

School District of Marshfield Course Syllabus

Course Name: Advanced Construction Length of Course: 1 Year Credit: 1

Program Goal(s):

Empower learners to be college and career ready through standards-based experiences in the classroom and career-based learning experiences with business and industry partners. Learners will engage through technology in design, building, problem-solving, repair or service, in a collaborative environment through theory and hands-on experiences.

Course Description:

This course will provide students the opportunity to explore the construction trades in a classroom and lab environment. Students will develop a variety of technical skills associated with residential construction. Areas include safety procedures, building layout, rough construction, finish carpentry, masonry, electrical wiring, and cabinet making and millwork. This course is part of the Architecture, Construction, and Engineering Academy, but students may take course without signing up for the Academy.

Standards:			
Wisconsin Technology & Engineering Broad Based (BB)			
Standard	Learning Priority	Performance Indicators	
BB1: Students will analyze the core	BB1.a Analyze and use	BB1.a.1.e: Compare and contrast	
concepts of technology	technological systems	systems found in nature and others	
		made by humans.	

BB1.b: Analyze and use tools and	BB1.b.3.m: Students will describe
materials.	how resources are the things needed
	to complete a task (e.g., tools,
	machines, materials, information,
	energy, people, capital and time).
	BB1.b.4.m: Use appropriate tools to
	measure and layout a piece of
	material (e.g., length, width,
	thickness angles circles arcs and
	volume) within tolerances
	BB1 b 5 h: Select appropriate
	resources and explain how trade-offs
	between competing values such as
	availability cost desirability and
	wasta influenced their decision
	PP1 b 6 b; Choose and perform the
	BB1.0.0.11. Choose and perform the
	forming (o g has line
	forming (e.g., bending, pressing,
	urawing, rolling), bonding (e.g.,
	gluing, soldering, brazing, spot
	welding, gas welding, arc welding),
	fastening (e.g., screws, nuts & bolts,
	rivets, clips, pins, nails) and
	finishing (e.g., surface preparation,
	cleaning, treatment, coating).
BB1.d: Analyze and use electricity	BB1.d.2.m: Define basic electrical
and electronic systems.	concepts (i.e., voltage, direct and
	alternating current, resistance,
	power, polarity, conductor, insulator,
	series circuit, parallel circuit, series-
	parallel circuit, inductance,
	capacitance, continuity, digital,
	analog).
	BB1.d.7.h: Inspect and test
	components such as switches,
	connectors, relays, solid state
	devices and conductors and take
	appropriate action.
BB1.e: Analyze, explain and use	BB1.e.4.m: Explain how quality
control systems.	control is a planned process to
	ensure that a product, service or
	system meets established criteria.
	BB1.e.6.h: Select and perform an
	appropriate maintenance is the
	process in order for the product or
	system to continue functioning
	properly, to extend its life or to
	upgrade its capability given a flawed
	product or system.
BB1.f: Identify and analyze	BB1.f.3.m: Identify and describe
structures.	basic types of structures (i.e., mass
	bearing wall, framed) as they relate
	to their function.

Wisconsin Technology & Engine	ering Architecture and Constructi	BB1.f.6.h: Justify the application of structural materials and their trade- offs in the design of structures based on design requirements through optimization (i.e., engineering design process).
Standard	Learning Priority	Performance Indicators
Standard: AC1: Students will be able	AC1 a: Analyze construction	AC1 a 5 m: Select designs for
to select and use architecture and	requirements materials structures	structures based on factors such as
construction technologies	techniques and maintenance	building codes and requirements
		style, convenience, cost, climate,
		culture and function.
		AC1.a.6.m: Explain the function of
		foundations and why structures rest
		on a foundation.
		AC1.a.12.h: Analyze how structures
		require maintenance, alteration or
		renovation periodically to improve
		them or to alter their intended use.
		AC1.a.13.h: Explain how structures
		can include prefabricated materials.
	AC1.b: Apply measurement systems	AC1.b.9.m: Demonstrate use of the
	in the planning and layout process	Standard Measuring System to the $1/16^{\circ}$ and the Matrix Measuring
	industry	1/10 and the Metric Measuring
	liidusu y.	AC1 b 10 m; Add subtract multiply
		and divide in the Standard
		Measuring System to the 1/16" and
		the Metric Measuring System to
		millimeters.
	AC1.c: Demonstrate the safe and	AC1.c.3.m: Demonstrate proficiency
	appropriate use of hand tools	in the use of simple hand tools such
	common to the residential and	as hammers, screwdrivers,
	commercial construction industry.	handsaws, planes, sandpaper, nail
		sets, tin shears, framing squares,
		utility knives, chalk lines, etc.
		AC1.c.4.m: Demonstrate proficiency
		in obtaining and storing simple hand
		tools. $A \subset I = 5$ he Demonstrate and use the
		AC1.c.5.n: Demonstrate and use the
		safely and properly
		$\Delta C_1 \subset 6$ h: Maintain and care for
		hand tools used in residential and
		commercial construction.
	AC1.d: Demonstrate the safe and	AC1.d.2.m: Demonstrate the safe
	appropriate use of portable power	and proper use of power tools.
	tools that are common to the	AC1.d.3.m: Demonstrate the safe
	residential construction industry and	and proper use of pneumatic tools.
	are appropriate to the individual	AC1.d.4.m: Demonstrate proficiency
	student's level.	in the proper care of all tools used in
		a class or lab.

	AC1.d.5.h: Demonstrate the use of portable power tools, such as circular saws, table saws, saber saws, drills, planers and sanders, safely and properly. AC1.d.6.h: Demonstrate the use of portable pneumatic tools, such as rough framing nail guns, interior finishing and brad nail guns, hammers, impact wrenches, drills and compressors, safely and appropriately. AC1.d.7.h: Maintain and care for portable power tools and portable pneumatic tools.
AC1.e: Demonstrate project management procedures and processes as they occur in a construction project.	AC1.e.8.m: Explain the events that occur to construct any project. AC1.e.11.m: Explain the importance of positive and constructive communication skills.
AC1.f: Demonstrate the value and necessity of practicing occupational safety in the construction industry facility and job site.	AC1.f.3.m: Explain electrical safety standards and proper wiring methods. AC1.f.4.m: Recognize the potential accidents and injuries that may occur in a given work environment. AC1.f.5.h: Demonstrate the safe use of electrical connection methods and electrical wiring procedures. AC1.f.6.h: Demonstrate the safety procedures and practices in various work environment settings pertaining to residential and commercial construction.
AC1.g: Demonstrate the variety of building phases, systems and techniques used in architecture and construction.	AC1.g.4.e: List the many different professions required to complete a construction project. AC1.g.5.m: Create a drawing and completion schedule for a simple project. AC1.g.11.h: Prepare the site layout utilizing common surveying equipment and/or create a site plan.
AC1.h: Demonstrate the impact of financial, technical, environmental, political, societal and labor trends on the past and future of the construction industry.	AC1.h.5.m: Describe historically that construction began to meet the basic need of shelter. AC1.h.6.m: Identify that structures are planned and constructed based on financial constraints. AC1.h.7.m: Distinguish how construction can impact the environment both positively and negatively.

Wisconsin Common Career Tech Communication and Collaboration	hnical Standards (WCCTS)-Creati (C)	AC1.h.8.m: Identify the importance of energy efficient, safe, comfortable and healthy structures. AC1.h.11.h: Explain the environmental regulations that influence residential and commercial design. AC1.h.12.h: Identify the skills and building techniques that are utilized to construct energy efficient, safe, healthy and comfortable structures. vity, Critical Thinking,
Standard	Learning Priority	Performance Indicators
Standard: 4C1: Students will think and work creatively to develop innovative solutions to problems and opportunities.	4C1.a: Develop original solutions, products and services to meet a given need.	 4C1.a.4.m: Analyze elements of a problem to develop creative solutions. 4C1.a.6.m: Describe how past experiences can inform current problem solving. 4C1.a.7.h: Develop original ways to solve a given problem. 4C1.a.8.h: Design a product or service that could fulfill a human need or desire. 4C1.a.9.h: Apply past experiences to current problems in developing
	4C1.b: Work creatively with others to develop solutions, products and services.	 Innovative solutions. 4C1.b.4.m: Explain how multiple people can develop better solutions than an individual. 4C1.b.5.m: Explain how multiple people and perspectives can develop better ideas than an individual. 4C1.b.6.m: Explain how multiple people and perspectives can improve an existing product or process better than an individual. 4C1.b.7.h: Incorporate the skills and experiences of others to develop a new solution to a problem. 4C1.b.8.h: Work as part of a team to design a product or service that could fulfill a human need or desire. 4C1.b.9.h: Work as part of a team to improve an existing product or process.
Standard: 4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.	4C2.a: Develop effective resolutions for a given problem, decision or opportunity using available information.	 4C2.a.5.m: Analyze symptoms to identify the root cause of a problem. 4C2.a.6.m: Develop multiple resolutions for a given problem, decision or opportunity. 4C2.a.7.m: Identify problems that became worse due to poorly thought out or poorly informed solutions.

		4C2.a.8.m: Explain how
		implementation of a solution or
		action may affect one or more
		corresponding systems
		4C2 a 0 m Eurlain how different
		4C2.a.9.m: Explain now different
		resolutions may be appropriate
		under different circumstances.
		4C2.a.10.m: Explain the process for
		choosing an action or making a
		decision.
		4C2.a.11.h: Determine the
		information needed to address an
		identified problem.
		4C2.a.12.h: Contrast the benefits and
		drawbacks of various proposed
		resolutions to a given situation.
		4C2.a.13.h: Predict how an action
		could result in unintended
		consequences, both positive and
		negative.
		$4C^2$ a 14 h. Analyze the impact of a
		decision using a systems thinking
		model
		4C2 = 15 h: Determine the best
		resolution for a problem decision or
		apportunity based on given criteria
		4C2 a 16 by Defend an action taken
		4C2.a. 10.11. Detend all action taken
		or a decision implemented.
	4C2.b: Develop and implement a	4C2.b.3.m: Analyze problems to
	resolution for a new situation using	determine what past experiences
	personal knowledge and experience.	might be related and relevant.
		4C2.b.4.m: Analyze a problem to
		determine how it relates to existing
		knowledge.
		4C2.b.5.h: Apply past experience to
		develop a course of action for a new
		situation.
		4C2.b.6.h: Use existing knowledge
		to develop a resolution for a new
		situation, problem or opportunity.
Standard: 4C3: Students will	4C3.a: Communicate thoughts and	4C3.a.8.m: Implement effective
communicate and collaborate with	feelings with others using verbal and	listening skills in resolving a
others to accomplish tasks and	non-verbal language.	situation.
develop solutions to problems and	00	4C3.a.9.h: Develop a mutually
opportunities.		acceptable response to a question or
opportunition		problem
		4C3 a 11 h: Communicate
		effectively in the presence of a
		language barrier
		4C3 a 12 h. Utilize effective
		listening skills in creating consensus
		in a group
	4C2 he Work collaboration by milt	In a group.
	4C3.D: WORK CONADORATIVELY WITH	4C3.0.4.III: Use Idea generating
	omers.	AC2 h 5 m Describ
		4C3.b.5.m: Describe ways to
		tacilitate group collaboration.

	4C3.c: Use interpersonal skills to resolve conflicts with others in an ethical manner.	 4C3.b.6.m: Demonstrate the use of various tools to communicate effectively with an individual or a group. 4C3.b.7.h: Participate in group processes to generate consensus. 4C3.b.8.h: Lead group processes to generate consensus. 4C3.c.5.m: Contribute to resolving conflicts that occur within a team or group. 4C3.c.6.m: Explore the ethical considerations of a current or historical action or decision. 4C3.c.7.h: Resolve conflicts productively with individuals as they arise. 4C3.c.8.h: Lead a team or group through a conflict resolution process to reach a productive outcome.
Wisconsin Common Career Tech	nnical Standards (WCCTS)-Caree	r Development (CD)
Standard	Learning Priority	Performance Indicators
Standard: CD1: Students will consider, analyze and apply an awareness of self, identity and culture to identify skills and talents.	CD1.a: Identify person strengths, aptitudes and passions.	CD1.a.2.m: Assess personal strengths, aptitudes and passions related to potential future careers CD1.a.3.h: Evaluate various occupations and career pathways to identify personal, academic and career goals based on personal strengths, aptitudes and passions
	CD1.b: Demonstrate effective decision-making, problem solving and goal setting.	CD1.b.4.m: Identify long and short- term goals. CD1.b.5.h: Use a decision-making and problem-solving model.
	CD1.c: Interact effectively with others in similar and diverse teams.	CD1.c.7.m: Display cooperative behavior and identify personal strengths and assets in groups. CD1.c.11.h: Evaluate how the personal strengths and assets of others contribute to a cooperative group atmosphere. CD1.c.12.h: Assess how respect and appreciation for individual and cultural differences impacts group processes.
	CD1.d: Apply a range of relevant decision-making strategies.	CD1.d.4.m: Apply decision-making strategies to personal and team interactions. CD1.d.5.h: Predict the outcome of various decisions on personal, social and career success. CD1.d.6.h: Evaluate the impact of personal decision-making strategies on specific outcomes.

Standard: CD2: Students will identify the connection between educational achievement and work opportunities in order to reach personal and career goals.	CD2.a: Apply academic experiences to the world of work, inter- relationships and the community.	CD2.a.2.m: Describe a diverse range of opportunities available beyond high school. CD2.a.3.h: Evaluate how performance and connections within the learning community enhance future opportunities. CD2.a.4.h: Determine those opportunities that best support attainment of a specific career goal.
	CD2.b: Assess attitudes and skills that contribute to successful learning in school and across the life span.	CD2.b.5.m: Apply academic information from a variety of sources to enhance career preparedness and lifelong learning. CD2.b.6.m: Research local and regional labor market and job growth information to analyze career opportunities. CD2.b.7.h: Interpret and analyze the impact of current education, training and work trends on life, learning and career plans. CD2.b.8.h: Assess education and training opportunities to acquire new skills necessary for career advancement. CD2.b.9.h: Analyze local and regional labor market and job growth information to select a career pathway for potential advancement.
Standard: CD3: Students will create and manage a flexible and responsive individualized learning plan to meet their career goals.	CD3.a: Investigate the world of work in order to gain knowledge of self in order to make informed career decisions.	CD3.a.5.m: Demonstrate the ability to use technology to retrieve and manage career information that inspires educational achievement. CD3.a.6.m: Build an ongoing awareness of personal abilities, skills, interests and motivation and determine how these fit with chosen career pathway. CD3.a.7.m: Develop an individual learning plan to enhance educational achievement and attain career goals based on a career pathway. CD3.a.9.m: Use assessment results in educational planning including career awareness. CD3.a.10.h: Analyze how career plans may be affected by personal growth, external events and changes in motivations and aspirations. CD3.a.11.h: Apply academic and employment readiness skills in work-based learning situations such as internships, shadowing and/or mentoring experiences.

		CD3.a.12.h: Evaluate changes in
		local, national and global
		employment trends, societal needs
		and economic conditions related to
		career planning.
		CD3.a.14.h: Implement an
		individual learning plan to maximize
		academic ability and achievement.
	CD3.b: Examine and evaluate	CD3.b.2.m: Describe educational
	opportunities that could enhance life	levels (e.g., work-based learning,
	and career plans and articulate plan	certificate, two-year, four-year and
	to guide decisions and actions.	professional degrees) and
		performance skills needed to attain
		personal and career goals. CD3.b.3.m: Demonstrate openness
		to exploring a wide range of
		occupations and career pathways.
		CD3.b.4.h: Implement strategies for
		responding to transition and change
		with flexibility and adaptability.
		CD3.b.5.h: Evaluate the relationship
		between educational achievement
		and career development.
	CD3.c: Employ career management	CD3.c.3.m: Identify work values and
	strategies to achieve future career	needs.
	success and satisfaction.	CD3.c.4.m: Define adaptability and
		flexibility in the world of work.
		CD3.c.5.h: Determine how
		principles of equal opportunity,
		equity, respect, inclusiveness and
		fairness, affect career planning and
		management.
		CD3.c.6.h: Discuss how adaptability
		and flexibility, especially when
		initiating or responding to change,
		contributes to career success.
Standard: CD4: Students will	CD4.a: Identify and demonstrate	CD4.a.4.m: Demonstrate flexibility
identify and apply employability	positive work behaviors and	and willingness to learn new
SKIIIS.	personal qualities needed to be	knowledge and skills.
	employable.	CD4.a.5.m: Identify positive work-
		qualities typically desired in each of
		CD4 a 6 b; Evaluate how solf
		discipline self worth positive
		attitude and integrity displayed in a
		work situation affect employment
		status
		CD4.a.7.h: Assess how flexibility
		and willingness to learn new
		knowledge and skills affect
		employment status.
		CD4.a.8.h: Apply communication
		strategies when adapting to a
		culturally diverse environment.

	CD4 a 0 h; Usa positiva work
	CD4.a.9.n: Use positive work-
	qualities typically desired in each of
	the career cluster's pathways.
	CD4.a.10.h: Manage work roles and
	responsibilities to balance them with
	other life roles and responsibilities.
CD4 b: Demonstrate skills related to	CD4 h 3 m. Use technology to assist
cD4.0. Demonstrate skins related to	in correct exploration and job
seeking and apprying for	in career exploration and job-
employment to find and obtain a	seeking activities.
desired job.	CD4.b.4.m: Compare and contrast
	personal attributes with employment
	needs and trends.
	CD4.b.5.h: Use multiple resources to
	locate job opportunities.
	CD4.b.6.h: Prepare a resume, cover
	letter employment application
	CD4 b 7 b: Employ critical thinking
	and decision making alvilla to arkitist
	and decision-making skins to exhibit
	quantications to a potential
	employer in an interview.
CD4.c: Identify and exhibit traits for	CD4.c.3.m: Distinguish between
retaining employment.	appropriate behaviors in a social vs.
	professional setting.
	CD4.c.4.h: Model behaviors that
	demonstrate reliability and
	dependability
	CD4 c 5 h: Maintain appropriate
	dress and behavior for the job to
	contribute to a sofe and effective
	contribute to a safe and effective
	workplace/jobsite.
	CD4.c.6.h: Complete required
	employment forms and
	documentation.
	CD4.c.7.h: Summarize key activities
	necessary to retain a job in an
 	industry.
CD4.d: Develop positive	CD4.d.4.m: Use cooperative
relationships with others.	behavior in helping peers
*	accomplish goals and tasks.
	CD4.d.5.h: Participate in co-
	curricular and community activities
	to enhance the school experience
	CD/ d 6 h. Evaluate the best method
	to assist co workers in
	accomplishing goals and toslig
	CD4 4.7 h. Examine the status
	CD4.d. /.n: Examine the skills
	required to enable students to
	successfully transition to post-
	secondary opportunities.
	CD4.d.8.h: Use a systematic
	approach to academic and career
	planning for students to achieve their
	learning, socio-cultural and work
	goals.

Wisconsin Common Career Technical Standards (WCCTS)-Environmental Health and Safety (EHS)

Standard	Learning Priority	Performance Indicators
Standard: EHS1: Students will	EHS1.d: Implement personal and	EHS1.d.5.m: Recognize and use
identify the importance and	jobsite safety rules and regulations	systems in school and in the
interrelationships of health, safety	to maintain and improve safe and	community that protect and enhance
and environmental systems and	healthful working conditions and	personal, environmental health and
evaluate the impacts of these	environments.	safety.
systems on organizational		EHS1.d.6.m: Discuss employee
performance for continuous		rights and responsibilities and how
improvement.		to apply them in a workplace setting.
		EHS1.d.7.h: Assess workplace
		conditions with regard to personal
		and environmental health and safety.
		EHS1.d.8.h: Identify different
		workplace systems that protect and
		enhance personal and environmental
		health and safety.
		EHS1.d.9.h: Describe employee
		rights and responsibil-ities to
		maintain workplace health and
		safety, including compliance with
		rules and laws.

Key Vocabulary:				
Arbor	Miter	Router	Tablesaw	
Planer	Awl	Bandsaw	Jointer	
Fence	Outfeed	Band Clamp	Sandpaper	
Jig	Bits	Level	Plumb	
Try Square	Square	Combination Square	Bard Foot	
Square Foot	Lineal Foot	Carbide Tipped	Crosscut	
Rip	Dado	Kerf	Rabbit	
Kick Back	Chamfer	Butt joint	Face	
Tongue and Groove	Face	Snipe	Ogee	
Chuck	Collet	Dowel	Template	
Varnish	Bark	Grain	Kiln	
Air Dried	Knot	Rough Lumber	Hardboard	
Veneer	Warp	Green Lumber	Concrete	
Cement	Masonry	Mortar	Aggregate	
Fascia	Header	Joint	Sill	
Top Plate	Miter Joint	Neutral Wire	GFCI	
Wire Nut	Penny	Anchor Bolts		

Topics/Content Outline- Units and Themes:

Quarter 1 and Quarter 2

- Fire and tornado drills
- Items needed for shop
- Organizations/clubs
- Course content and activities
- Grading system
- Plans and Codes
- Footings and Foundations
- Floor Framing
- Wall and Ceiling Framing
- Roof Framing
- Roofing Materials and Methods
- Windows and Doors
- Plot Plans
- Building Lines
- Vertical Planes and Lines
- Laser plane System

Quarter 3

- Cabinetry Unit
- Styles and Rails
- Door making
- Shaper Safety

Quarter 4

- Work site safety
- Tools and equipment
- Mixing and material handling
- Brick & Block laying
- Tools and Equipment
- Electrical Wiring Theory
 - Electrical Troubleshooting
- Testing Fixtures
- Plumbing Systems
- Connecting Pipe
- Fixtures
- Plumbing Tool
- Basic construction problems
- Cabinetmaking joints
- Gluing and clamping
- Bending and laminating

- Veneering and inlaying
- Plastic laminates
- Frame and panel construction
- Cabinet and furniture doors
- Drawers and drawer guides
- Shelves and cabinet interiors
- Legs and posts
- Leg and rail construction
- Table and cabinet tops
- Basic casework
- Fine furniture cabinetwork
- Preparing for finishing
- Finishing equipment and supplies
- Finishing procedures
- Staining
- Filling
- Distressing, glazing, and other overtone treatments
- Protective coatings
- Interior finishing

Primary Resource(s):			
•	Modern Carpentry, 12 th Edition	•	House Wiring Simplified, 14 th Edition
	Goodheart Wilcox		Goodheart Wilcox
	ISBN: 978-1-63126-083-4		ISBN: 978-1-63126-920-2
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