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| **SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**  **SAULT STE. MARIE, ONTARIO**   COURSE OUTLINE | | | | | |
| **COURSE TITLE:** | Residential Construction II | | | | |
| **CODE NO. :** | HMI 200 | | **SEMESTER:** | | 3 |
| **PROGRAM:** | Home Inspection | | | | |
| **AUTHOR:**  **PROFESSOR:** | Al Tucci  Sam Spadafora | | | | |
| **DATE:** | January 2015 | **PREVIOUS OUTLINE DATED:** | | January  2014 | |
| **APPROVED:** |  | | |  | |
|  | “Corey Meunier”CHAIR | | |  | |
| **TOTAL CREDITS:** | 5 | | | | |
| **PREREQUISITE(S):** | Residential Construction I | | | | |
| **HOURS/WEEK:** | 5 | | | | |
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| *For additional information, please contact Corey Meunier, Chair* | | | | | |
| ***School of Technology & Skilled Trades*** | | | | | |
| ***(705) 759-2554, Ext. 2610*** | | | | | |

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| **I.** | **COURSE DESCRIPTION:**  This course is a continuation of Residential Construction I. The student will continue to build and expand knowledge and skills in relevant topic areas, including floor systems, wall, ceilings and roofing systems and finishes, windows and doors, rough openings, stair design, vapour barriers, thermal ratings, etc. and exterior finishes (siding, masonry, openings) as well as chimneys and fireplaces. The student will learn through hands on application of theory taught during the course. |

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| **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.*** | ***Understand, layout and assemble wall, ceiling and roof assemblies according to industry standards.***    Wall and Ceiling Systems**:** Potential Elements of the Performance:   * Types of wall framing systems including platform, balloon and post and beam * Plate layout, wall sections and framing connections * Girder support * Window, door and specialty openings * Ceiling framing * Assembly and erection of interior and exterior walls   Roof Systems: Potential Elements of the Performance:   * Types of roofs and roof supports * Parts of a roof frame * Layout terms and principles, unit measurements * Framing plans * Types of rafters and common rafter sizes * Using a framing square, speed square and rafter table * Roof truss construction |
|  | ***3.*** | ***Describe, prepare and install roofing, decks, and materials.*** |
|  |  | Potential Elements of the Performance:   * Define roofing and sheathing terms * List material types, including decking * Prepare roof decks * Select appropriate roofing materials for various slopes and conditions * Types of roof coverings including built up roofs * Demonstrate correct nailing patterns, gutter positioning and material estimating |
|  | ***4.*** | ***Understand, describe and demonstrate proper window and door installation and replacement procedures.*** |
|  |  | Potential Elements of the Performance:   * Discuss standards for window and door fabrication * Identify window and door types * Calculate rough openings * Explain window frame and door adjustments for wall thickness. * Describe proper procedures for installation and replacement * Construction of garage door frames. * Select proper doors, windows and hardware |
|  | ***5.*** | ***Describe, prepare and install exterior finishes, including cornice and rake construction.*** |
|  |  | Potential Elements of the Performance:   * Describe cornice and rake construction. * Describe and demonstrate exterior wood siding and shingles including beveled siding. * Review and discuss exterior insulation systems. * Examine various brick and stone veneer finishes. * Review installation of various brick and stone veneer. * Review installation of insulation board and stucco. |

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|  | ***6.*** | ***Understand the principles of conduction, convection and radiation in relation to heat transfer and heat loss.*** | |
|  |  | Potential Elements of the Performance:   * Describe the function of air, vapour and weather barriers. * Understand heat transfer and loss through building components * Describe methods of controlling moisture. * Select appropriate areas for insulation in a given structure * Define technical terms relating to thermal and acoustical properties of construction materials * Understand the formula for “r” ratings and energy efficient construction * List general procedures for installing batt and blanket, fill and rigid insulation * Understand STC (decibels) standards in desired areas and sound reduction techniques | |
|  | ***7.*** | ***Understand, describe and demonstrate stair design and construction.*** | |
|  |  | Potential Elements of the Performance:   * Identify various types of stairs * Define stair parts and terms * Calculate rise-run ratios, number and size of risers, and stairwell length. * Prepare sketches for types of stringers * Layout stringers for a given stair rise and run. * Identify and split angles for miter cuts * Prepare staircase hand rails | |
| **III.** | **TOPICS:** | |
|  | 1. | Protect yourself and others. |
|  | 2. | Wall, ceiling and roof assemblies and installation. |
|  | 3. | Roof decking, materials and installation. |
|  | 4. | Window and door installation. |
|  | 5. | Exterior finishes. |
|  | 6. | Principles of conduction, convection, moisture control and radiation. |
|  | 7. | Interior stair design and construction. |

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| **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 |

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| **V.** | **EVALUATION PROCESS/GRADING SYSTEM:**  Assignments and tests 30%  Practical activities 60%  Attendance 10% |
|  | The following semester grades will be assigned to students: |

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|  | 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 |
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|  | 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. |  |

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| **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. | |

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| **VII.** | **COURSE OUTLINE ADDENDUM:** |
|  | The provisions contained in the addendum located on the portal form part of this course outline. |

** HMI 200 Residential Construction II – Course Plan**

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| Week | Outcomes | Format | Hours | Topic/Content | Readings | Assignments | Assessment | Resources |
| 1,2 | 1,2 | Lecture  Lab | 6  9 | ***Wall and ceiling framing***  Identify  The main parts of wall frame  Rough openings doors and windows  Explain  Methods of forming the outside corners and partitions  Estimating materials required  Describe construction and erection of wall sections and partitions  Plate and stud layout  Apply  Trade related math  Concepts of plate layout  Construct and erect wall sections  Double plate and wall sheeting  Special framing and house wraps  Ceiling framing and blocking | Chap. 9 pp. 253-280 | Workbook Chap. 9, pp. 49-54 | p. 281 Test ques. #1-15  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. |
| 3,4 | 1,2 | Lecture  Lab | 6  9 | ***Roof framing***  Explain Various types of roofs  Parts of a common rafter  The terms slope and pitch  Design and erection of trusses  Identify  Trade related math  Roof supports  Layout terms and principles and Rafter sizes and using a rafter table  Framing plans  Perform  Use framing and speed squares  Apply  Layout a common rafter  Erecting a gable roof and gable end frame  Hip and valley rafters including jack rafters  Applying math estimating | Chap. 10 pp. 283-325 | Workbook Chap. 10, pp. 55-63 | p. 326 Test ques. #1-20  Practical activities | As above and roof framing materials as provided, framing square, skill saw |
| 5,6 | 1,2,3 | Lecture  Lab | 4  6 | ***Roofing materials and methods***  Identify  List various roofing materials commonly used  Define roofing terms  Describe  Prepare a roof deck  Procedures for both asphalt and wood shingles  Application procedures for a built-up roof  Apply  Demonstrate correct nailing patterns  Demonstrate the proper positioning of gutters  Estimate materials required for a specific roofing job | Chap. 12  pp. 343-392 | Workbook Chap. 12, pp. 67-74 | pp. 393-394 ques. #1-25  Practical activities | As above and roofing materials (asphalt and wood shingles, nails) |
| 7,8 | 1,2,4 | Lecture  Lab | 4  6 | ***Windows and exterior doors***  Describe  Window and door fabrication  Window frame adjustments for wall thickness  Procedures for installing a replacement window  Identify  Various types of windows  Window schedule  Procedures for installing standard windows  Construction of garage door frames  Apply  Calculate required rough openings  Prepare a rough opening for installation of a door frame  Select appropriate garage door hardware | Chap. 13  pp. 395-432 | Workbook Chap. 13,  pp. 75-80 | p. 433 Test ques. # 1-20  Practical activities | As above and window and door samples, installation materials |
| 9,10 | 1,5 | Lecture  Lab | 4  6 | ***Exterior wall finishes***  Describe  Parts of a cornice and rake  Cornice and rake construction  How wood siding and shingles are applied  Proper application of bevelled siding  Exterior insulation and finish systems  Identify  Various brick and stone, masonry materials and tools  Installation of insulation board and stucco  Apply  Estimate the amount of siding on a structure  Installation techniques for various siding materials | Chap. 14  pp. 435-480 | Workbook Chap. 14,  pp. 81-87 | pp. 481-482 Test, ques. #1-25  Practical activities | As above and samples of various exterior material |
| 11,12 | 1,6 | Lecture  Lab | 4  6 | ***Thermal and sound insulation***  Describe  Principles of conduction, convection and radiation  Types of insulation  Methods of controlling moisture problems  Construction that raise STC ratings in desired areas  Identify  Technical terms relating to thermal and acoustical properties  Interpret thermal ratings charts  Principle of condensation  Apply  Select appropriate areas for insulation in a given structure  Procedures for installing batt and blanket, fill, rigid insulation  Formula for R rating | Chap. 15  pp. 485-527 | Workbook Chap. 15,  pp. 89-97 | p. 528 Test ques. # 1-20  Practical activities | As above and various types of insulation and vapour barriers |
| 13,14 | 1, 7 | Lecture  Lab | 4  6 | ***Interior stair construction***  Discuss  Interior stair design  Review  Various types of stairs  Stair parts and terms  Perform  Calculate the rise-run ratio, number and size of risers and stairwell length  Apply (continued from HMI 114)  Prepare sketches of types of stringers for interior stairs  Layout stringers for a given stair rise and run  Splitting angles for mitre cuts  Using stock interior stair parts  Identifying the angles on preformed hand railing stock  Prepare staircase hand rails  Layout of winder stairs | Chap. 18  pp. 597-615 | Workbook Chap. 18, pp. 113, prepare for final test | p. 616 Test ques. # 1-10  Practical activities | As above and staircase materials and hand railings |
| 15 | 1,2,3,4,5,6,7 | Lecture, lab | 5 | ***Building project completion***  Complete term project work and all practical activities |  |  | Practical activities ***Final test*** |  |
| 16 | 1,2,3,4,5,6,7 |  | 5 | Review; take up and discuss final test / assignments / practical activities / sharing and feedback |  |  |  |  |