Maryland CTE Programs of Study

Construction Design and Management (2016)

Introduction to Construction Design and Management 1.CDM

1. Discuss potential careers and the education needed in Construction Design and Management 1.CDM.1
2. Understand the interdependence of architectural designers, skilled trades and construction managers 1.CDM.2
3. Demonstrate the use of computer-aided design (CAD) and drafting tools 1.CDM.3
4. Read and develop technical drawings, including understanding types of plans used in construction 1.CDM.4
5. Demonstrate the use of design principles and understanding of materials in developing basic plans 1.CDM.5
6. Understand construction methods and materials, including building codes, safety regulations, and components of Green Construction 1.CDM.6
7. Develop a series of plans and documentation for multiple design projects. 1.CDM.7

Princples of Construction Design and Management 2.CDM

1. Understand principles of construction management and the design-build-maintain process, including technical requirements, cost estimating, and quality control 2.CDM.1
2. Read and develop technical drawings, including understanding types of plans used in construction; 2.CDM.2
3. Demonstrate the use of computer-aided design (CAD) and drafting tools (2-D and 3-D drawings); 2.CDM.3
4. Demonstrate the use of design principles and understanding of materials in construction surveying and the development of architectural plans; 2.CDM.4
5. Understand construction methods and materials, including building codes, safety regulations, and components of Green Construction; 2.CDM.5
6. Understand the use of new technologies and innovations in the design and build process, including energy efficiency standards and Building Information Modeling (BIM); 2.CDM.6

	7 **Conduct a carbon footprint analysis and energy audit for an existing structure;** 2.CDM.7
	8 **Develop technical drawings for mechanical and electrical systems;** 2.CDM.8
	9 **Develop a portfolio, including a series of plans and documentation for a one-story structure.** 2.CDM.9
Advanced Design and 3-D Modeling 3.CDM	1 **Understand principles of construction management and the design-build-maintain process, including technical requirements, cost estimating, and quality control;** 3.CDM.1
	2 **Read and develop technical drawings, including understanding types of plans used in construction;** 3.CDM.2
	3 **Demonstrate the use of computer-aided design (CAD) and drafting tools (2-D and 3-D drawings);** 3.CDM.3
	4 **Demonstrate the use of design principles and understanding of materials in developing architectural plans;** 3.CDM.4
	5 **Understand construction methods and materials, including building codes, safety regulations, and components of Green Construction;** 3.CDM.5
	6 **Understand the use of new technologies and innovations in the design and build process, including energy efficiency standards and Building Information Modeling (BIM);** 3.CDM.6
	7 **Conduct a carbon footprint analysis and energy audit for an existing structure;** 3.CDM.7
	8 **Develop technical drawings for mechanical and electrical systems; and** 3.CDM.8
	9 **Develop a portfolio, including a series of plans and documentation for a one-story structure.** 3.CDM.9
Advanced Construction Management 4.CDM	1 **Document principles of construction management and the design-build-maintain process, including technical requirements, cost estimating, and quality control;** 4.CDM.1
	2 **Develop a series of technical drawings, including site plans, mechanical systems, building plans, and a BIM design for a completed project;** 4.CDM.2
	3 **Demonstrate the use of advanced design principles and understanding of the design-build process;** 4.CDM.3
	4 **Document construction methods and materials, including compliance to building codes, safety regulations, and principles of Green Construction and energy efficiency;** 4.CDM.4

5 **Incorporate the use of new technologies and innovations in the design and build process, including energy efficiency standards, modular construction and Building Information Modeling (BIM);** 4.CDM.5

6 **Demonstrate the use of construction estimating and contracting to develop a project schedule;** 4.CDM.6

7 **Document construction management requirements including project schedules, environmental safety requirements, quality control, cost-benefit analysis, and labor relations; and** 4.CDM.7

8 **Develop a portfolio, including a series of plans and documentation for a full site development project.** 4.CDM.8