

BUILDING CONSTRUCTION TECHNOLOGY

2022-2023 Student Information Book



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Building Construction Technology is a two-year program leading to an Associate of Applied Science Degree. The purpose of this program is to train future leaders for a variety of roles in the construction industry.

A SOE is real-world industry experience. As part of the Building Construction Technology (BCT) program you will be employed by a commercial construction company for a minimum of 14 weeks. This educational experience/employment will occur during the summer semester and second six weeks of the fall semester (second year). Please refer to “Participant Responsibilities” on page 7 for more details.



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INTRODUCTION

The Building Construction Technology (BCT) program is an Associate of Applied Science degree (A.A.S.) that is designed to develop technically competent and professional people who are ready to enter the construction industry.

Students receive technical training on industry methods and equipment and related products through a combination of classroom instruction, hands-on laboratory instruction, and supervised occupational work experience at a commercial construction site.

The Building Construction Technology program takes five semesters or approximately 21 months to complete. During the summer semester and second six weeks of the fall semester (second year) students will be partaking in an SOE off-campus with one or more of our industry sponsors.

Classroom and laboratory instruction at NDSCS covers the basics of each subject. Industry provided work experiences are structured to relate to the most recent classroom subjects covered at NDSCS and includes projects to improve the student's skill level.

Students are required to obtain an SOE from an authorized industry employer. Students can request assistance in locating an SOE employer and SOE employer can request assistance in locating a student to employ.

SOE employers are responsible for providing students with employment and challenging them during the work experience periods. Students are responsible for tuition, fees, textbook and tool costs.

BUILDING CONSTRUCTION TECHNOLOGY

(21 months) (AAS Degree)

First Semester

	Credits
BCT 110 Concrete and Site work	4
BCT 111 Concrete Theory	2
BCT 115 Introduction to Light Commercial Construction	3
BCT 133 Carpentry Fundamentals	2
BCT 140 Introduction to Print Reading	2
BCT 224 Building Layout	2
FYE 101 Science of Success	1
MATH 130 Technical Mathematics*	2

Second Semester

	Credits
CSCI 116 Business Use of Computers	3
BCT 131 Rough Carpentry	3
BCT 132 Exterior Finish Construction	3
BCT 222 Construction Safety	2
ENGL 110 College Composition I	3
HPER 210 First Aid & CPR	2
MATH 132 Technical Algebra I*	2

Summer Semester

	Credits
BCT 201 Supervised Occupational Experience I	6

Third Semester

	Credits
BCT 202 Construction Seminar	2
BCT 203 Supervised Occupational Experience II	4
BCT 212 Steel Frame Construction	3
BCT 240 Commercial Print Reading	3
MATH 136 Technical Trigonometry*	2
MFGT 120 Basic Welding I	1
PSYC 100 Human Relations in Organizations	2

Fourth Semester

	Credits
BCT 220 Project Supervision	3
BCT 231 Interior Finishes	3
BCT 232 Finish Carpentry	3
BCT 233 Commercial Finishes	3
ARCT 144 Construction Estimating I	3
COMM 110 Fundamentals of Public Speaking	3

TOTAL REQUIRED CREDITS: 77

(6 credits are Summer SOE, 1 credit is FYE)

GENERAL EDUCATION TRANSFER CREDITS

*MATH 130, 132, and 136 DO NOT transfer, take MATH 103, 104, 105, or 146 for transfer credits.

**ENGL 105 DOES NOT transfer, take ENGL 120, 125, or COMM 110 for transfer credits.

COURSE DESCRIPTIONS

BCT 110 Concrete and Sitework (4 credits)

This course is an introduction to the techniques of forming, placing, and finishing concrete. Students will gain experience and knowledge of footings, walls, and flat work as well as the tools used in the concrete construction industry. The course is conducted during the first eight weeks of the fall semester and is primarily lab. The students actually prep the sub-grade, construct the form-work, install the reinforcement, place and finish the concrete, strip and clean the forms, and backfill the work site as required. Skid steer operation as well as the use of other construction equipment is incorporated into this hands-on training experience.

BCT 111 Concrete Theory (2)

This course gives the students an understanding of proper procedures and techniques for placing, finishing, jointing, curing, and protection of concrete flatwork.

BCT 115 Introduction to Light Commercial Construction (3)

This course is an introduction to framing techniques to include constructing a floor system, framing of walls, constructing and installing rafters, applying sheathing, installing windows and doors, installing siding and soffits, and installing shingles. Both wood and metal is used in the construction of small utility type structures. The students use blueprints to construct these projects and work in small teams. This course is primarily lab.

BCT 131 Rough Carpentry (3)

This course is primarily laboratory focused consisting of proper construction of floor, wall and roof assemblies using appropriate means and methods in regards to building codes and applicable drawings. The students are also developing their skills as a leader and crew member. Students are required to give daily safety toolbox talks, plan daily tasks, and track daily logs and timesheets.

BCT 132 Exterior Finish Construction (3)

This course is primarily laboratory focused consisting of proper construction of exterior weather barriers, windows and doors, and exterior finishes while following appropriate building codes, manufacturer's instructions and applicable drawings. The students are also developing their skills as a leader and crew member. Students are required to give daily safety toolbox talks, plan daily tasks, and track daily logs and timesheets.

BCT 133 Carpentry Fundamentals (2)

This course is primarily lecture focused on the basics of carpentry. Course modules consist of orientation to the trade, building materials and fasteners, hand and power tools, floor assemblies, wall assemblies, roof assemblies, building envelopes, and basic stair layout.

BCT 140 Intro to Print Reading (2)

This is a comprehensive lecture-based course that covers print reading fundamentals, construction materials, and light frame construction used in residential and light commercial buildings. The course provides information applicable to carpentry, electrical, mechanical, and general building trades. It provides an authentic print reading experience using contemporary prints. Also included is updated coverage on building codes, CSI Master Format, LEED Certification, and Green Building Technology.

BCT 201 Supervised Occupational Experience I (6)

The student will receive on-the-job experience on a construction project. This will allow the student to practice and utilize the skills and knowledge learned during the previous on-campus instructional period. The work experience will be supervised by the NDSCS Supervised Occupational Experience coordinator.

BCT 202 Construction Seminar (2)

The student will receive customized learning modules based on evaluations acquired from Supervised Occupational Experience I. The course will require a minimum of 64 hours over a two-week period. Students will be assigned learning objectives necessary for the successful completion of Supervised Occupational Experience II.

BCT 203 Supervised Occupational Experience II (4)

The student will receive on-the-job experience on a construction project. This will allow the student to practice and utilize the skills and knowledge learned during the previous on-campus instructional period. The work experience will be supervised by the NDSCS Supervised Occupational Experience coordinator.

BCT 212 Steel Frame Construction (3)

This course provides experience and knowledge of how to work with commercial construction materials. Methods of constructing pre-engineered structures and steel construction including commercial frame, floor, roof, and interior systems will be taught. Hollow metal doors, frames and hardware will be included. Equipment usage and safety will be emphasized.

BCT 220 Project Supervision (3)

This is a lecture/discussion-based class in supervisory training. Individual participation is highly recommended and encouraged. It is a comprehensive, competency-based program that gives new field managers a step-by-step approach to honing their natural abilities, developing essential skills, and generally improving their performance as leaders. Students will learn management skills in problem solving, planning, estimating, safety supervision, scheduling, controlling costs and resources, and, perhaps most important, managing people. These are skills most easily acquired through formal education.

BCT 222 Construction Safety (2)

This course is designed to parallel the 29CFR1926 OSHA Construction Industry Regulations. The course covers both the compliance as well as best practices in the construction industry as they pertain to safety. Upon completion of this course students will receive a "30 Hour OSHA Safety Card." Attendance at each of the 30 hour sessions is mandatory.

BCT 224 Building Layout (2)

The course will be held in a classroom and outdoor environment where the student will learn basic site layout and determining elevations. Students will utilize basic site layout tools during the lab portion of the class.

BCT 231 Interior Finishes (3)

This course provides a hands-on lab-based experience and knowledge of the skills and techniques to perform in the field of carpentry. Methods of laying out and installing insulation, vapor barrier, drywall and getting to a finished wall state (painted). Organization, quality control, estimating materials and coordination with others will be emphasized.

BCT 232 Finish Carpentry (3)

This course provides a hands-on lab-based experience and knowledge of the skills and techniques to perform in the field of finish carpentry. Methods of laying out and installing frames/doors, cabinet/counter installation, millwork, floor coverings, tile and finish hardware. Organization, quality control, estimating materials and coordination with others will be emphasized.

BCT 233 Commercial Finishes (3)

"Carpentry Framing and Finishing from the National Center for Construction Education and Research" (NCCER), along with "Fundamentals of Building Construction" are used to educate the student in areas of commercial and residential finishes. Some specific topics covered are cold-formed steel framing; thermal and moisture protection; doors and door hardware; drywall installation; window, door, floor, and ceiling trim; cabinet installation; selecting interior finishes; interior walls and partitions; and finish ceilings and floors. It is to develop the students' vocabulary and knowledge of the commercial construction industry relating to construction practices and construction material requirements within our industry.

BCT 240 Commercial Print Reading (3)

This course provides a print reading experience relating to commercial construction. The course covers the skills needed to interpret plans and specifications commonly included on prints for large commercial structures. Expanded topics include materials and methods, the roles of building-process participants, and project delivery methods. Included are types of construction, specifications, site work, structural steel construction, reinforced concrete construction, mechanical and electrical systems, and finish construction found on commercial projects. Students will become familiar with terms and symbols that are commonly used in commercial blueprints.

ARCT 144 Construction Estimating I (3)

This course is an introduction to residential material estimating. The basic principles of construction estimating are covered. Material lists, calculations and costs are made for several different houses and projects.

CSCI 116 Business Use of Computers (3)

This course is designed to teach the use of Microsoft Office in the business environment covering the most critical topics of Windows and Microsoft Office, to include Word, Excel, Access and PowerPoint, along with Cloud Computing. Students will be able to apply technology skills to enhance both their personal and professional lives. Additional topics include email basics and use of the Internet. No prior computer experience is assumed. Windows PC required.

ENGL 110 College Composition I (3)

An introduction to college-level writing as a process of drafting, revising and editing. This course emphasizes critical reading, writing, thinking and research skills as students write for a variety of audiences and purposes. Students will receive guided instruction in the writing process as they begin writing based on personal experiences. An introduction to proper crediting of source material and research will occur toward the end of the course. Prerequisite: Placement test.

COMM 110 Fundamentals of Public Speaking (3)

The theory and practice of public speaking with emphasis on content, organization, language, delivery and critical evaluation of messages.

FYE 101 Science of Success (1)

This is a practical one-credit course that provides the tools and skills necessary to get a strong start with the transition for new students at NDSCS. This course will introduce students to campus resources, policies and procedures and cover topics such as time management, study skills, goal setting, wellness, financial literacy and professional development.

HPER 210 First Aid & CPR (2)

Provide students with the knowledge and skills necessary to respond to an emergency. Preparing students to identify, assess, manage and minimize consequences of injury (minor and major) and sudden illness in medical emergencies. Providing options for professional level of training, this course is outlined by the American Heart Association and will follow those guidelines. Certificate cards are given upon request and only after successfully completing the course. The student must score at or above the 84th percentile on all written exams for certifications. Training skills for the professional AHA BLS, AED, and first aid. AHA Heart Saver CPR training may be available upon request.

MATH 130 Technical Mathematics (2)

A review of whole numbers, fractions and decimals using U.S. measurements. The application of ratio and proportion, direct measure, perimeter, area and volume with a construction emphasis.

MATH 132 Technical Algebra (2)

A basic algebra course for students enrolled in technology programs. Topics include properties of real numbers, algebraic expressions, solving equations, polynomials, factoring, formula manipulations and problem-solving.

MATH 136 Technical Trigonometry (2)

A study of the fundamentals of trigonometry. Right triangle trigonometry, the Law of Sines, the Law of Cosines and Vectors. Emphasis is placed on problem-solving for the technology fields. Prerequisite: MATH 132.

MFGT 120 Basic Welding I (1)

Basic Training in the use of Oxygen-Acetylene/Propylene Cutting (OFC), Shielded Metal Arc Welding (SMAW) and Gas Metal Arc Welding (GMAW). Welding safety, welding equipment, welding joint configurations and welding techniques will be covered. Welding supplies such as electrodes, shielding gases and electricity will be studied. Welding shop safety is the main focus.

PSYC 100 Human Relations in Organizations (2)

This course focuses on building successful and effective interpersonal relationships within organizational and other social environments. It includes an examination of human relations in business and industry with emphasis on how people can work effectively in groups to satisfy both organizational and personal goals. Motivation, emotional and mental health, communication techniques, and coping with stress are explored. Activities are used to encourage the application of concepts to enhance personal growth and insight and to increase social skills. ND:SS

STUDENT ADMISSION AND SELECTION PROCEDURE

Students enroll in the Building Construction Technology program at the beginning of fall semester. Students are accepted into the program upon completion of admission into NDSCS. Students should do the following:

Apply for admission to NDSCS through the Enrollment Services office. Enrollment Services will not accept faxed applications for any program.

- Submit high school transcripts or GED to Enrollment Services.
- Visit NDSCS and complete orientation (testing, academic advising and scheduling, and registration).

ADMISSIONS

Students should contact the NDSCS Enrollment Services office (701-671-2173) to receive information on the college, financial aid and housing. Students should complete the applications and return them to NDSCS promptly.

HIGH SCHOOL OR GED TRANSCRIPTS

Applicants must demonstrate completion of high school or GED equivalency. Students should contact their high school guidance office and request that their transcript be submitted to NDSCS Enrollment Services.

COLLEGE EXPENSES

Contact the Director of Enrollment Services for tuition costs.

NOTE: All tuition, fees, room and board costs are tentative and are subject to change. Personal costs are rough estimates of personal spending. Contact the NDSCS Enrollment Services office for a current information sheet.

ORIENTATION

All freshmen must complete an orientation. Once a student is admitted to NDSCS, Enrollment Services will schedule orientation for the student. Orientation includes a tour of the NDSCS campus, financial aid counseling, scheduling (academic advising) and registration.



CONTACT

Sponsors and students should direct all program inquiries to the following NDSCS contacts:

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PARTICIPANT RESPONSIBILITIES

The Building Construction Technology (BCT) Program is a partnership between an Industry Supervised Occupational Experience (SOE) Employer, North Dakota State College of Science, and participating students. Each has the following responsibilities in this partnership:

NORTH DAKOTA STATE COLLEGE OF SCIENCE

- Maintain a current curriculum updated by Industry Advisory Members.
- Provide classroom and laboratory facilities.
- Provide SOE-coordinator and instructors; the SOE-coordinator acts as a liaison between NDSCS and Industry SOE employer.
- Provide equipment and tools other than student purchased tools (see tool list).
- Promote and advertise and recruit qualified students.
- Test, interview and screen students.
- Assist SOE employer with student selection.
- Maintain all student records.
- Provide academic, financial aid, and counseling services and advisement.
- Visit students during supervised occupational work experiences to assure attainment of work experience competencies.
- Furnish program information to Industry Advisory Members, students and the general public when requested.
- Provide an Associate of Applied Science Degree in Building Construction Technology.

INDUSTRY SUPERVISED OCCUPATIONAL EXPERIENCE COMPANY

- Promote, advertise and recruit qualified students.
- Interview and select a student to provide SOE.
- Appoint a mentor to coordinate and supervise students' SOE experience.
- Mentor will work with NDSCS's SOE-coordinator in planning and monitoring the supervised occupational work experiences.
- Pay trainee's wages, commensurate with experience, during periods of supervised occupational work experiences.
- Provide work experience that will increase the students' skill level.

- Clarify any behavioral issues, rules, permissions, clothing and safety requirements.
- Provide an overview of the organization and industry, and share career advice and tips on work/life balance
- Help students understand the required skills and attitudes needed for the job.
- Demonstrate and explain effective work methods and show a desire to work with students.
- Provide students with constructive feedback, especially as it relates to realistic expectations of the student.

STUDENT

- Demonstrate high school graduate or equivalent.
- Apply for admission to NDSCS.
- Complete entrance tests (ACT and ACCUPLACER if needed) and personal interview as required by the program coordinator.
- Obtain an SOE sponsor prior to required SOE I and SOE II.
- Maintain NDSCS and BCT academic standards and adhere to academic policies.
- Wear required personnel protective equipment (PPE) while working in lab environment on or off campus and during supervised occupational experiences at the employing company.
- Participate in all learning activities and experiences at the scheduled times.
- Provide the sponsoring company with responsible and productive employment.
- Pay for program costs - tuition, fees, books and tools. Tools are required prior to your first semester. To meet this requirement, tools are available for purchasing at the NDSCS Bookstore.
- Students shall meet expectations set by your employers and program requirements such as attendance, promptness, safety and performance.
- Complete SOE reports and other college-related assignments during non-working hours.

FINDING AN EMPLOYER

Note: You may speak to any employer at any time about the Building Construction Technology (BCT) program.

KEY POINTS TO REMEMBER:

- Employers are independent businesses.
- When looking for a employer, you are looking for a JOB – act and dress accordingly.
- The North Dakota State College of Science SOE Coordinator will provide assistance, guidance and identify interested companies.
- We do not assign you to a company.
- As a BCT student you will be an employee and a student, although the two should never conflict.

- Be prepared:
 - Be neat and clean in appearance.
 - Be confident of your goals and skills.
 - Complete your part of the Building Construction Technology application legibly.
- Your first priority should be convincing the employer that you will make a good employee.
- If you are not sure whom to see, ask for the HR person first.

If you are sure that you want to be in the Building Construction Technology program, be confident and get busy right now.

CAMPUS SOE HOUSING INFORMATION

Most students choose to live with relatives while employed off-campus during the SOE experience. Housing reimbursement is available during this time.

- 2nd year BCT students will receive an up-front credit equivalent to the pro-rated amount for six weeks (3rd-8th week of 1st 8 weeks starting Fall 2020).
- Students will be given credit at the rate of the standard double room for the time period they are not on campus. If they occupy a room that is priced higher than the standard double rate, they would be responsible for the additional cost.
- Room credits for SOE apply only to residential hall spaces (apartments and College townhomes are excluded).

On-campus housing is available for students who chose to remain locally during their SOE experience.

- BCT students will live in the Forkner residence hall during the summer while taking their first SOE. In order to provide a seamless transition of housing between Spring and Fall semesters, students will stay on campus from graduation until move-in day for the Fall semester. (Forkner is the only residence hall open during the summer.)
- Students can also choose to live in Forkner only during the eight-week summer session if that is all the time they will need for housing during their first SOE.

For other questions regarding housing, please contact Student and Residential Life at 701-671-2224 or NDSCS.ResidenceLife@ndscs.edu.



SOE EMPLOYER APPROVAL OF STUDENT

DIRECTIONS TO THE STUDENT

Fill in your name and address in the lines below. Then, take this Sponsor Approval Form to the SOE Sponsor for approval of the sponsorship.

Student's Name _____
 Street Address _____
 City, State, Zip _____
 Phone _____

DIRECTIONS TO THE SOE EMPLOYER

_____ I agree to provide a SOE for the above student in the Building Construction Technology program at NDSCS.

Company _____
 Street Address _____
 City, State, Zip _____
 Phone _____
 Authorizing Representative _____
 Date _____

STUDENT RELEASE OF INFORMATION FORM

I hereby grant permission to North Dakota State College of Science to share my high school transcripts, pre-admission test results, interview data, and college grades and progress reports with the SOE employer.

Student Signature _____
 Street Address _____
 City, State, Zip _____
 Date _____

Return this completed form to:
 NDSCS Enrollment Services
 800 Sixth St. N.
 Wahpeton, ND 58076-0002

CORRESPONDENCE

All correspondence should be directed to the following address:

Building Construction Technology Program
 Enrollment Services
 North Dakota State College of Science
 800 Sixth St. N.
 Wahpeton, ND 58076



STUDENT TOOL LIST

Students are responsible for purchasing or providing their own tools. Below is a list of required tools for the program. These tools can be purchased from NDSCS at a substantial discount through the Bookstore.

Qty	Description	Catalog #	Brand
1	Carpenter's Combo Tool Belt, 4 pc.	1604	CLC
1	5-in-1 Painter Tool	02970	HYDE
1	Ratchet Suspension Hard Hat - Red	19954	ERB Omega
1	8" Line Pliers N.American Strait	2078208	Irwin
1	Molding Pro 10"	21-2325	Erb Omega
1	6-in-1 Screwdriver	26000G	Lutz
1	Stabila GP 4' Level	29048S	Stabila
1	5 pkt. Level Case	30015F	Stabila
1	16" Adjustable Wrench	3239	Klein
1	Construction Master Pro Calculator	4065	Calculated Ind
1	24" English Rafter Square	45-011	Stanley
1	29 pc. Bully Drill Bit Set	46962	Viking
1	7" Quick Square Layout Tool	46-071	Stanley
1	Chalk Line Reel	47-140L	Stanley
1	Fastback Flip Utility Knife	48-22-1502	Milwaukee
1	Driver Bit Set, 32 pc.	48-32-4004	Milwaukee
1	Fastener Pouch 6.5w x 3d x 9h	54160M	Bucketboss
1	21" Wonder Bar/Pry Bar	55-526	Stanley
1	Steel Nail Set, 3 pc.	58-230	Stanley
1	Blue Marking Chalk, 8 oz.	64901	Irwin

Qty	Description	Catalog #	Brand
1	20v 4.0 XR Battery	DCB204F	DeWalt
1	20v Max Lith Ion 5 Tool Combo Kit	DCK590L2	DeWalt
2	1/4" Magnetic Hex Head Driver	DW2221IRB	DeWalt
2	5/16" Magnetic Hex Head Driver	DW2222IRB	DeWalt
2	3/8" Magnetic Hex Head Driver	DW2223IRB	DeWalt
1	25' Tape Measure	DWHT36225S	DeWalt
1	Claw Rip Hammer 20oz	E3-20S	Estwing
1	Offset Left Cut Aviation Snip	MWT-6510L	Midwest Snips
1	Offset Right Cut Aviation Snip	MWT-6510R	Midwest Snips
1	Straight Cut Aviation Snip	MWT-6716S	Midwest Snips
1	Banded Hearing Protection	QB3HYG	Howard Leight
1	Safety Glasses	S3200	Uvex
1	Carpenters Pencil	SPECIAL	
1	Saw Blades for Tool	DWA1612CMB	DeWalt
1	Rediprocating Saw Blade	DW4892	Dewalt
1	Welding Starters Kit	KH977	Lincoln
1	BCT Vest (Sized)	21125	Ergodyne
3	BCT Shirts (Sized)		Custom

ELIGIBLE SOE EMPLOYERS



Structures Inc.

Other companies welcome, please contact SOE Coordinator for more details.



NORTH DAKOTA STATE COLLEGE OF SCIENCE

NDSCS.edu/Building-Construction