|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **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:** | | September2014 | **PREVIOUS OUTLINE DATED:** | | January  2014 | |
| **APPROVED:** | | “Corey Meunier” | | |  | |
|  | | CHAIR | | | **DATE** | |
| **TOTAL CREDITS:** | | 4 | | | | |
| **PREREQUISITE(S):** | | Residential Construction I, II | | | | |
| **HOURS/WEEK:** | | 5 | | | | |
| Copyright ©2014 The Sault College of Applied Arts & Technology *Reproduction of this document by any means, in whole or in part, without prior* *written permission of Sault College of Applied Arts & Technology is prohibited.* | | | | | | |
| *For additional information, please contact Corey Meunier, Chair* | | | | | | |
| ***Technology & Skilled Trades*** | | | | | | |
| ***(705) 759-2554, Ext. 2610*** | | | | | | |
| **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 direct-gain 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, 11th 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 | Definition | *Grade Point Equivalent* |
|  | A+ | 90 – 100% | 4.00 |
|  | A | 80 – 89% |
|  | B | 70 - 79% | 3.00 |
|  | C | 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  Lab | 2  6 | ***Interior wall and ceiling finishing***  Describe  Wallboard cutting, nailing and adhesive techniques  Characteristics of gypsum plaster, plastering methods  Methods for levelling and installing suspended ceilings  Apply  Wall and ceiling covering materials  Procedure for installing wood panelling  Apply plastering methods  Gypsum and metal lathe  Layout ceiling tile and furring strips | Chap. 16,  pp. 531-567 | Workbook chap. 16, pp. 99-105 | p. 569 quiz ques. #1-20  Practical activities | Handouts, calculators, green tag safety boots, safety glasses. Text book ***Modern Carpentry,*** along with accompanying work book.  ***Construction materials as arranged by instructor***: drywall, mud, cement board |
| 3,4 | 1,2 | Lecture  Lab | 2  6 | ***Finish flooring***  Describe  Strip, plank and unit block wood flooring  Procedure for hardboard, particle and wafer board, plywood underlayment  Apply  Layout and install strip flooring | Chap. 17,  pp. 571-594 | Workbook chap. 17,  pp. 107-111 | p. 595 quiz ques. #1-15  Practical activities | As above and various flooring samples, underlays and adhesives |
| 5 | 1,3 | Lecture  Lab | 1  3 | ***Doors and interior trim***  Explain  The difference between panel and flush-type doors  Steps for hanging the door  Identify  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  Apply  Cut, fit and nail baseboard trim, window trim and interior door jambs | Chap. 19,  pp. 619-644 | Workbook chap. 19, pp. 119-125 | p. 645 quiz, ques. # 1-20  Practical activities | As above and mouldings, door frames, casings, hinges and door knobs |
| 6,7 | 1,4 | Lecture  Lab | 2  6 | ***Cabinetry***  Describe  Types of cabinetry  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  Apply  Install prefabricated base and wall cabinets  Layout and frame a cabinet from drawings  Install plastic laminate to a surface  Build and install a cabinet drawer, face frame and sliding doors | Chap. 20,  pp. 647-674 | Workbook  chap. 20, pp. 127-133 | p. 674 quiz, ques. # 1-15  Practical activities | As above and various types of wood, laminated plywood |
| 8 | 1,2 | Lecture  Lab | 1  3 | ***Painting, finishing and decorating***  Identify  Safety rules applying to painting and finishing  Proper tools for painting and finish decorating  Perform  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 | Chap. 21,  pp. 677-702 | Workbook  chap. 21,  pp. 135-137 | p. 702 Test  ques. # 1-20  Practical activities | As above and patching material, sanding tools, paint, brushes and caulking |
| 9 | 1,4 | Lecture  Lab | 1  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  Practical activities | As above and masonry tools, mortar, flue pipe.  Certified fireplace and wood stove inspector |
| 10 | 1,6 | Lecture  Lab | 1  3 | ***Post-and- beam construction***  Describe  Advantages and disadvantages of post-and-beam construction  Specifications for supporting posts  How roof and floor planks should be selected and installed  Explain  Traverse and longitudinal beams  Perform  Sketch basic construction details of stressed skin panels and box beams  Identify  Nailing and bolting patterns | Chap. 23,  pp. 721-738 | Workbook  chap. 23,  pp. 145-149 | p. 738 Test,  ques. # 1-10  Practical activities | As above and engineered and laminated materials |
| 11 | 1,7 | Lecture  Lab | 1  3 | ***Systems-built housing***  Describe  Technology of systems-built housing  Identify  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  Apply  Systems-built plans  Explain erection sequence of a panelized home | Chap. 24,  pp. 741-755 | Workbook  chap. 24,  pp. 151-153 | p. 756 Test,  ques. # 1-10  Practical activities | As above and various types of systems, hangers, bolts and nailing |
| 12 | 1,8 | Lecture  Lab | 1  3 | ***Passive solar construction***  Describe  The difference between passive and active solar construction  A solar retrofit on an older home  Define  Conduction, convection, radiation and thermal siphoning  Apply  Calculate the amount of glazing and storage needed for a passive solar system  Locate a dwelling for maximum solar gain  Design and install various passive solar systems | Chap. 25  pp. 757-774 and chap.26 pp. 797-798 | Workbook  chap. 25,  pp. 155-158 | p. 775 Test,  ques. # 1-10  Practical activities | As above and a selection of passive solar drawings |
| 13 | 1,9 | Lecture  Lab | 1  3 | ***Remodelling, renovating and repairing***  Identify  Different types of residential construction by visual inspection  Bearing walls  Accepted methods in replacing all types of doors  Describe  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  Apply  Install and support headers, concealed headers and saddle beams  Make repairs to wood and asphalt shingles | Chap. 26  pp. 777-801 | Workbook chap. 26,  pp. 159-162 | p. 801 Test,  ques. # 1-15  Practical activities | As above and various demolition tools both hand and light power tools |
| 14 | 1,10 | Lecture  Lab | 1  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 | ***Review***; take up and discuss final test / assignments / practical activities / sharing and feedback |  |  |  |  |