# SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY SAULT STE. MARIE, ONTARIO



#### **COURSE OUTLINE**

COURSE TITLE: Residential Construction III

CODE NO.: HMI210 SEMESTER: 3

**PROGRAM:** Home Inspection Technician

**AUTHOR:** Al Tucci

**DATE:** September **PREVIOUS OUTLINE** January

2014 **DATED**: 2014

APPROVED: "Corey Meunier"

CHAIR DATE

TOTAL CREDITS: 4

**PREREQUISITE(S):** Residential Construction I, II

HOURS/WEEK: 5

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#### I. COURSE DESCRIPTION:

This course is a continuation of Residential Construction II. The student will continue to build and expand knowledge and skills in the following relevant topic areas: interior finishes (trim, doors, and hardware), installation of door frames and casings, types of cabinetry, paint finishes, and chimneys and fireplaces. Students will also look at post and beam, passive solar and system built houses, deck construction and review renovation strategies.

#### II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

### 1. Adhere to health and safety, and current construction related legislation and practices.

Potential Elements of the Performance:

- Demonstrate safe work practices including injury prevention and the use of personal protective equipment
- Use tools and equipment according to specified direction / instructions

## 2. Describe, prepare and install interior wall, ceiling and floor finishes, including safety rules that apply to painting and finishing.

Potential Elements of the Performance:

- Describe and demonstrate wall board installation (cutting, nailing and adhesive) techniques.
- Types of wall finishes and installation techniques.
- Wall, ceiling and wood paneling materials and installation techniques.
- Plaster, gypsum and metal lathe installations.
- Lay out ceiling tile and furring strips.
- List painting tools and equipment and demonstrate their use.
- Prepare interior surfaces for painting.
- Primer, paint and finishing.
- Proper tool and application systems.
- Preparing exterior and interior surfaces for painting.
- Explore other wall coverings and finishes.
- Trade related math for estimating.
- Proper cleaning and storing of equipment.
- Describe, layout and install strip, plank and unit block wood flooring.

 Describe the procedure for applying hardboard, particle and wafer board, and plywood underlayment.

### 3. Understand door types and demonstrate interior door and trim installation methods.

#### Potential Elements of the Performance:

- Compare door types, panel and flush type doors.
- Demonstrate the installation of frames and casings.
- List steps for hanging a door.
- Name lock parts, and describe lock installation procedures.
- Compare pocket and bypass-type sliding doors.
- Cut, fit and nail baseboard trim and mouldings.

#### 4. Select and install cabinetry, millwork and hardware.

#### Potential Elements of the Performance:

- Selecting prefab cabinetry to match a specific floor plan.
- Review onsite cabinetry millwork.
- Describe and install various drawer guides.
- Describe material choices for cabinet, shelves, doors and laminate surfaces.
- Review typical cabinet finishes (painting, finishing and decorating).

### 5. Understand and describe the parts and typical installation procedures for chimneys and fireplaces.

#### Potential Elements of the Performance:

- Name the parts of a typical masonry fireplace
- Describe procedures for the construction of chimney, hearth, walls and throat.
- Describe the common types of factory built fireplaces.
- Complete calculations of flue area.

#### 6. Describe and understand post-and-beam construction.

#### Potential Elements of the Performance:

- List the advantages and disadvantages of post-and-beam construction.
- Describe general specifications and codes.
- Describe the selection of roof and floor planks.
- Compare transverse and longitudinal beams.
- Sketch basic construction details of stressed skin panels and box beams.

### 7. Describe and understand basic types of systems-built housing. Potential Elements of the Performance:

- Describe and understand the history and technology of system built housing.
- Identify a variety of factory built components and define terms.
- Differentiate between basic types of system-built structures.
- Explain moving methods and the erection sequence for a system built house.
- Review system built plans.

#### 8. Understand passive solar construction design

Potential elements of the Performance:

- Explain the difference between passive and active solar construction.
- Define conduction, convection, radiation and thermal siphoning.
- Complete calculation applications including glazing and directgain storage
- Describe considerations for lot locations, design and installation of solar systems.

### 9. Describe a proper renovation / repair sequence and strategy. Potential Elements of the Performance:

- Visually identify different types of residential construction.
- Identify bearing walls by visual and mechanical inspection.
- Demonstrate proper planning and scoping of renovations or repair.
- Make correct calculations for loads and spans.
- Follow proper installation techniques for support headers, saddle beams, and wood and asphalt shingles.
- Describe a solar retrofit on an older home.

#### 10. Prepare, layout and build a deck / porch.

Potential Elements of the Performance:

- Different types of decks and porches (including different structural and decking materials).
- Selecting and installing the appropriate fasteners for deck construction.
- Preparing the site, layout and construction of the deck.

#### III. TOPICS:

- 1. Interior wall and ceiling finishing.
- 2. Doors and interior trim.
- 3. Cabinetry.
- 4. Interior finishes (including flooring).
- 5. Post and beam construction and system built homes.
- 6. Fireplace construction and installations.
- 7. Passive and solar construction.
- 8. Remodeling, renovation and repair.
- 9. Porch / deck construction.

#### IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Handouts, calculators, green tag safety boots, personal tool belt, safety glasses at all times in the class / on the work site

Text book *Modern Carpentry*, Essential Skills for the Building Trades, 11<sup>th</sup> Edition, 2008, Wagner and Smith, along with accompanying work book

#### V. EVALUATION PROCESS/GRADING SYSTEM:

Assignments and tests	30%
Practical activities	60%
Attendance	10%

The following semester grades will be assigned to students:

		Grade Point
Grade	<u>Definition</u>	Equivalent
A+	90 – 100%	4.00
Α	80 – 89%	1.00
В	70 - 79%	3.00
С	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	

X A temporary grade limited to situations

with extenuating circumstances giving a student additional time to complete the

requirements for a course.

NR Grade not reported to Registrar's office.
W Student has withdrawn from the course

without academic penalty.

#### VI. SPECIAL NOTES:

#### Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

#### VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.



### **HMI 210** Residential Construction III – Course Plan

Week	Outcomes	Format	Hours	Topic/Content	Readings	Assignments	Assessment	Resources
1,2	1,2	Lecture	2	Interior wall and ceiling finishing	Chap. 16,	Workbook	p. 569 quiz	Handouts,
				<u>Describe</u>	pp. 531-	chap. 16, pp.	ques. #1-20	calculators, green
				Wallboard cutting, nailing and adhesive	567	99-105		tag safety boots,
				techniques				safety glasses. Text
				Characteristics of gypsum plaster, plastering				book <i>Modern</i>
				methods				Carpentry, along
				Methods for levelling and installing suspended				with accompanying
				ceilings				work book.
		Lab	6	Apply			Practical	Construction
				Wall and ceiling covering materials			activities	materials as
				Procedure for installing wood panelling				arranged by
				Apply plastering methods				instructor: drywall,
				Gypsum and metal lathe				mud, cement board
				Layout ceiling tile and furring strips				
3,4	1,2	Lecture	2	Finish flooring	Chap. 17,	Workbook	p. 595 quiz	As above and various
				<u>Describe</u>	pp. 571-	chap. 17,	ques. #1-15	flooring samples,
				Strip, plank and unit block wood flooring	594	pp. 107-111		underlays and
				Procedure for hardboard, particle and wafer				adhesives
				board, plywood underlayment				
		Lab	6	Apply			Practical	
				Layout and install strip flooring			activities	

5	1,3	Lecture	1	Doors and interior trim	Chap. 19,	Workbook	p. 645 quiz,	As above and
				<u>Explain</u>	pp. 619-	chap. 19, pp.	ques. # 1-20	mouldings, door
				The difference between panel and flush-type	644	119-125		frames, casings,
				doors				hinges and door
				Steps for hanging the door				knobs
				<u>Identify</u>				
				How door frames and casings are installed				
				Name lock parts and describe typical				
				installation procedures				
				Pocket and bypass types of sliding doors				
				The order in which window members should be				
				applied				
		Lab	3	Apply			Practical	
				Cut, fit and nail baseboard trim, window trim			activities	
				and interior door jambs				
6,7	1,4	Lecture	2	Cabinetry	Chap. 20,	Workbook	p. 674 quiz,	As above and various
				<u>Describe</u>	pp. 647-	chap. 20, pp.	ques. # 1-15	types of wood,
				Types of cabinetry	674	127-133		laminated plywood
				Selecting prefab cabinetry				
				Common alternative procedures for building				
				cabinets on the job				
				Three types of drawer guides				
				Material choices for cabinet shelves and doors				
				How to install a plastic laminate surface				
		Lab	6	Apply			Practical	
				Install prefabricated base and wall cabinets			activities	
				Layout and frame a cabinet from drawings				
				Install plastic laminate to a surface				
1		1				1	1	1
				Build and install a cabinet drawer, face frame and sliding doors				

8	1,2	Lecture	1	Painting, finishing and decorating Identify Safety rules applying to painting and finishing Proper tools for painting and finish decorating Perform	Chap. 21, pp. 677- 702	Workbook chap. 21, pp. 135-137	p. 702 Test ques. # 1-20	As above and patching material, sanding tools, paint, brushes and caulking
		Lab	3	Proper procedures for painting, finishing and wallpaper hanging Prepare surfaces for painting Apply Trade related math to estimate paint coverage Proper cleaning and storing of equipment Primer coat and finish coat			Practical activities	
9	1,4	Lecture	3	Chimneys and fireplaces  Explain  How masonry chimneys are constructed around a flue lining  Procedures for construction of a chimney, hearth, walls and throat  Common types of factory built fireplaces  Identify  Parts of a typical masonry fireplace  Considerations for installing factory-built fireplace units  Apply  Calculate the flue area of a given fireplace  Install a prefabricated flue	Chap. 22, pp. 705- 719	Workbook chap. 22, pp. 139-143	p. 720 quiz, ques. # 1-10	As above and masonry tools, mortar, flue pipe. Certified fireplace and wood stove inspector

10	1,6	Lecture	1	Post-and- beam construction	Chap. 23,	Workbook	p. 738 Test,	As above and
				<u>Describe</u>	pp. 721-	chap. 23,	ques. # 1-10	engineered and
				Advantages and disadvantages of post-and-	738	pp. 145-149		laminated materials
				beam construction				
				Specifications for supporting posts				
				How roof and floor planks should be selected				
				and installed				
				<u>Explain</u>				
				Traverse and longitudinal beams				
		Lab	3	<u>Perform</u>			Practical	
				Sketch basic construction details of stressed			activities	
				skin panels and box beams				
				<u>Identify</u>				
				Nailing and bolting patterns				
11	1,7	Lecture	1	Systems-built housing	Chap. 24,	Workbook	p. 756 Test,	As above and various
				<u>Describe</u>	pp. 741-	chap. 24,	ques. # 1-10	types of systems,
				Technology of systems-built housing	755	pp. 151-153		hangers, bolts and
				<u>Identify</u>				nailing
				Variety of factory built components that are				
				utilized in a systems-built home				
				Differentiate between the basic types and				
				systems-built structures				
				Terms used in the systems-built housing				
				industry				
				Method of moving systems-built housing				
		Lab	3	Apply			Practical	
				Systems-built plans			activities	
				Explain erection sequence of a panelized home				

12	1,8	Lecture	1	Passive solar construction	Chap. 25	Workbook	p. 775 Test,	As above and a
				<u>Describe</u>	pp. 757-	chap. 25,	ques. # 1-10	selection of passive
				The difference between passive and active solar	774 and	pp. 155-158		solar drawings
				construction	chap.26 pp.			
				A solar retrofit on an older home	797-798			
				<u>Define</u>				
				Conduction, convection, radiation and thermal				
				siphoning				
		Lab	3	Apply			Practical	
				Calculate the amount of glazing and storage			activities	
				needed for a passive solar system				
				Locate a dwelling for maximum solar gain				
				Design and install various passive solar systems				
13	1,9	Lecture	1	Remodelling, renovating and repairing	Chap. 26	Workbook	p. 801 Test,	As above and various
				<u>Identify</u>	pp. 777-	chap. 26,	ques. # 1-15	demolition tools
				Different types of residential construction by	801	pp. 159-162		both hand and light
				visual inspection				power tools
				Bearing walls				
				Accepted methods in replacing all types of				
				doors				
				<u>Describe</u>				
				Proper sequence of renovations or repair				
				Repair and replace deteriorated components				
				and systems				
				How to remove parts of a structure without				
				damaging the total structure				
				Determine loads and calculate the correct				
				header size for a span				
		Lab	3	Apply			Practical	
				Install and support headers, concealed headers			activities	
				and saddle beams				
				Make repairs to wood and asphalt shingles				

14	1,10	Lecture	3	Building decks and porches  Identify Different types of decks and porches Advantages and disadvantages of different structural and decking materials Differences between deck and porch construction Apply Select and install the appropriate types of fasteners for deck construction Prepare a site, layout and construct a deck	Chap. 27 pp. 803- 819	Workbook chap. 27, pp. 163-164	p. 819 Test, ques. # 1-10 Practical activities	As above and various decking materials and fasteners used for decks and porches including composites
15	1,2,3,4, 5,6,7,8, 9,10	Lecture / lab	4	Building project completion Complete term project work and all practical activities			Practical activities Final test	
16	1,2,3,4, 5,6,7,8, 9,10	Lecture	4	<b>Review</b> ; take up and discuss final test / assignments / practical activities / sharing and feedback				