

## Course 300 - Fundamentals of Mass Appraisal



This course introduces mass appraisal and is a prerequisite for the 300 series of courses offered by IAAO. This course will cover:

- The similarities and differences between single-property appraisal and mass appraisal
- The components and processes of a mass appraisal system including data requirements and analysis
- An introduction to statistics
- How to develop and use assessment ratio studies in mass appraisal based upon the 2007 IAAO Standards on Ratio Studies
- The use of the Cost Approach, Sales Comparison Approach, and Income Approach to value models in mass appraisal
- Aspects to consider in selecting mass appraisal system
- CAMA management issues to be addressed in mass appraisal



## Objectives

On completion of Chapter 1, the student should be able to:

- Understand mass appraisal and list differences and similarities between mass and single property appraisal.
- Trace the beginning and evolution of mass appraisal.
- Understand the features of mass appraisal.
- Define a model and explain the objectives of mass appraisal models.
- List basic supply and demand factors in real estate markets.
- Understand the basic structures of cost, sales comparison, and income models.
- Distinguish between model specification and calibration.
- Graph supply and demand curves.

On completion of Chapter 2, the student should be able to:

- Identify and describe the three components that make up the Property Tax System.
- Identify and describe the four components of a Computer Assisted Mass Appraisal System (CAMA).
- Describe the four basic files in a Computer Assisted Mass Appraisal System (CAMA).
- Identify the ten steps in reappraisal.
- Distinguish between batch and on-line processing.
- Identify and describe the steps in a reappraisal involving a new CAMA system.
- Understand the types of property characteristics and how to collect data.

On completion of Chapter 3, the student should be able to:

- Understand why assessment data must be accurate.
- Know several methods for evaluating data accuracy.
- Distinguish between continuous, discrete, and binary data, giving examples of each.
- Know several factors important in the design of property record cards.
- Describe the type of training data collectors should receive.
- Know several elements of good protocol in field data collection.
- Estimate the number of staff positions required for a reappraisal given:
  - Number of parcels to be worked
  - Production rate per day
  - Time available
- Estimate the time required for data collection effort given:
  - Number of parcels to be worked
  - Available staff
  - Production rate per day



On completion of Chapter 4, the student should be able to:

- Array data in order of magnitude.
- Develop and interpret frequency distributions.
- Develop a graphical representation of a frequency distribution.
- Calculate common measures of central tendency.
- Calculate common measures of dispersion.
- Use cross-tabulations to show the distribution of values for two binary or discrete variables.
- Develop scatter diagrams showing the relationship between two continuous variables.
- Use a polygon (line chart) to show several variables simultaneously.
- Use a polygon to show the same variable for different strata.
- Make three-way variable comparisons using contingency tables.

On completion of Chapter 5, the student should be able to:

- Define the purpose of ratio studies.
- List three means of obtaining sales information from buyers and sellers and the advantages and disadvantages of each.
- Describe sales that are commonly excluded from ratio studies.
- Explain two methods of adjusting sales for personal property and special financing.
- Describe an array, frequency distribution, line chart, (polygon) bar chart, (histogram) and scatter diagram and understand their use in ratio studies.
- Calculate the median, mean, and weighted mean for sales ratio or other data.
- Calculate the coefficient of dispersion (COD) and coefficient of variation (COV).
- Explain the coefficient of dispersion (COD).
- Explain the relationship between the coefficient of variation and a normal curve.
- Distinguish between horizontal and vertical equity and explain how each is measured.
- Know performance standards contained in the IAAO Standard on Ratio Studies.

On completion of Chapter 6, the student should be able to:

- Determine the structure of the cost approach in mass appraisal.
- Distinguish between reproduction and replacement cost.
- List the basic steps in applying the cost approach.
- List sources of tables for the cost approach.
- Compute and apply time and location adjustments in the cost approach.
- Describe the quantity survey method of cost estimation and its role in mass appraisal.
- Describe the unit-in-place method of cost estimation and its role in mass appraisal.
- Describe the comparative unit method of cost estimation and its role in mass appraisal.
- Describe the trended original cost method of cost estimation and its role in mass appraisal.
- List desirable features of cost manuals.



On completion of Chapter 7, the student should be able to:

- Define the structure of the sales comparison approach as applied in single property appraisal.
- Define additive, multiplicative, and hybrid model structures used in mass appraisal.
- Describe the three general approaches to treating location in sales comparison models.
- Explain how cluster analysis can be used in mass appraisal.
- List four steps in finding benchmark per unit values in the sales comparison approach.
- Explain how to evaluate the reliability of benchmark per unit values produced by per unit value analysis.
- Describe multiple regression analysis (MRA) and its role in mass appraisal.
- List strengths and limitations of MRA in mass appraisal.
- Describe adaptive estimation procedure (AEP) and its similarities.
- Describe automated sales comparison analysis and its roll, advantages, and limitations in mass appraisal.
- Describe global response surface analysis and its use in mass appraisal.

On completion of Chapter 8, the student should be able to:

- Define the basic structure of the income approach.
- Describe the two basic approaches to developing gross income multipliers and overall rates in mass appraisal applications of the income approach.
- Estimate vacancy ratios.
- Describe how an appraiser can evaluate the reliability of market rents, expense ratios, income multipliers, on overall rates developed through stratification.
- Identify the dependent variable in a gross rent model, expense ratio model, gross rent multiplier model, and overall rate model.
- Identify important dependent variables to include in gross rent expense ratio, gross rent multiplier, and overall rate models.
- List allowable expenses for property tax purposes and explain proper treatment of property taxes in income models.



Topic	Time Table	Day Covered
Chapter 1		
Orientation	15 Minutes	Monday AM
General Appraisal Process Common to Mass/Single Property	15 Minutes	Monday AM
Evolution of Mass Appraisal	10 Minutes	Monday AM
Features of Mass Appraisal	10 Minutes	Monday AM
Models and Mass Appraisal	20 Minutes	Monday AM
Economic Basis of Model Building	20 Minutes	Monday AM
Model Structure for the Three Approaches	25 Minutes	Monday AM
Basic Steps in Model Building	30 Minutes	Monday AM
Calibration of the Three Approaches	30 Minutes	Monday AM
Simple General Cost Model	20 Minutes	Monday AM
Chapter 2		
Components of a Property Tax System	20 Minutes	Monday AM
Components of a Mass Appraisal System	20 Minutes	Monday PM
Requirements of a Mass Appraisal System	20 Minutes	Monday PM
Ten Steps in Reappraisal	45 Minutes	Monday PM
CAMA System	30 Minutes	Monday PM
Property Characteristics Data	45 Minutes	Monday PM
Chapter 3		
Determining Data Needs	30 Minutes	Monday PM
Describing and Coding Property Characteristics	30 Minutes	Monday PM
Property Record Forms	20 Minutes	Tuesday AM
Designing Data Inventory Manuals	20 Minutes	Tuesday AM
Field Data Collection	20 Minutes	Tuesday AM
Data Edits	30 Minutes	Tuesday AM
Data Conversion	30 Minutes	Tuesday AM
Chapter 4		
Single Variable Analysis	75 Minutes	Tuesday AM
Comparing Two Variables	75 Minutes	Tuesday PM
Three-way Comparisons	30 Minutes	Tuesday PM



Chapter 5		
Purpose and Uses of Ratio Studies	30 Minutes	Tuesday PM
Sales Data	45 Minutes	Tuesday PM
Displaying Ratio Data	45 Minutes	Tuesday PM
Sales Ratio Statistics	180 Minutes	Tuesday PM/Wednesday AM
Equity Among Property Groups	30 Minutes	Wednesday AM
Performance Standards	30 Minutes	Wednesday AM
Chapter 6		
Structure of the Cost Approach	60 Minutes	Wednesday AM/PM
Types of Costs	15 Minutes	Wednesday PM
Steps in the Cost Approach	30 Minutes	Wednesday PM
Cost Tables and Schedules	45 Minutes	Wednesday PM
Methods of Estimating Costs	30 Minutes	Wednesday PM
Cost Manuals	30 Minutes	Wednesday PM
Chapter 7		
Structure of the Sales Comparison Approach	55 Minutes	Wednesday PM
Per Unit Value Analyses	50 Minutes	Thursday AM
Multiple Regression Analysis (MRA)	45 Minutes	Thursday AM
Adaptive Estimation Procedure (AEP or "Feedback")	25 Minutes	Thursday AM
Automated Comparable Sales Analysis	25 Minutes	Thursday AM
Stratification and Location Analysis	25 Minutes	Thursday AM
Chapter 8		
Income Models	30 Minutes	Thursday AM
Estimating Gross Income	45 Minutes	Thursday PM
Estimating Expense Ratios	45 Minutes	Thursday PM
Determining Gross Income Multipliers (GIM)	30 Minutes	Thursday PM
Determining Overall Rates	30 Minutes	Thursday PM
Course Review	90 Minutes	Thursday PM