

Facility Engineering Program Guide

Content Area	Course Title	Course Number	Course Hours
00	Fundamentals of Facility Engineering		270
	Basic Safety	FEN101	30
	Introduction to Construction Math	FEN102	30
	Introduction to Hand Tools	FEN103	15
	Introduction to Power Tools	FEN104	15
	Introduction to Blueprints	FEN105	15
	Basic Rigging	FEN106	30
	Introduction to NEC	FEN107	15
	Introduction to Electrical Blueprints	FEN201	30
	Introduction to Fasteners and Anchors	FEN202	15
	Introduction to Bearings	FEN203	30
	Leadership	FEN109	15
	Business Principles	FEN209	15
	Total Quality Concepts	FEN309	15
10	Basic Electricity		240
	Electrical Safety	FEN111	15
	Electricity I	FEN112	45
	Electricity II	FEN113	45
	Electricity III	FEN114	45
	Electrical Test Equipment	FEN115	15
	Conductors, Terminations and Splices	FEN211	45
	Hand Bending Conduit	FEN212	30
20	Plumbing		135
	Ferrous Metal Piping Practices	FEN121	45
	Copper And Plastic Piping Practices	FEN122	45
	Piping Systems	FEN123	45
30	Carpentry		45
	Basic Carpentry	FEN331	45
40	Mechanical Maintenance		30
	Lubrication	FEN241	30
50	Industrial Electricity / Motor Control		435
	Wiring: Commercial & Industrial I	FEN251	45

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FACILITY ENGINEERING DUTIES AND TASKS

CONTENT AREA	COURSE CODE	NATIONAL SKILL STANDARD	MATHEMATICS	READING	
				OJT	IP
FUNDAMENTALS OF FACILITY ENGINEERING	00				
BASIC SAFETY	FEN 101	00101-00			
Identify the responsibilities and personal characteristics of a professional crafts person	FEN101	00101-00		YES NCCER	NO
Explain the role safety plays in the construction crafts	FEN101	00101-00		YES NCCER	NO
Describe what job site safety means	FEN101	00101-00		YES NCCER	NO
Explain the appropriate safety precautions around common job site hazards	FEN101	00101-00		YES NCCER	NO
Demonstrate the use and care of appropriate personal protective equipment	FEN101	00101-00		YES NCCER	NO
Follow safe procedures for lifting heavy objects	FEN101	00101-00		YES NCCER	NO
Describe safe behavior on and around ladders and scaffolds	FEN101	00101-00		YES NCCER	NO
Explain the importance of the HAZARD COMMUNICATION STANDARDS and MSDS	FEN101	00101-00		YES NCCER	YES
Describe fire prevention and fire fighting techniques	FEN101	00101-00		YES NCCER	NO
Define safe work procedures around electrical hazards	FEN101	00101-00		YES NCCER	NO
INTRODUCTION TO CONSTRUCTION MATH	FEN 102	00102-00			
Add, subtract, multiply and divide whole numbers, with and without a calculator	FEN 102	00102-00			
Use a standard ruler and metric ruler to measure	FEN 102	00102-00			
Add, subtract, multiply and divide fractions	FEN 102	00102-00			
Add, subtract, multiply, and divide decimals, with and without a calculator	FEN 102	00102-00			
Convert decimals to percents and percents to decimals	FEN 102	00102-00			
Convert fractions to decimals and decimals to fractions	FEN 102	00102-00			

CONTENT AREA	COURSE CODE	NATIONAL SKILL STANDARD	MATHEMATICS	READING	
				OJT	IP
Explain what the metric system is and why it is important in the construction trade	FEN 102	00102-00			
Recognize and use metric units of length, weight, volume, and temperature	FEN 102	00102-00			
Recognize some of the basic shapes used in the construction industry and apply basic geometry to measure them	FEN 102	00102-00			
INTRODUCTION TO HANDTOOLS	FEN103	00103-00			
Visually inspect a variety of hand-tools to determine if they are safe to use	FEN103	00103-00		NCCER	NO
Safely and properly use a variety of hand-tools	FEN103	00103-00		NCCER	NO
INTRODUCTION TO POWER TOOLS	FEN104	00104-00			
Safely and properly operate an electric drill	FEN104	00104-00		NCCER	NO
Safely and properly operate a circular saw	FEN104	00104-00		NCCER	NO
Safely and properly operate a bench grinder	FEN104	00104-00		NCCER	NO
Safely and properly operate a portable belt sander	FEN104	00104-00		NCCER	NO
Safely and properly operate a pneumatically powered nail gun	FEN104	00104-00		NCCER	NO
INTRODUCTION TO BLUEPRINTS	FEN 105	00105-00			
Recognize and identify blueprint terms, components, and symbols	FEN 105	00105-00		NCCER	YES
Relate information on blueprints to actual locations on a print	FEN 105	00105-00		NCCER	YES
Recognize different classifications of drawings	FEN 105	00105-00		NCCER	YES
Interpret and use drawing dimensions	FEN 105	00105-00		NCCER	YES
BASIC RIGGING	FEN 106	00106-00			
Identify and describe the use of slings and common rigging hardware	FEN 106	00106-00		NCCER	YES Tag Lift wt.
Describe the basic inspection	FEN 106	00106-00		NCCER	YES

CONTENT AREA	COURSE CODE	NATIONAL SKILL STANDARD	MATHEMATICS	READING	
				OJT	IP
techniques and rejection criteria used for slings and hardware					
Describe the basic hitch configurations and their proper connections	FEN 106	00106-00		NCCER	NO
Describe basic load handling safety practices	FEN 106	00106-00		NCCER	NO
Describe proper use of American National Standards Institute (ANSI) hand signals	FEN 106	00106-00		NCCER	NO
INTRODUCTION TO THE NATIONAL ELECTRICAL CODE (NEC)	FEN107	32107			
Explain the purpose and history of the NEC	FEN107	32107		NCCER NEC CODE BK	YES
Describe the layout of the NEC	FEN107	32107		NCCER NEC CODE BK	YES
Explain how to navigate the NEC	FEN107	32107		NCCER NEC CODE BK	YES
Describe the purpose of the National Electrical Manufacturers' Assoc. (NEMA) and the National Fire Protection Assoc. (NFPA)	FEN107	32107		NCCER NEC CODE BK	YES
Explain the role of testing laboratories	FEN107	32107		NCCER NEC CODE BK	YES
INTRODUCTION TO ELECTRICAL BLUEPRINTS	FEN201	32109			
Explain the basic layout of a blueprint	FEN201	32109		NCCER	YES
Describe the information included in the title block of a blueprint	FEN201	32109		NCCER	YES
Identify the types of lines used on a blueprint	FEN201	32109		NCCER	YES
Identify common symbols used on blueprints	FEN201	32109		NCCER	YES
Understand the use a architect's and engineer's scales	FEN201	32109		NCCER	YES

CONTENT AREA	COURSE CODE	NATIONAL SKILL STANDARD	MATHEMATICS	READING	
				OJT	IP
Interpret electrical drawings, including site plans, floor plans, and detailed drawings	FEN201	32109		NCCER	YES
Read equipment schedules found on electrical blueprints	FEN201	32109		NCCER	YES
Describe the type of information included in electrical specifications	FEN201	32109		NCCER	YES
INTRODUCTION TO FASTENERS AND ANCHORS	FEN202	32103			
Identify and explain the use of threaded fasteners	FEN202	32103		NCCER	NO
Identify and explain the use of non-threaded fasteners	FEN202	32103		NCCER	NO
Identify and explain the use of anchors	FEN202	32103		NCCER	NO
Demonstrate the correct applications for fasteners and anchors.	FEN202	32103		NCCER	NO
Install fasteners and anchors	FEN202	32103		NCCER	NO
INTRODUCTION TO BEARINGS	FEN203	32212			
Identify and explain plain bearings	FEN203	32212		NCCER	NO
Identify and explain ball bearings	FEN203	32212		NCCER	NO



Erie County
Technical
School

Program Title

Course Syllabus

Course Title		Course Number	Course Hours
INTRODUCTION TO BEARINGS		FEN203	30
Instructor:	Mr. Massello		
Telephone/Email	864-0641 Ext. 351	tmassello@ects.org	
Course Description:			
This course introduces the student to plain bearings and antifriction bearings and the materials they are made of.			
Previous Course Prerequisites:			
FEN102			
Suggested Academic Prerequisites:			
NONE			
Course Outline:			
1. Identify and explain plain bearings 2. Identify and explain ball bearings 3. Identify and explain roller bearings 4. Identify and explain thrust bearings 5. Identify and explain guide bearings. 6. Identify and explain flanged bearings 7. Identify and explain pillow block bearings. 8. Identify and explain take up bearings. 9. Identify and explain bearing materials. 10. Explain bearing design.			
Materials and Tools Needed for Course:			
1 – Calculator 2 – 2 inch three ring binders 300 sheets of paper for the three ring binders 1 – 12 inch ruler 12 - #2 pencils or a mechanical pencil with extra lead 1 – Large eraser 1 – High liter			

Instructional Activities:	
NCCER Module 32212	
Grading Criteria:	
93 – 100	A
85 – 92	B
77 – 84	C
70 – 76	D
69 or below	F