SAUDER School of Business
Real Estate Division

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BUSI 400 Residential Property Analysis

PURPOSE AND SCOPE

The *Residential Property Analysis* course BUSI 400 is intended to give the real estate practitioner student a working knowledge of the design, construction, and inspection of residential properties. The course will provide you with detailed information on site analysis, neighbourhood analysis, and building design, construction, materials, components, and systems. The material is intended to be introductory in nature; it is important to keep in mind that study of this course by itself does not certify the reader as a qualified building inspector or developer of residential properties. The purpose of this course is not to make you an expert in the design, construction, and post-construction evaluation of residential properties – experts and specialists offer each of these services and can provide much more in-depth knowledge of this area than would ever be required of a real estate professional. This course will instead offer a practical overview of what architects, engineers, and other specialists must consider when they are designing and constructing residential properties, and offer insight into how these factors affect the value of the real estate asset.

After reading the text and proceeding through the *Course Workbook*, the student should have a basic understanding of the components and techniques involved in the design, construction, and inspection of residential properties. Listed below are general objectives for what a student should learn from this course:

- Understand the building construction process in general, knowing the participants and the steps involved.
- Understand the various types of plans and drawings used in residential design.
- Understand how neighbourhoods are formed and the effect this can have on property value.
- Understand how site and house planning affect the value of real property.
- Understand the various forms of house style and configuration and how these forms affect a house's habitability and value.
- Understand the considerations involved in planning functional and aesthetically pleasing houses.
- Understand the importance of a building's substructure (foundation) and be familiar with the construction methods for various types of foundations.
- Understand how the superstructure of a residential building is constructed, including predominant materials and designs.
- Understand the function of a building's envelope system and be able to identify the components of the building envelope.
- Understand the different types of interiors that are used in residential buildings and the advantages and disadvantages of each in various situations.
- Understand the basics of mechanical, electrical, and plumbing systems for residential properties.
- Understand how to carry out an inspection of a residential property, knowing the important factors to look for and in particular understanding when additional professional assistance is required.
- Understand the problems or defects that can occur with residential design and construction, be able to recognize how these affect value, and understand methods to remedy them.

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LESSON 1 – Plans, Codes, and Neighbourhood Analysis

1. Understand the building construction process in general, knowing the participants and the steps involved.
2. Understand the various types of plans and drawings used in residential design.
3. Explain how building codes govern residential building design and construction.
4. Be able to interpret a basic set of drawings with respect to symbols and abbreviations used.
5. Understand how neighbourhoods are formed and the effect this can have on property value.
6. Explain the difference between external and internal variables, and static and connective elements.
7. Conduct a neighbourhood analysis and understand how various design factors can affect the analysis.

LESSON 2 – Site and House Design

1. Understand how site and house planning affect the value of real property.
2. Describe the considerations involved in functional planning, including house and site zones, environmental integration, and engineering considerations.
3. Describe the considerations involved in site design, including both visual and construction aspects.
4. Explain how a site can be evaluated based on functional and site design considerations.
5. Understand the various forms of house configurations and how these affect a house's liveability and its value.
6. Describe the considerations involved in planning functional and aesthetically pleasing houses.
7. Explain the attributes that determine the external style of a house and be able to describe several common styles.

LESSON 3 – Structure

1. Explain why building foundations and superstructures are necessary and how they fulfill their function in residential buildings.
2. Understand how foundations and superstructures are designed in order to support both live and dead loads.
3. Understand why the forces of compression and tension are important factors to consider in designing effective foundations and superstructures.
4. Describe the various types of building foundations and superstructures, noting their intended functions, similarities, differences, advantages, and disadvantages.
5. Understand how soil capabilities affects the choice of building foundation.
6. Describe the construction process and materials used for various types of foundations and superstructures.
7. Explain various problems that can occur in the design and construction of foundations and superstructures, as well as in their on-going application in existing buildings.
8. Explain how serviceability, economy, and durability are all key considerations and competing factors in determining optimal foundation and superstructure design.
9. Describe various systems used for floor and roof construction.

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LESSON 4 – Building Envelope System

1. Understand the importance of the envelope system in building design and construction.
2. Describe the environmental factors which a building envelope system needs to resist, including control of heat transfer, temperature, moisture movement, humidity, air quality, and light.
3. Explain how the components of envelope systems are used to resist environmental factors.
4. Describe the various exterior systems used for building openings, walls, and roofs.
5. Describe materials and techniques used for improving fire resistance.

LESSON 5 – Service Systems

1. Understand the importance of mechanical and electrical systems in buildings.
2. Describe the components of the various mechanical and electrical systems available.
3. Explain the advantages and disadvantages of various systems used for plumbing, heating, ventilation, electrical, and fire safety.
4. Discuss the importance of energy efficiency in homes and explain various methods of improving efficiency.
5. Understand the methods used to make electrical systems safer.

LESSON 6 – Finishes and Fitments

1. Understand the difference between interior partition walls and load-bearing walls.
2. Describe the different options available for interior finish for walls, ceilings, and floors.
3. Explain various options for interiors to meet the design principles of sound control, aesthetics, durability, and fire resistance.
4. Understand configurations and requirements for stair design.
5. Understand the difference between fitments and fixtures.
6. Describe the different fitments and fixtures used in a house, including cabinetry, appliances, plumbing fixtures, and electrical fixtures.

LESSON 7 – Residential Construction Review

1. See the "big picture" for how all of the different aspects of residential construction covered so far in this course fit together, synthesizing an understanding of the components parts into an integrated whole.
2. Evaluate existing and proposed residential construction projects, understanding the reasoning behind why the various design attributes and construction methods have been selected and applied.
3. Analyse the design and construction of residential buildings and discuss any apparent defects or flaws in design.
4. Discuss the manner of residential construction in their area of residence and explain the reasons for how and why construction is carried out in this way.

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LESSON 8 – Exterior and Basement Analysis

1. Understand how to identify the construction type for a building's foundation and superstructure through a visual inspection.
2. Calculate the living area of a residential building.
3. Describe problems that occur with foundations and explain possible solutions.
4. Describe problems that occur with walls and roofing and explain possible solutions.
5. Describe the various exterior features of residential properties, such as windows, soffits, fascias, gutters, decks, and site work, and be able to explain potential problems with these features.
6. Explain the different structural, envelope, and mechanical systems used in a basement.
7. Describe problems that occur in basements and explain possible solutions.

LESSON 9 – Upper Level and Attic Analysis

1. Understand how to identify a building's structure and envelope systems through an interior visual inspection.
2. Describe various problems that can occur with the design and construction of building interiors and explain how to alleviate them.
3. Describe problems that occur with walls and roofing and explain possible solutions.
4. Describe various interior features of residential properties, such as windows, skylights, doors, stairs, cabinetry, and mechanical systems, and be able to explain potential problems with these features.
5. Explain the strategy, pre-planning, and process undertaken in completing a property inspection.
6. Understand the research that must be undertaken to carry out a comprehensive inspection, know where to find this information, and be able to analyse what information these resources provide.
7. Describe the tools an inspector should have to conduct a property inspection.
8. Understand the different general categories of defects that can exist in properties.

LESSON 10 – Residential Inspection Overview

1. Understand the need for property inspection for residential properties.
2. Understand the procedures and techniques required in a residential property inspection.
3. Understand the research that must be undertaken to carry out a comprehensive inspection, know where to find these resources, and be able to analyse the information that these resources provide.
4. Measure and calculate site and improvement areas for residential properties.
5. Carry out a physical inspection of a residential property, systematically examining both exterior and interior, inventorying the property's characteristics and noting any observed defects.
6. Understand the varying reporting requirements for residential inspections from various market participants, such as the Appraisal Institute of Canada, United States Department of Housing, mortgage lenders, etc.