**FN1140 – Introduction to Finance**

**Annuities**

***Although the name may not be familiar we deal with annuities every day in the world of finance. If you have ever had a loan that you paid off over time, you have dealt with an annuity***

Simply put, Annuities are a series of EQUAL payments that are made at periodic intervals over time.

All annuities have these essential ingredients – in our examples, you will have information about all of these except for one – which you will learn how to find:

* **Future Value (FV) of a series of payments**
* **Present Value (PV) of a series of payments**
* **A Payment Amount (PMT)**
* **An Annual Rate of Interest**
* **A Conversion Period (the number of compounds per year)**
* **A Payment Period**
* **A Payment Interval (time between payments)**
* **An indication of the payment being made at either the END OF the payment period or BEGINNING OF the payment period**

There are several types of annuity calculations used – and the type used depends on the type of annuity.

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| **Type of Annuity** | **Use when** | **Formula** |
| **Chapter 11**  Ordinary Simple Annuity | Conversion Period and Payment Period are the same interval. Payment made at END of payment Period | FVn = PMT ( (1+i)n – 1) / i )  PVn = PMT ( (1-(1+i)-n) / i ) |
| **Chapter 12**  Ordinary General Annuity | Conversion Period and Payment Period are **not** the same interval. Payment made at END of payment Period | FVG = PMT ((1+P)n – 1)/P) where P=(1+i)C - 1  PVG = PMT ((1-(1+P)-n)/P) where P=(1+i)C – 1  where  C = (# compounds/yr) / (# pmt prd/yr) |

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| **Chapter 13**  Ordinary Simple Annuity Due | Conversion Period and Payment Period are the same interval – Payment made at BEGINNING of payment Period | FVnDUE = PMT ((1+i)n – 1)/i)\*(1+i)  PVnDUE = PMT (1-(1+i)-n)/i)\*(1+i) |
| **Chapter 13**  Ordinary General Annuity Due | Conversion Period and Payment Period are not the same interval. Payment made at BEGINNING of payment Period | FVgDUE = PMT ((1+p)n – 1)/p)\*(1+p)  PVgDUE = PMT (1-(1+p)-n)/p)\*(1+p)  where P=(1+i)C – 1  where C = (# Compounds/yr) / (# pmt prd/yr) |
| **Chapter 13**  Ordinary Simple Perpetuity | The payment begins at a fixed date and then continues indefinitely, Conversion Period and Payment Period are the same interval – Payment made at BEGINNING of payment Period | PVn = PMT / i |
| **Chapter 13**  Ordinary General Perpetuity | The payment begins at a fixed date and then continues indefinitely, Conversion Period and Payment Period are NOT the same interval – Payment made at BEGINNING of payment Period | PV = PMT / i |

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| Ch 11 |  |  |
| Ch 12 | P440 Ex12.1 p1-4  P443 ex12.2 p1-4 |  |

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**ASSIGNMENT #2**

**Due Nov. 27**

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| **Chapters Covered** | **Assignment Questions** |
| Chapter 9 – Compound interest | Ex. 9.2 p331 #9 A debt of…  Ex 9.4 p341 #B1 Determine the &  #B7 A non-interest |
| Chapter 11 – Ordinary Simple Annuities | Ex 11.2 p403 #7 Joan  Ex 11.3 p412 #7 Harry |
| Chapter 12 – Ordinary General Annuities | Ex 12.1 p440 #8 Ms. Cook  Ex 12.2 p443 #9 Dale |
| Chapter 13 – Annuities Due & Perpetuties | Ex 13.2 p484 #7 Teachers Credit  Ex 13.3 p493 #7 Samantha  Ex 13.5 p508 #5 The Municipal |