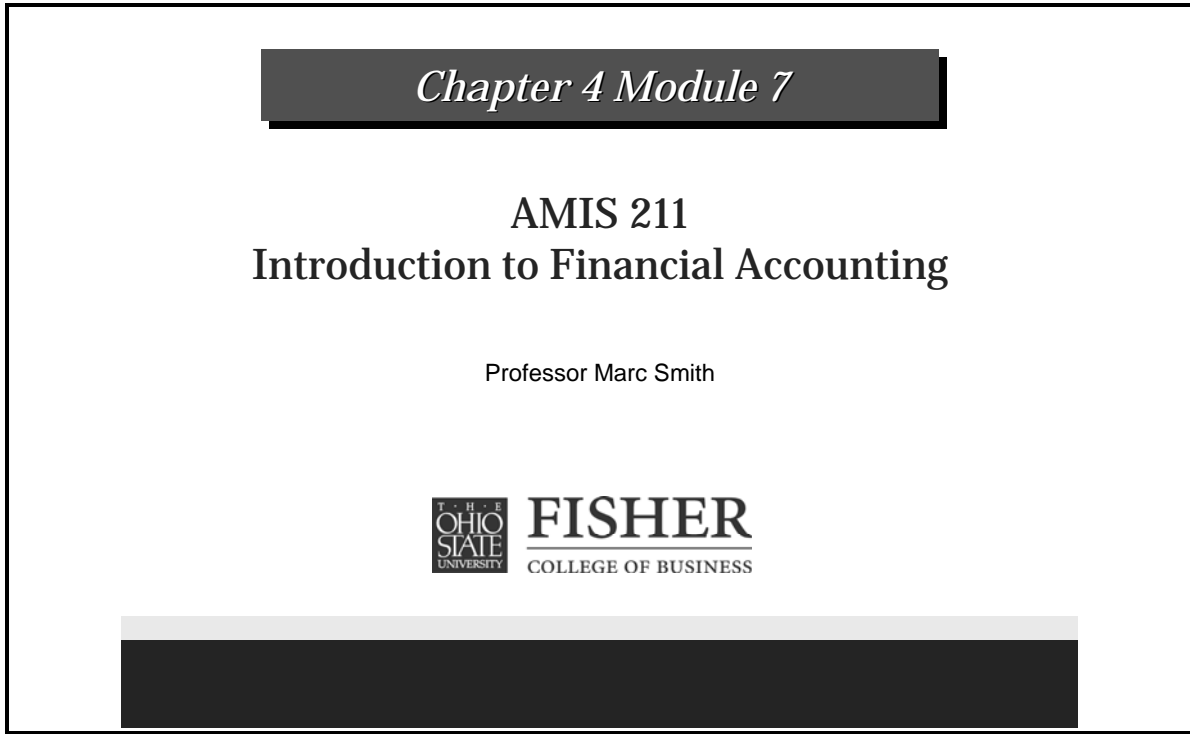


Chapter 4, Module 7 - Interest

Slide 1

A rectangular box with a black border containing the slide content. At the top, a dark grey horizontal bar contains the text "Chapter 4 Module 7" in white italicized font. Below this, the text "AMIS 211" and "Introduction to Financial Accounting" is centered in a bold, black, serif font. Underneath, "Professor Marc Smith" is centered in a smaller, black, sans-serif font. The logo for The Ohio State University Fisher College of Business is centered, featuring a square with "THE OHIO STATE UNIVERSITY" and the word "FISHER" in a large serif font above "COLLEGE OF BUSINESS". At the bottom of the box, there are two horizontal bars: a light grey one on top and a dark grey one below it.

Hi everyone. Welcome back.

Let's do one more example of a specific type of adjustment.

And, in this module, let's talk a little bit about Interest.

Let's go ahead and jump right into it.

And, let's go to the next slide.

Slide 2

Chapter 4 Module 7: Interest

Interest comes about when a company either borrows money and must repay it with interest (*interest expense*) or when a company lends money to someone and is to be repaid with interest (*interest revenue*)

To Calculate Interest:

$$\text{Interest} = \text{Principal} \times \text{Rate} \times \text{Time}$$

Interest comes about when a company, either: borrows money from say a Bank or some another Creditor and they have to repay it with interest; or it comes about if the company lends money—say maybe it lends money to its Employees or it lends money to a Customer--and then, those folks have to pay the company back with interest.

So, we are either going to have Interest Expense representing interest we are going to have to pay or we are going to have Interest Revenue representing interest that we will eventually collect from people we have made loans to.

Regardless of whether it is Interest Expense or Interest Revenue; one of the nice things here: the calculation is the same.

The Interest calculation is a basic calculation:

It is = Principle (P) times (x) Rate (R) times Time (T)—PRT.

It is a straightforward calculation. But, I think there is one place that we could run into some problems.

Let's go ahead to the next slide.

Slide 3

Chapter 4 Module 7: Interest

Interest = Principal x Rate x Time

3 Key Points:

- 1. The rate is always expressed as an annual rate.**
- 2. The time is ALWAYS a fraction ALWAYS over 12 (because there are 12 months in one year). The numerator represents the number of months that have elapsed, or been 'used up', in the current year.**
- 3. In this chapter, we assume all interest is repaid at the end of the loan rather than have monthly payments that include interest.**

And, let's talk a little more about this Interest Formula.

And, there it is at the top of the slide (Slide 3).

Interest is (=) Principal (P) times (x) Rate (R) times Time (T).

And, I want you to note three (3) key points about the Interest we are going to talk about in this particular chapter.

Key point #1: The "R" or the Rate will always be given to you as an Annual Interest Rate. So, the Rate they tell you is always meant to be an Annual Interest Rate.

Key point #2:--and this is the one that is most important—this is the one that you might want to circle, or star, or highlight, or whatever in your notes.

Key point #2: the Time Fraction—the Time Factor up there in the P-R-T. The Time Factor is always a fraction and it is *always* over 12—12 months in one year.

So, that PRT—the “T” part—the “Time” is always a fraction and it is always over 12 in every case. So, just take it as a given. It is always over 12.

The numerator represents the number of months that have expired in the current period. Think about it as: the number of months used up in the Current Year.

We will see a little more about that numerator when we do a couple of examples.

Key point #1: The Interest Rate is always expressed as an Annual Rate.

Key point #2: The Time Factor is always a fraction. It is always over 12 for 12 months in the year. The numerator represents the number of months expired or used up in the Current Year.

Key point #3:

As we just get our hands around Interest, and learn a little bit as to what it is all about; we make a simplifying assumption.

In this chapter, we assume that all interest is repaid at the end of the loan.

In later chapters, we will relax that assumption.

If you want to think about a car loan, where you make monthly payments; we will look at those sorts of things a little bit later in the quarter.

But, for now, as we are just learning Interest and trying to get our hands around it and understand how to deal with it, we will assume all interest is paid at the end of the loan—nothing is paid until that point.

You want to be comfortable with these three (3) key points here on this slide (Slide 3).

You also want to be comfortable with:

Interest is equal (=) to Principle (P) times (x) Rate (R) times (x) Time: (PRT).

That said; let's go ahead to the next slide.

Slide 4

<i>Chapter 4 Module 7: Example #1</i>						
Case H:						
May 1, 1999						
Cash	50,000					
Notes Payable	50,000					
Cash	=			=	Asset	
Notes Payable	=			=	Liability	
<u>Rev</u>	-	<u>Exp</u>	=	<u>NI</u>	A	=
NE		NE		NE	↑50,000	=
					↑50,000	+
						=
						E
						NE

And, let's go back to our Web site problem: Example #1.

And, let's look at Case H.

Here is what it says:

“On May 1st, 1999, XYZ Company borrowed \$50,000 on a 12% 9-Month Note Payable.”

Let's start:

Before we even worry about the adjustment—before we worry about interest, let's start with the basic Journal Entry that would be recorded on May 1st to record the borrowing of the money.

Again, I think this is something we should all be able to do by now.

The Entry is: debit: Cash to reflect the fact that we now have \$50,000 in our hands; credit our Liability: Notes Payable.

And, as we all know: Cash is an Asset; Notes Payable—anything that says Payable—is a Liability.

So, we have an Asset and a Liability affected by this transaction.

How does that impact the financial statements?

There is No Effect (NE) on the Income Statement—there are no Revenues or Expenses.

Assets are going up and Liabilities are going up because we borrowed the cash and now we have to pay it back later.

Okay. We can do that.

Let's go to the next slide.

Slide 5

Chapter 4 Module 7: Example #1**Case H:****Interest for 1999:****Interest = Principal x Rate x Time****Interest = 50,000 x .12 x 8/12****Interest = \$4,000**

And let's figure out the Interest.

Because: by the end of the year, we are going to have to record Interest related to this Note Payable.

Remember: Interest is (=) Principle (P) times (x) Rate (R) times (x) Time (PRT).

And, I think in this example, most of that will be fairly easy.

The Principle borrowed: \$50,000. The Rate that we are paying: 12%. Both are given.

Look here at the slide (Slide 5).

The Time Factor is 8/12ths.

If you press the buttons, you can figure out the Interest for 1999 to be \$4,000.

Now, my question to you is this:

Why 8/12ths?

The bottom part should be easy. The denominator of this fraction is always 12. But why is “8” in the numerator?

It is a 9-Month Note. Why is the numerator 8?

Are we just going to forget about that last month? Are we not going to owe interest for that last month?

The reason it is 8 is: that is the number of months that have expired in 1999.

Go back to counting on your fingers. 1) May-; 2) June-; 3) July-; 4) August-; 5) September-; 6) October-; 7) November; 8) December. From the date we borrowed the money to the end of the year: 8 months have gone by.

What about that last month?

We are going to still have to deal with that. But, that will be Interest of the next year—Interest for 2000—because: that month will occur in the next accounting year.

I cannot tell you how many folks make this mistake on 211 Exams when they ask about Interest. They see a 9-Month Note and they want to throw a 9 somewhere in that fraction. And, that is wrong!

The denominator is always 12.

The numerator—in this case, is 8, because that is the number of months that have been used up, or expired, from the time we borrowed the money until the end of the year.

The Interest for 1999 is \$4,000.

Now that we know that, let’s go to the next slide.

Slide 6

Chapter 4 Module 7: Example #1**Case H:****December 31, 1999 (AJE)**

Interest Expense 4,000
Interest Payable 4,000

Interest Expense = Expense
Interest Payable = Liability

Rev	-	Exp	=	NI	A	=	L	+	E
NE		↑4,000		↓4,000	NE		↑4,000		↓4,000

And, let's make our Adjusting Entry (AJE).

This will be Interest Expense. It is money that we borrowed and we are going to have to repay it back with interest.

The Adjusting Entry (AJE):

You debit the Interest Expense to record the Expense.

You credit: Interest Payable.

We now owe the Bank \$4,000. We are not going to pay anything until the end of the loan—one more month—at the end of the next month. But, as of December 31, 1999, we owe the Bank 4000 bucks (\$4,000).

So, we need to put that Liability on our Balance Sheet reflecting the fact that: we now have this Liability.

Interest Expense is an Expense account. Interest Payable—we just said—is a Liability account.

This is the Adjusting Entry (AJE).

How does it effect the financial statements?

We have an Expense. Expenses go up. That causes Net Income to go down. As soon as Net Income goes down, so does Equity. And, once Equity goes down, we have to balance it out.

And, we can balance out the Balance Sheet by increasing our Liabilities—the Interest Payable. We are now liable to pay the Bank \$4,000 as of this date.

The Balance Sheet balances.

There is No Effect (NE) on the Asset side.

The Liability plus (+) Equity side adds to No Effect (NE).

That is Interest Expense.

Let's go to the next slide.

Slide 7

Chapter 4 Module 7: Example #1**Case I:****September 30, 1999**

Notes Receivable	40,000	
Cash		40,000

Notes Receivable	=	Asset
Cash	=	Asset

Rev	-	Exp	=	NI	A	=	L	+	E
NE		NE		NE	NE		NE		NE

And, let's look at our last Case—an example of Interest Revenue.

Here is what it says. Case I:

“On September 30th of 1999, XYZ Company lent a Customer \$40,000 on a 10% 6-Month Note Receivable.”

Before we worry about the Interest, let's just record the basic Journal Entry at September 30th.

This one should not be too, too bad.

We will debit our Notes Receivable.

And, we will credit: Cash. We need to reflect the fact that we have given up \$40,000 of cash. Cash has gone out.

And, we are now owed that money in 6 months. We have what is called a Note Receivable. It represents loans that we have made.

Notes Receivable—or any Receivable—is an Asset. Cash is, of course, an Asset.

Which means: the overall effect on our financial statements is nothing.

There is no change anywhere. Because: you have one Asset going up and the other Asset going down—it “nets” to No Effect (NE).

But, we know, we have to record the Interest at the end of the year because we have earned some Interest from the date of the loan to year-end.

Let’s go to the next slide.

Slide 8

Chapter 4 Module 7: Example #1

Case I:

Interest for 1999:

Interest = Principal x Rate x Time

Interest = 40,000 x .10 x 3/12

Interest = \$1,000

And, let’s do that.

Remember to calculate Interest: it is Principle (P) times (x) Rate (R) times (x) Time—PRT.

I am not going to show it to you yet.

Let's sort of talk it through.

The Principle (P) in this case is \$40,000—that is how much we lent.

The Rate (R) is also given as 10%.

The Time (T) we know is a fraction. And, it is a fraction over...what number?

Say it out loud to yourself.

It is over 12.

What will the numerator be in this case?

It won't be 6 even though it is a 6-Month Note!

It will only be 3.

We lent the money on September 30th. So, the months that have expired since then are: 1) October-; 2) November-; 3) December.

So, it will be just 3 over (/) 12 or Interest of \$1,000.

The other 3 months of the Note—that will be Interest Revenue of next year because that is when those months will expire.

There is a total of \$1000 of Interest Earned as of Year-End.

Go to the next slide.

Slide 9

Chapter 4 Module 7: Example #1**Case H:****December 31, 1999 (AJE)**

Interest Receivable 1,000
Interest Revenue 1,000

Interest Receivable = Asset
Interest Revenue = Revenue

Rev	-	Exp	=	NI	A	=	L	+	E
↑1,000		NE		↑1,000	↑1,000		NE		↑1,000

And, let's make the Adjusting Entry (AJE).

To record Interest Revenue:

We will debit Interest Receivable. It reflects that somebody now owes us \$1,000.

And, we will credit our Interest Revenue to reflect the fact that it has now been earned. We have to record the Revenue.

We know that an Interest Receivable is an Asset—anything that says Receivable is an Asset.

Interest Revenue is a Revenue account.

So, to determine the effect of this Adjusting Entry (AJE) on the financial statements:

We know our Revenues are going to go up. We have earned \$1,000 of Revenue. An increase in Revenues causes an increase in Net Income. And,

of course, when Net Income goes up, so does Equity; specifically Retained Earnings.

I'll bet you are getting tired of hearing that. But, it is something we don't ever get away from. I just want to keep pounding that and pounding that and pounding that.

The effect on Net Income is the effect on Equity—specifically, Retained Earnings.

To balance the Balance Sheet, we also have an increase in our Assets. This Interest Receivable is an Asset. It represents money that is now owed to us.

Very good.

Let's go to the next slide.

Slide 10

<i>Chapter 4 Module 7: Interest</i>	
Question	- Is interest an example of an accrual or a deferral?
Answer	- Accrual. The interest revenue or expense is recorded first. The cash will either be paid or received later at the end of the loan term.

And, I would like to end this module with the same question that we ended the previous module with.

Is Interest considered a Deferral or an Accrual?

See if you can answer it to yourself.

Interest is considered an Accrual.

The reason being: we made the Adjusting Entry (AJE) first. We recorded the Revenue or the Expense first; and then, at some future point in time—in case H, one month into the next year—in case I, three months into the next year—we would either pay the cash to the Bank or receive the cash from our Customer.

The point being: the action happened first—the Revenue or Expense is recorded first; the exchange of cash occurs later.

That is the definition of an Accrual.