectively use various financial skills, including personal financial management, budgeting, and investing.Financial decisions, be they related to asset building or debt management, require the capacity to do calculations, including some complex ones. Studies show that the level of numeracy among the population is very low. This has potential consequences for individuals and society because numeracy is linked to many financial decisions. As we shift responsibility from governments and employers onto individuals, it is increasingly important to find ways to equip people with the skills that are necessary to make savvy financial decisions.

As a future teacher of secondary mathematics, you can impact students’ ability to develop financial literacy skills, either explicitly through financial literacy education or implicitly through developing students’ numeracy skills.

## Module 1

## Earning Income, Spending, and Saving

Learning Objectives

* Identify and compare the sources of income
* Analyze and discuss the factors that influence wages and salaries
* Calculate federal taxes
* Create a monthly budget based on after-tax income
* Compare and contrast checking and savings accounts

Income is what is earned or received in a given period. There are various terms for income because there are various ways of earning income. Income from employment or self-employment is called wages or salary. Deposit accounts, like savings accounts, earn interest. You can also earn interest by lending money to entities, by investing in bonds. You can own a small portion of a corporation through stocks, which may entitle you (the shareholder) to dividend payments.

The two fundamental ways of earning income are by selling labor or investing. **Selling labor** means working, either for someone else or for yourself. Income from selling labor comes in the form of a paycheck. Total compensation may include other benefits, such as an employer’s contributions to an employee’s retirement account, health insurance, or life insurance. Earning income from labor is a familiar concept to most people. Labor is sold in the labor market.

**Investing** means taking excess cash and using it to generate a future benefit (return). Investments carry a certain amount of risk; that is, the investor bears the risk of losing some or all of the cash they invested. Most individuals invest in one (or more) of three ways. The first two ways are investing in equities or real property. Examples of investing in real property are purchasing land for a future home, antiques, coins or art. Investing in equities means buying stocks or portions of stocks, which the investor hopes will generate income in the form of dividends and increase in value over time. The third way individuals invest is by lending money to an entity that needs cash. For example, you may loan someone a certain amount of cash with the promise that it will be returned with interest. You can also loan money to corporations (corporate bonds), the U.S. government (treasury bonds), or state/local governments (municipal bonds), among others.

You can also put your excess cash into a savings account, which is a form of lending to banks. Savings accounts are insured by the U.S. government up to $250,000. This means that if the bank fails, you will not lose your money if it is less than $250,000. Savings accounts are useful because there is little to no risk of losing your money and it can be easily withdrawn for unexpected expenses. The trade-off for this convenience is that the interest you earn on your money is almost always less than what you could earn on other, riskier, investments. In general, riskier investments carry a greater return potential.

The table below shows the different ways to generate income (work, invest, or lend) by the asset that is offered in exchange. It also describes the form of the income (return/income), and the market on which the asset and income are exchanged (market). Examples are provided for each case.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Work | Invest in equities | Invest in bonds | Invest in real property |
| Trade | Sell labor | Invest capital | Invest capital | Invest capital |
| Return/Income | Wages or salary | Dividend or capital gain | Interest | Capital gain |
| Market | Labor market | Equity market | Credit market | Real property markets |
| Examples | Working as a car mechanic, teacher, or CEO of a company | Buying stocks, investing in equity funds | Purchasing a bond, putting money in a savings account | Buying a home, buying land, purchasing rare coins |

Table 1. Comparing income generation through work, investments, and lending.

## The Labor Market

In the labor market, the price of labor is the wage that an employer is willing to pay to the employee. The **employer** is the buyer in the labor market and the **employee** is the seller. For any given job, that price is determined by many factors. The work defines the education and skills required, and the price may reflect other factors, such as the job's status or desirability.

In turn, the skills needed, and the attractiveness of the work determine the **supply of labor** for that particular job—the number of people who could and would want to do the job. If the supply of labor is greater than the demand (i.e., if there are more people available to work at a job than are needed), then employers will have more hiring choices. That labor market is a buyers’ market, and the buyers can hire labor at lower prices (i.e., lower wages). If there are fewer people willing and able to do a job than there are jobs, then that labor market is a sellers’ market, and workers can sell their labor at higher prices. Similarly, the fewer skills required for the job, the more people there will be who are able to do it, creating a buyers’ market. The more skills required for a job, the fewer people there will be to do it, and the more leverage or advantage the seller has in negotiating a price. People pursue education to make themselves more highly skilled and therefore able to compete in a sellers’ labor market.

When you are starting your career, you are usually in a buyers’ market (unless you have some unusual gift or talent), if only because of your lack of experience. As your career progresses, you have more, and perhaps more varied, experience and presumably more skills, and so can sell your labor in more of a sellers’ market. You may change careers or jobs more than once, but you would hope to be doing so to your advantage, that is, always to be gaining bargaining power in the labor market.

Many people love their work for many reasons other than the pay, however, and choose it for those rewards. Labor is more than a source of income; it is also a source of many intellectual, social, and other personal gratifications. Your labor nevertheless is also a tradable commodity and has a market value. The personal rewards of your work may ultimately determine your choices, but you should be aware of the market value of those choices as you make them.

Your ability to sell labor and earn income reflects your situation in your labor market. Earlier in your career, you can expect to earn less than you will as your career progresses. Most people would like to reach a point where they do not have to sell labor at all. They hope to retire someday and pursue other hobbies or interests. They can retire if they have alternative sources of income—if they can earn income from lending and/or selling capital.

## The Capital Market

Capital markets exist so that businesses can raise capital. Businesses always need capital and have limited ways of raising it. Investors, on the other hand, have many more choices of how to invest their excess cash in the capital market, so the capital market is much more like a sellers’ market.

The market for any investment or asset may be a sellers’ or buyers’ market at any time, depending on economic conditions. For example, the market for real estate, modern art, sports memorabilia, or vintage cars can be a buyers’ market if there are more sellers than buyers. Typically, however, there is as much or more demand for capital as there is supply. The more capital you have to sell, the more ways you can sell it to more kinds of buyers, and the more those buyers may be willing to pay. At first, however, for most people, selling labor is their only practical source of income.

## Labor Market: Gross vs Net Income

In the US, withholding by employers of tax on wages is required by the federal, most state, and some local governments. Taxes withheld include federal income tax,Social Security and Medicare taxes, and state income tax. Other expenses may also be automatically withheld from each paycheck, such as retirement contributions or health insurance premiums. The wage or salary earned before any deductions or taxes is called **gross income**. Gross income minus taxes and other deductions is called **net income**, or take-home pay. When calculating income for budget planning, most individuals and families start with their net income, rather than gross income.

## Income Taxes

The amount of tax withheld from an individual’s paycheck is determined by the W-4 Form, which employees complete when they are hired. The form determines the amount of taxes that should be withheld based on the employee’s circumstances, such as number of children in the family or other considerations. Each year, individuals and families file a tax return, in which real taxes owed to the state and federal governments for the previous year are reconciled with the taxes that were withheld. Those who had more taxes withheld than they owed will qualify for a refund. Those who paid too little are required to make an additional payment to the federal or state government or both. Tax filers who significantly underpaid taxes throughout the year will owe a penalty. Although it is natural to prefer a refund of taxes, in practice having too much tax withheld amounts to providing the government an interest-free loan. Underpaying taxes just enough to avoid a penalty is preferable, especially if you invest the difference in take-home pay.

The Federal government calculates the amount of income taxes paid by taxpayers using what is called a **graduated tax bracket** system. (This is sometimes referred to as a progressive tax system.) This means taxpayers pay a certain percentage of their income in taxes based on the amount of taxable income they earn each year. Various income tax brackets are created based on taxable income ranges. The rate or percentage the taxpayers pay in taxes is different for each income tax bracket. The range of taxable incomes in each tax bracket varies according to whether the tax return is filed single, married-filing-jointly, married-filing-separately, or head-of-household (e.g., unmarried with children).

The income for a taxpayer is “split” into different ranges, with each range taxed at a specific rate. Every taxpayer, no matter how high their income, pays the lowest tax rate on the first *x* dollars of income (the value of *x* varies and can be determined with a current tax table). The portion of income in each subsequent tax bracket is taxed at the rate given in the tax table. The **marginal tax rate** is the tax rate you pay on your highest dollar of taxable income. Tax tables for the current year are easily found online.

The amount one pays in income taxes is not totally based on a taxpayer’s income alone. The standard deduction or itemized deductions play an important role in the income tax system. They are used to determine what a taxpayer’s taxable income will be. Taxpayers have a choice of using the standard deduction, which is the same for all taxpayers based on their filing status or itemizing their deductions. Itemizing deductions is beyond the scope of this module.

## Spending

A **budget** is a plan for allocating a person’s spendable net income to necessary and desired goods and services. The process is cyclical in nature but begins with creating estimates and expectations for financial obligations based on short-term and long-term goals. The second step is to collect data on actual expenditures and monitor spending. The third step is to analyze the data for variances of overspending or underspending and to reconcile differences within the budget. The process then repeats itself with more clarity from past experiences. If the actual results are better than expected because of underspending the surplus can be reallocated for a different purpose, on the flip side, if the actual results are worse than expected because of overspending then the current choices may have to be reevaluated to meet financial realities. To avoid stress and unwelcome change, it is always better to be conservative by underestimating the income and overestimate expenses.

You will also need to determine a period for budget review and adjustments. For example, setting monthly budgeting periods is common for many households. Income for salaried employees and expenses such as utilities are often chunked into monthly time periods. Regardless of the selected period, it is important to monitor and track spending consistently. Tracking and reconciling differences will assist you in making lifestyle choices. There is always uncertainty in predicting the future expenses. For example, what if the price of gas doubles during the middle of the year? What sacrifices or behavioral changes will need to be made for this unexpected change in the budget?

Many banks and institutions offer tools or apps for budgeting free of charge. While these can be useful, a basic budget can be made from a spreadsheet and adapted to your specific situation. The example below shows a list of income sources and expenditures and projected versus actual amounts.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Projected** | **Actual** | **Difference** |
| **Income** |  |  |  |
| **Spending** |  |  |  |
| Housing |  |  |  |
| Electricity |  |  |  |
| Phone |  |  |  |
| Waste Removal |  |  |  |
| Water and sewer |  |  |  |
| Car |  |  |  |
| Insurance |  |  |  |
| Food |  |  |  |
| Student loan |  |  |  |
| Entertainment |  |  |  |
| Other |  |  |  |

People can often improve their financial well-being by making well-informed spending decisions. Budgets are tools that help us project the outcomes of our financial choices. Utilizing a budget is a continuous process that allows us to assess the current situation and the effects of price and methods of payment. Careful analysis of financial statements and identifying budgeting variances of overspending or underspending is one way of mindfully assessing the effects of one’s actions. Unique needs, peers and advertising also affect spending trends. Advertising an item for no money down or low monthly payments (at high interest rates) may tempt the buyer. Ultimately, referring to a budget for the purchase of such items can assist in long-term planning and better money management. Economic factors and the time value of money and their dynamics also affect monetary outcomes.

A **comprehensive budget** is a budget that includes both an operating budget and a plan for money not required for daily and monthly expenses. An **operating budget** includes reoccurring income and expenses. Regular income, living expenses (utilities, food, housing, entertainment), and loan payments are anticipated as part of each budget cycle. Seasonal weather can cause utilities bills to fluctuate with higher bills in the hottest part of summer and the coldest part of winter. Car insurance may only be paid once every 6 months. Both are examples of recurring expenses that should be included in the operating budget. An annual budget review is necessary because some monthly bills fluctuate, and the timing of the cash flow may need attention.

Most people use checking accounts as their primary means of managing an operating budget and daily living expenses. Checking accounts are known for low interest, and if they do earn interest often a minimum balance is required. The advantage of checking accounts is the **liquidity,** which means readily available, on demand money in case a cash outflow is required. Many employers distribute paychecks with direct deposit. **Direct deposit** is timely and more efficient and potentially more secure than historical paper checks. Automatic payments or withdrawals may be scheduled to take care of expenses with the operating budget.

Banks typically provide statements (paper or online) that provide evidence of all cash activities. The primary purpose is to ensure that the bank's records are accurate, and the information is up to date. It is important that you **balance the checkbook** to compare your list of income and expenses with the banks. This helps prevent fraudulent activities.

Income that remains after obligations under the operating budget have been met should be allocated for one-time expenditures, savings, and investments. This money can be used for non-recurring expenditures. This includes durable household goods and repairs. For example, purchasing a washing machine and dryer for laundry or a couch and TV are one-time purchases. Likewise, remodeling or repairing a home are often expenses that are not part of the operating budget.

Budgeting choices should also reflect both short-term and long-term goals. An immediate goal might be to lower housing expenses by moving to a place with lower rent or getting a roommate, so that you can start a savings plan for purchasing a house with a down payment. The operating budget is based on the present, short-term goals. In contrast, the capital budget is based on long-term goals. Long-term goals such as saving for down payments or retirement are best reached by a progression of steady and even steps.

Saving

Money that is allocated not part of the operating budget should be saved or invested. This section will discuss savings leaving investing as a topic for a different module. Banks serve as an **intermediary** or “middleman” between the saver and an individual borrowing the money. Saving accounts are minimal risk and low interest with high liquidity. Since the failure of the banking system during the Great Depression era, bank deposits are federally insured for up to $250,000 through the FDIC (Federal Deposit Insurance Corporation). Even more recently, bank money market accounts are also insured since the monetary crisis of 2009. Banks offer diverse ways to save money until you are ready to consume it. For example, quick internet search provided this as an example for saving accounts offered in July of 2024.

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of Account** | **Opening Deposit** | **Minimum Balance Required for a Free Account** | **Annual Percentage Yield** |
| Savings | $50 | $300 | 0.01% |
| Money Market Account | $50 | $1000 | 4.5% varies based on monthly balances |
| Certificate of Deposit (CDs) | $1000 | $1000 (3-month commitment) | 4.5% |

The chart contains three distinct types of savings accounts: general (savings), money market accounts, and certificates of deposit. The general savings account offers an extremely low annual percentage yield but offers complete liquidity on demand. The money market account offers a higher yield, but the minimal balance requirements enforced by fees reduce liquidity. Certificates of deposit offer high yield for bank savings accounts, but time commitments enforced by withdrawal penalties again reduce liquidity.

Savings account choices should reflect your liquidity goals and economic factors. What are your personal liquidity needs? Do you need the money in 3 months, 9 months, 1 year, 5 years, etc.? If you can give up liquidity, then you should consider economic changes. If interest rates are expected to rise, then short-term maturities are better so that you can reinvest at higher rates. In contrast, if interest rates are expected to fall long-term investments with time requirement may produce higher returns.

Savings accounts should be purposeful. Are you saving for a rainy day? This adage points to creating an emergency fund. An **emergency fund** is a savings account for unfortunate and unexpected expenses. It is money that is set aside for unforeseen medical expenses, repairs to home and car, and unemployment. Having an emergency fund creates a financial buffer so that you do not have to seek loans that are potentially high interest or rely on credit cards. How much money should an emergency fund have? The right amount varies based on circumstances, but a general rule of thumb is at least three to six months' worth of living expense. You can calculate this by looking at your operating budget and focusing on necessities. You may be able to cut back on entertainment, but not on the rent or utilities.

A high yield saving account is recommended for an emergency fund for two reasons. First the money is earning interest and second you need easy, immediate access to the funds. The second is more important than the first. Investments discussed later in this module may yield better long-term returns, but you give up liquidity. Opening a separate saving account from the operating budget can help stay focused on building an emergency fund or saving for a different purpose. Start with a small amount of money, $1000 or less, then add money to the savings account gradually through small monthly contributions. Even better, make the monthly contributions automatic through payroll deductions. Some employers will allow you to divide your paycheck between multiple accounts.

## Quiz Questions

1. A redditor posted a picture of an old 1952 gold Gibson Les Paul that he acquired at a garage sale for $200. The guitar was useable but a little worn. Nevertheless, commenters claimed that the guitar was worth $30,000. Which type of market exists for the Gibson Les Paul gold guitar that explains its high value?
   1. Seller’s market \*Answer
   2. Buyer’s market
2. True or false: Gross income is almost always greater than net income. (True)
3. Use the 2024 tax table for single tax filers to calculate the total federal tax owed on an annual income of $1,000,000.
   1. $370,000
   2. $357,813
   3. $328,188 \*Answer
   4. $235,000
4. True/ False. The phrase *living within your means* suggests that sound financial advice is to spend less than your income. \*Answer: True
5. Select the item that belongs to a capital budget.
6. Monthly fees to the gym
7. A/C repair for an automobile \*answer
8. Car insurance that is due once every three months
9. Lunch at local restaurant
10. Select the item that belongs to an operating budget.
11. The purchase of a new couch
12. Student loan payments \*answer
13. Saving for a down payment on a new car
14. An emergency trip to the vet for your dog’s broken leg
15. What is the purpose of an emergency fund?
16. To provide a financial buffer in times of distress \*answer
17. To provide unlimited spending during an emergency situation
18. To provide loan to others in an emergency situation
19. To provide flexibility for quitting a job
20. How much money should be in an emergency fund?
21. One months' worth of operating expenses
22. One months’ worth of income
23. Three to six months’ worth of operating expenses \*answer
24. Three to six months’ worth of income

## Preliminary Research for Assignments throughout these modules

You will soon start your career as an educator. As part of this, you will be trading your labor for a monetary income. In preparation for assignments that accompany these modules, pretend you will be teaching at the secondary school of your choice. Research the expected salary you will receive your first full calendar year of teaching and the general housing costs nearby. You should assume you will be renting, but you can focus on a particular style of rental (house, apartment, etc.) if it is important to you. You can use a website like [Zillow.com](https://www.zillow.com/) to determine rental prices. Choose a particular rental that you can envision yourself living in.

Fill in the information below. Do not overthink; you will have the opportunity to modify your choices later.

For the purpose of these assignments, I will assume I am teaching at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ School.

My income for the first full calendar year is \_$\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Optional) I will share rental costs with \_\_(number)\_\_\_ other roommate(s).

The rental I have selected can be found at this URL link: \_\_ (copy and paste) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Module 1 Assignment

Assignment: Find the most recent tax table for your taxpayer status: <https://www.irs.gov/filing/federal-income-tax-rates-and-brackets>. If you are unsure about your filing status, you can go here: <https://www.irs.gov/help/ita/what-is-my-filing-status>. Next, find the standard deduction for your taxpayer status at nerdwallet.com or forbes.com.

1. Use the tax table to create a piecewise function that calculates the tax, *T*(*x*)*,* for a given income, *x* for your filing status. Note that this is not as simple as calculating a percentage of taxable income. Include a copy of the tax table you used.
2. Reduce your income by the standard deduction for your filing status, then use your piecewise equation from part *a* to calculate your total income tax for your first full calendar year of teaching.
3. Calculate the total federal tax you will owe for your first full calendar year of teaching.
   1. You calculated your annual income tax in part *b*. You are also liable for Medicare and Social Security taxes, both of which are automatically withheld from your paycheck. The current tax rate for Social Security is 6.2% and 1.45% for Medicare (your school district will contribute an additional 6.2% and 1.45%, respectively, on your behalf). Wage base limits will not apply to you.
   2. Calculate your Social Security and Medicare annual taxes based on your income (do not apply the standard deduction to your income for this). Show your calculations.
   3. Sum your income tax, Social Security tax, and Medicare tax. This is your total federal income tax. Show your calculations.
4. As a resident of Georgia, you will also owe state income taxes. Go to <https://dor.georgia.gov/taxes/taxes-individuals> and download Form 500-EZ Individual Income Tax Return for the most recent year. Complete the fillable PDF form as if you are filing your Georgia state income taxes after your first year of teaching. *Do NOT enter your social security number in those fields.* Most likely, your “Adjusted Gross Income from Federal 1040” will simply be the income you estimated for your first year of teaching. When completing the form, assume that the state withheld 5% of the income you estimated for your first year of teaching.
5. What is your annual after-tax income after deducting all federal and state taxes?
6. Use the after-tax income to create a monthly budget using UNG’s budgeting worksheet in Excel. Adapt the spreadsheet to reflect your future situation. You should delete or ignore sections that do not apply to you. For example, you may not have a pet. Likewise, you may have expenses that are not explicitly listed such as a Christmas and birthday gift allotment or a vacation fund. <https://ung.edu/dean-of-students/financial-resources.php>
7. Where do you keep your money for your operating budget? Do you have a savings account? Compare checking and saving accounts from two sources. Justify the ones you have selected as most appropriate for your situation.

## Vocabulary

Definitions from [Oxford Languages](https://languages.oup.com/google-dictionary-en) and [Wikipedia](https://en.wikipedia.org/wiki/Main_Page)

* **Balance the checkbook:** a comparison of transactions with the bank
* **Budget:** a calculation plan for anticipated resources and spending to evaluate and achieve objectives.
* **Buyers’ Market:** an economic situation in which goods or shares are plentiful and buyers can keep prices down
* **Capital Market:** the part of a financial system concerned with raising capital by dealing in shares, bonds, and other long-term investments.
* **Capital:** wealth in the form of money or other assets owned by a person or organization or available or contributed for a particular purpose such as starting a company or investing.
* **Comprehensive budget:** a budget that includes both an operating and capital budget
* **Credit Market** (also known as bond market): a financial market where people buy and sell debt securities, usually in the form of bonds.
* **Deductions:** an amount that is or may be deducted from something, especially from taxable income or tax to be paid.
* **Direct Deposit:** a deposit of money by the payer directly into the payee’s bank account.
* **Emergency fund:** a savings account for unfortunate and unexpected expenses.
* **Free Cash Flow:** the portion of cash that can be extracted without disruption to the operations budget
* **Dividend Payments** a distribution of profits by a corporation to its shareholders, usually in the form of cash.
* **Income Tax Brackets:** the divisions at which tax rates change in a progressive tax system.
* **Income**: Earnings for a given period. In the case of an individual or household, this is generally cash from wages, interest, dividends, or assets (such as rental income from real estate) that can be used for consumption or saved.
* **Intermediary:** a middleman between lender and borrower
* **Labor Market:** the availability of employment and labor, in terms of supply and demand.
* **Liquidity:** the access to money and assets
* **Market Value:** the amount for which something can be sold on a given market.
* **Operating Budget:** a plan for income and expenditures that are routine.
* **Return:** a profit on an investment
* **Sellers’ Market:** an economic situation in which goods are scarce and sellers can keep prices high.
* **Standard Deduction:** a dollar amount that non-itemizers may subtract from their income before income tax is applied.
* **Stocks:** a share in the ownership of a company.
* **Tax Return:** a form on which a taxpayer makes an annual statement of income and personal circumstances, used by the tax authorities to assess liability for tax
* **Tax Table (also known as rate table):** a chart that helps United States taxpayers determine their federal income tax for a particular year.
* **Taxable Income:** refers to the base upon which an income tax system imposes tax.
* **Tradable Commodity:** an economic good, usually a resource like oil or oranges, that can be traded.
* **W-4 Form:** an Internal Revenue Service (IRS) tax form completed by an employee in the United States to indicate his or her tax situation (exemptions, status, etc.) to the employer.
* **Withholding:** income tax paid to the government by the payer rather than by the recipient. The tax is thus withheld or deducted from the income due to the recipient.

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