Statewide Model
Programs of Study

Architecture, Construction, and Energy

February 22, 2022
Thank you for joining!
We will get started shortly.
Quick Notes

- We highly encourage you to use the Q&A and Chat Box
- This webinar is being recorded
- The slide deck link will be shared in the chat

Agenda

- Welcome from ICCB and EdSystems
- Background on Model POS Guides
  - Policy Alignment
  - Role of Advisory Committee
- Model POS Mapping Process
- Review of POS Guide for Architecture, Construction, and Energy
- POS in Action: Kankakee Community College
- Feedback and Next Steps
Welcome from Illinois Community College Board

Janelle Washington
Director for CTE
EdSystems Staff

Jon Furr
Executive Director

Meagan Mitchell
Pathways Manager
The EdSystems Mission
Shape and strengthen education and workforce systems to advance racial equity and prepare more young people for productive careers and lives in a global economy.

College & Career Pathways
Bridges to Postsecondary
Data Impact & Leadership

Statewide
Community Networks
Innovation
Background on Model Programs of Study
The primary purposes and goals for the Model Programs of Study Guides are to:

- Provide guidance and exemplars for local programs to adopt or customize as they develop programs of study for approval as part of the Perkins V Plan.

- Identify priority dual credit and early college courses that are foundational to the industry area and well-situated for statewide scaling and articulation.

- Define the competencies that should be sequenced across a program of study course sequence to prepare students for the future of work in that industry area.

- Identify entry points for employers to support coursework and related experiences.
Why Develop Statewide Model Programs of Study? Pt. 2

Intended audiences:

• High school faculty working in pathways
• Community College faculty and staff (e.g. academic deans & department heads, early college liaisons, etc.)
• Education for Employment System Directors

Subsequent Presentations

• March 15: Finance and Business Services
• April 19: Arts and Communications
State Pathways Model

- **Individualized Planning**
- **Career Focused Instruction**
- **Work-Based Learning**
- **Core Academics**

**Secondary Pathway**
- Internships / CDE
- Low-Skilled Jobs
- Semi-Skilled Jobs

**Postsecondary Pathway**
- Middle-Skilled Jobs
- Advanced-Skilled Jobs

**OUTCOMES:**
- Credential Attainment
- Labor Market / Economic Development

**Stackable Credentials**
- AA/AAS
- BA/BS
INDIVIDUAL PLAN

Each student completing an endorsement must have an individualized plan, which includes college planning linked to early understanding of career goals, financial aid, resume, and personal statement.

PROFESSIONAL LEARNING

Awareness, exploration, and preparation activities that provide opportunities for students to interact with adults in their workplace.

<table>
<thead>
<tr>
<th>9th</th>
<th>10th</th>
<th>11th</th>
<th>12th</th>
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</thead>
<tbody>
<tr>
<td>At least 2 career exploration activities or 1 intensive experience</td>
<td>60 cumulative hours of paid or credit supervised career development experience with a professional skills assessment</td>
<td></td>
<td></td>
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<tr>
<td>At least 2 team-based challenges with adult mentoring</td>
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</tbody>
</table>

Through these experiences, a student gains essential employability and technical competencies in their identified sector.

CAREER-FOCUSED INSTRUCTIONAL SEQUENCE

Two years of secondary coursework, or equivalent competencies, that articulate to a postsecondary credential with labor market value. Must include at least 6 hours of early college credit.

<table>
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<tr>
<td>Orientation / Introduction</td>
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<tr>
<td>Skill Development</td>
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</tr>
<tr>
<td>Capstone / Advanced Courses</td>
<td></td>
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</table>

ACADEMIC READINESS

Ready for non-remedial coursework in reading and math by high school graduation through criteria defined by district and local community college.
Policy Alignment

- Postsecondary and Workforce Readiness Act
- Career and Technical Education
- Dual Credit
- Teach Illinois: Strong Teachers, Strong Classrooms
- ESSA: Every Student Succeeds Act

Policy Solutions to Alleviate Teacher Shortages in Illinois
September 2018

Every Student Succeeds Act
College & Career Readiness Indicator

A Plan to Revitalize the Illinois Economy and Build the Workforce of the Future
State Pathways Policy Framework: College, Career and Life Ready

**Foundational Skills for All Careers**
- General employability and entrepreneurial skills embedded in HS experience
- Student have a familiarity with work-based setting and robust experience in problem-based learning

**Accelerated Towards a Career Area**
- Multiple years of coursework, increasing commitment to the field
- Emphasis on Early college coursework in "Career-focused" subjects
- Courses go Beyond Traditional High School CTE and Industry Credentials, include Complementary General Education Courses

** Academically Ready for College**
- Required success in College-Level, career-focused coursework and electives
- Required placement college-level placement in Math and English (through collaboration with local Community College)
**2020 Guides**
- Education
- Health Sciences
- Information Technology
- Manufacturing and Engineering

edsystemsniu.org/guides

**2021 Guides**
- Agriculture, Food and Natural Resources
- Architecture, Construction and Energy
- Arts and Communications
- Finance and Business Services
Role of Advisory Committee

Expertise and guidance:

• What are trends in the industry that aren’t reflected in Labor Market Information?
• What credentials/degrees are emerging as most promising in the field?
• How does our desk analysis relate to on-the-ground implementation?
• What are future of work implications for this sector?

Inform key decision-points in this process:

• Pathway map approach
• Selecting strategic early college credit courses
• Identifying key competencies (building from existing State technical competencies)
Mapping Process
Model Programs of Study Mapping Process

6 month process

- Identify high-priority occupations
- Determine promising credentials & map stackable degrees/certificates
- Identify strategic community college courses
- Map secondary to postsecondary sequence
- Define related technical competencies
Model Programs of Study Mapping Process

1. Identify high-priority occupations
2. Determine promising credentials & map stackable degrees/certificates
3. Identify strategic community college courses
4. Map secondary to postsecondary sequence
5. Define related technical competencies
High Priority Occupations & Promising Credentials

• Using Department of Labor data and the MIT Living Wage Calculator for the State of Illinois as a reference, High Priority Occupation defined
  • Occupations with a positive growth outlook and
  • Occupations whose salaries are near or greater than the “Living Wage” of 1 Adult + 1 Child in Illinois.

• A “promising credential” is a degree or college certification that immediately prepares an individual for entry into a high-priority occupation, with a focus on credentials available in typical Illinois Community College.
  • Credential may also be a clear precursor to or stackable credential for a high-priority occupation
<table>
<thead>
<tr>
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<tbody>
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<td>Accountants and Auditors</td>
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<td>Yes</td>
<td>Bachelor's Degree</td>
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<td>Business Operations Specialist</td>
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<td>Yes</td>
<td>Bachelor's Degree</td>
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<td>Financial Analyst</td>
<td>39.29</td>
<td>Yes</td>
<td>Yes</td>
<td>Bachelor's Degree</td>
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<td>Actuary</td>
<td>49.34</td>
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<td>Yes</td>
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<td>Market Research Analysts and Marketing Specialists</td>
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<td>Yes</td>
<td>Yes</td>
<td>Bachelor's Degree</td>
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<td>Human Resource Specialist</td>
<td>28.79</td>
<td>Yes</td>
<td>Yes</td>
<td>Bachelor's Degree</td>
<td>2230</td>
<td>6%</td>
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<td>First-Line Supervisor of Retail Sales Workers</td>
<td>18.74</td>
<td>No</td>
<td>Yes</td>
<td>High school diploma</td>
<td>5,620</td>
<td>3%</td>
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<tr>
<td>First-Line Supervisor of Office &amp; Administrative Support Workers</td>
<td>28.3</td>
<td>Yes</td>
<td>No</td>
<td>High school diploma</td>
<td>4,450</td>
<td>0%</td>
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<tr>
<td>First-Line Supervisor of Non-Retail Sales Workers</td>
<td>34.04</td>
<td>Yes</td>
<td>Yes</td>
<td>High school diploma</td>
<td>1,070</td>
<td>3%</td>
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<td>Human Resource Assistant</td>
<td>19.49</td>
<td>No</td>
<td>No</td>
<td>Postsecondary nondegree award</td>
<td>380</td>
<td>-4%</td>
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<tr>
<td>Lodging Manager</td>
<td>21.62</td>
<td>No</td>
<td>Yes?</td>
<td>High school diploma or equivalent</td>
<td>180</td>
<td>9%</td>
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<tr>
<td>Insurance Claims and Policy Processing Clerks</td>
<td>19.94</td>
<td>No</td>
<td>Yes</td>
<td>High school diploma or equivalent</td>
<td>1090</td>
<td>10%</td>
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</table>
Common CC Programs

Guided Transfer
- Business AA**^^
- Accounting AA**^^
- Actuary AA^^

Business AAS, with specialities/certs^^
- General,**
- Insurance,
- HR,**
- Entrepreneurship,**
- Management,**
- Marketing,**
- Hospitality**

Supply Chain
- Supply Chain AAS, AA/AS^^

Accounting
- Accounting AAS**^^

Leading to Occupations/Careers

Entry Level Bachelor’s Degree Positions
- Business Operations Specialist OR Financial Analyst OR Market Research Analysts OR Human Resource Specialist
- Accountants and Auditors
- Actuary

Small/Local Business
- First-Line Supervisor of Retail Sales Workers OR Office & Administrative Support Workers OR First-Line Supervisor of Non-Retail Sales Workers
- Human Resource Assistant OR Lodging Manager OR Insurance Claim Clerk

Supply Chain
- Supply Chain Manager OR Production, Planning, & Expediting Clerks

Clerk Roles
- Payroll & Timekeeping, OR, Bookkeeping, Accounting, & Auditing Clerk, OR Billing and Posting Clerks

** Aligns with ISBE CTE Program of Study Matrix

^^Degree Stacks
Model Programs of Study Mapping Process

1. Identify high-priority occupations
2. Determine promising credentials & map stackable degrees/certificates
3. Identify strategic community college courses
4. Map secondary to postsecondary sequence
5. Define related technical competencies
Identify Strategic Community College Courses

- Analyze “promising credential” program requirements at various Community Colleges in the state

- Tally and label all of the “career-focused” & “general education” courses across programs to determine which of these courses:
  - Are most common across targeted programs,
  - Are more likely accessible for dual credit, and
  - Have the potential for transferability and currency (through the Illinois Articulation Initiative) or have industry credentials
# Identify Strategic Community College Courses

<table>
<thead>
<tr>
<th>Business careers, courses</th>
<th>Finance</th>
<th>Business careers, courses</th>
<th>XLSX</th>
</tr>
</thead>
</table>

## Business 111
- **Course Title:** Introduction to Business
- **Common Name:** Intro to Business
- **Prerequisites:** None
- **IAI Code:**
- **Notes:**
- **Sum:** 7

## Business 181
- **Course Title:** Financial Accounting
- **Common Name:** Financial Accounting
- **Prerequisites:** College Level Math Pla BUS 903
- **IAI Code:**
- **Notes:**
- **Sum:** 9

## Business 182
- **Course Title:** Managerial Accounting
- **Common Name:** Managerial Accounting
- **Prerequisites:** Business 181
- **IAI Code:**
- **Notes:**
- **Sum:** 9

## Business Administration
- **Course Title:** Fundamentals of Speech & Oral Communication
- **Common Name:** College Level English P C2 900
- **Prerequisites:**
- **IAI Code:**
- **Notes:**
- **Sum:** 5
Model Programs of Study Mapping Process

1. Identify high-priority occupations
2. Determine promising credentials & map stackable degrees/certificates
3. Identify strategic community college courses
4. Map secondary to postsecondary sequence
5. Define related technical competencies
Map Secondary to Postsecondary Sequence

- Recommend early college courses reasonably accessible to HS students, goal is to at least get 6+ career-focused credit hours by HS graduation
- Keep open possibility for unique opportunities, i.e. work-based learning or capstone course
- Consider typical teacher and faculty credentials, as well as course delivery and approval processes
- Suggest initial post secondary courses and sequences that continue to accelerate student
- Recommend sequence in general education subject areas, including early college and AP supplements
Model Programs of Study Mapping Process

1. Identify high-priority occupations
2. Determine promising credentials & map stackable degrees/certificates
3. Identify strategic community college courses
4. Map secondary to postsecondary sequence
5. Define related technical competencies
Define Related Technical Competencies for Key Courses

- Select foundational courses in each Model Programs of Study area
  - Courses map to multiple credentials within the industry area,
  - Can be accessed for early college credit at secondary level, and
  - Not currently recognized by the IL Articulation Initiative (IAI)
- Determine a set of technical competencies for each course (i.e. learning objectives)
State of Illinois
Model Programs of Study Guide:
Architecture, Construction, and Energy
August 2021

Review of the Architecture, Construction, and Energy Guide
### Model Programs of Study Guide: Architecture, Construction, & Energy

#### ORIENTATION / INTRODUCTION
Grades 9-10
- Computer Applications for Business
- Intro to Technology, Trades, and Engineering
- Intro to Engineering Design

#### SKILL DEVELOPMENT
Grades 10-12
- Intro to Technology, Trades, and Engineering (Construction Trades Intro)
- Intro to Engineering Design

#### CAPSTONE / ADVANCED
Grades 12
- Construction Trades A
- Advanced Calculus

#### POSTSECONDARY OPTIONS
Recommended 1st Year
- Apprenticeship Training or Certificate Course Sequence
- HVACR / I / C (Beginning Welding)
- Civil Engineering and Architecture
- Intro to Management or Financial Accounting

#### SELECTED OCCUPATIONS, WAGES, & JOB GROWTH

<table>
<thead>
<tr>
<th>Program</th>
<th>Typical Job</th>
<th>Median Hourly Wage</th>
<th>Growth in BL</th>
<th>Growth in 10 yrs</th>
<th>Stocked?</th>
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</thead>
<tbody>
<tr>
<td>Construction Trades</td>
<td>Construction Estimator</td>
<td>$27.35</td>
<td>0%</td>
<td>-2%</td>
<td>Yes</td>
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<tr>
<td>Energy Technician</td>
<td>Electrical Power Line Installers &amp; Repairers</td>
<td>$45.72</td>
<td>0%</td>
<td>-5%</td>
<td>No</td>
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<tr>
<td>HVACR / Heating</td>
<td>Heating, Air Conditioning, Ventilation, Solar, &amp; Plumbing</td>
<td>$44.40</td>
<td>0%</td>
<td>-5%</td>
<td>No</td>
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<tr>
<td>Architecture, CAD, and Surveying</td>
<td>Architects</td>
<td>$86.86</td>
<td>0%</td>
<td>-2%</td>
<td>No</td>
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<tr>
<td>Construction Management</td>
<td>Construction Managers</td>
<td>$50.72</td>
<td>0%</td>
<td>-2%</td>
<td>No</td>
</tr>
</tbody>
</table>

1. Living-wage calculations are based on: Oregon Living Wage Calculator. 2021-05-05. https://www.oregon.gov/Labor/OES/Other/OEStudies/Pages/LivingWage.aspx. As of January 2017 for the state of Illinois, the “Living Wage” for a single adult is $16 per hour and “needs” defined as 60% of that income for living wage, was $22.32 per hour. In March 2021, the Living Wage calculator updated its calculations for Illinois, but information presented in this guide reflects the wage data as of January 2021, when the project team conducted its analysis.
## SELECTED OCCUPATIONS, WAGES, & JOB GROWTH

<table>
<thead>
<tr>
<th>Program</th>
<th>Typical Job</th>
<th>Near or Above Living Wage Threshold for 1 Adult + 1 Child $^1$</th>
<th>Median Hourly Wage $^2$</th>
<th>Growth in IL: Annual Job Openings $^2$</th>
<th>Growth in IL: % Change Over 10 years $^2$</th>
<th>Stackable?</th>
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</thead>
<tbody>
<tr>
<td>1a Construction Trades</td>
<td>Construction Carpenters</td>
<td>Y</td>
<td>$33.22</td>
<td>3,250</td>
<td>6%</td>
<td>Not Typically Stackable</td>
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<td></td>
<td>Electricians</td>
<td>Y</td>
<td>$39.17</td>
<td>2,580</td>
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<tr>
<td></td>
<td>Pipefitters &amp; Steamfitters</td>
<td>Y</td>
<td>$43.85</td>
<td>2,360</td>
<td>14%</td>
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<tr>
<td>1b Energy Technicians</td>
<td>Electrical Power Line Installers &amp; Repairers</td>
<td>Y</td>
<td>$43.49</td>
<td>310</td>
<td>11%</td>
<td>Typically Stacks to Related Bachelor’s Programs at Most IL Universities</td>
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<tr>
<td></td>
<td>Wind Turbine Service Technicians</td>
<td>Y</td>
<td>$25.76</td>
<td>170 $^3$</td>
<td>57% $^3$</td>
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<tr>
<td></td>
<td>Solar Photovoltaic Installers</td>
<td>N</td>
<td>$21.58</td>
<td>720 $^4$</td>
<td>20% $^4$</td>
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<tr>
<td>2 HVACR &amp; Weatherization</td>
<td>Heating &amp; Air Conditioning Mechanics &amp; Installers</td>
<td>Y</td>
<td>$27.52</td>
<td>800</td>
<td>13%</td>
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<td></td>
<td>First-Line Supervisors of Mechanics, Installers, &amp; Repairers</td>
<td>Y</td>
<td>$33.55</td>
<td>1,390</td>
<td>7%</td>
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<td>Weatherization Installers &amp; Technicians</td>
<td>Y</td>
<td>$26.42</td>
<td>170</td>
<td>9%</td>
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<td>3 Architecture, CAD, and Surveying</td>
<td>Architectural &amp; Civil Drafters</td>
<td>Y</td>
<td>$30.20</td>
<td>240</td>
<td>5%</td>
<td>Typically Stacks to Related Bachelor’s Programs at Most IL Universities</td>
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<td>Architects</td>
<td>Y</td>
<td>$38.06</td>
<td>390</td>
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<td>Surveyors</td>
<td>Y</td>
<td>$33.89</td>
<td>90</td>
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<td>4 Construction &amp; Energy Management</td>
<td>Construction Managers</td>
<td>Y</td>
<td>$43.59</td>
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<td>Y</td>
<td>$36.81</td>
<td>5,570</td>
<td>7%</td>
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</tbody>
</table>

1. Living wage calculations are based on: Glasmeier, Amy K. Living Wage Calculator. 2020. Massachusetts Institute of Technology. [livingwage.mit.edu](http://livingwage.mit.edu). As of January 2021 for the state of Illinois, the “Living Wage” for 1 Adult + 1 Child equaled $26.27/hour and “near,” defined as 85% of that statewide living wage, was $22.33/hour. In March of 2023, the Living Wage calculator updated its calculations for Illinois, but information presented in this guide reflects the wage levels as of January 2021, when the project team conducted its analysis.

2. U.S. Department of Labor, CareerOneStop ([careeronestop.org/explorecareers](http://careeronestop.org/explorecareers)). Illinois Department of Employment Security Virtual Labor Market Information ([www2.illinois.gov/ides](http://www2.illinois.gov/ides)), except where otherwise noted.

3. Estimate derived from available data on CareerOneStop.

Union vs. Non-Union Pathway Opportunities

- Unionization rate of IL construction workers: one-third to one-half
  - Union positions can be highly competitive, few trade apprentices begin immediately out of high school
  - High school pathway coordinators should seek strong relationships with trade apprenticeship programs to increase opportunities for HS graduates

- Hourly wages vary significantly – non-union starting positions typically closer to minimum wages

- Annual compensation levels dependent on hours worked

- Vast majority of construction trades training outside of union apprenticeships is for electricians, HVACR, and welding. CC programs in trades/HVACR either provide prep for an apprenticeship program, or non-unionized entry-level employment in trades or with utilities
Courses and Work-Based Learning Address the PWR Act Recommended Essential Employability Competencies

**CAREER FOCUSED COURSES**

- Computer Applications for Business
- Intro to Technology, Trades, and Engineering
- HVACR & Weatherization
- Architecture & Surveying
- Construction & Energy Management

**WORK-BASED LEARNING**

- Career Exploration (2)
- Team-Based Challenge

**ORIENTATION / INTRODUCTION**
Grades 9-10

**SKILL DEVELOPMENT**
Grades 10-12

**CAPSTONE / ADVANCED**
Grades 12

**POSTSECONDARY COURSES**
Recommended 1st Year

- Apprenticeship Training
- HVACR I / II or Beginning Welding
- Civil Engineering and Architecture
- Construction Trades I & Intro to Business
- Intro to Management or Financial Accounting
- Construction Trades II &/or Electrical Trades I / II
- Apprenticeship Training or Certificate Course Sequence
- AAS: AAS Course Sequence or AA/AES: GECC
- AAS Course Sequence

* May be offered through Career and Technical Student Organizations (CTSOs) including SkillsUSA Illinois and Technology Student Association (TSA)
<table>
<thead>
<tr>
<th>SCIENCE</th>
<th>SOCIAL SCIENCE</th>
<th>MATH</th>
<th>ENGLISH</th>
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<tbody>
<tr>
<td>Science Sequence</td>
<td>Social Science Sequence</td>
<td>Algebra/Geometry (Geometry in Construction)</td>
<td>English Sequence</td>
</tr>
<tr>
<td>Science Sequence</td>
<td>Social Science Sequence</td>
<td>Geometry (Geometry in Construction)/Algebra 2</td>
<td>English Sequence</td>
</tr>
<tr>
<td>Science Sequence</td>
<td>Social Science Sequence</td>
<td>Algebra 2/Pre-Calculus</td>
<td>English Sequence</td>
</tr>
<tr>
<td>Science Sequence</td>
<td>Social Science Sequence</td>
<td>College Algebra</td>
<td>AP Language &amp; Composition</td>
</tr>
<tr>
<td>Science Sequence</td>
<td>Social Science Sequence</td>
<td>College Algebra</td>
<td>English Composition I &amp; II</td>
</tr>
</tbody>
</table>

### Courses
- **AP or Dual Credit**
- **Dual Credit Course**
- **Dual Credit Course Affiliated With IAI Code**
- **Course or Program Prepares for Industry Credential**
- **Postsecondary Course Affiliated with IAI Code**
- **College and Career Pathway Endorsement Earned**

### Notes
If courses in this column were accomplished through early college credit, students should take the next required course in the sequence or, if none, additional AAS or Major Courses.
CONSTRUCTION TRADES I  
Recommended for all students in ACE pathways

Career Awareness: Students can demonstrate awareness of the career pathways in architecture, construction, and energy in order to plan a personalized pathway leading to a promising credential.

Students have engaged in career exploration activities that include guest speakers and virtual and in-person site visits with architecture and construction firms, renewable energy companies, and utilities.

Safety Mindset: Students can use their awareness of safety practices and PPE in order to demonstrate a safety mindset when navigating a construction environment.

Students are prepared to attain an OSHA 10-hour course completion card.

Introduction to Tools: Students can use their understanding of simple hand and power tools in order to identify, correctly set-up, and operate them.

Material Handling: Students can use their knowledge of material types, standard sizes, and safe handling practices to identify and utilize materials needed for basic project types.

Measuring and Scaling: Students can use their understanding of measurement systems and scaling concepts to demonstrate proper use of measuring tools, as well as conversion between decimal and fraction units.

Design and Construction Process: Students can use their awareness of basic concepts in design and construction in order to describe the steps in a residential construction project, with an introduction to, at minimum, blueprints, floor plans, foundations, carpentry, plumbing, electrical, HVAC, and masonry systems.

Layout and Schematic Reading: Students can use their understanding of basic project layout and schematic concepts to differentiate among schematics needed for different trade areas (e.g., carpentry, electrical, plumbing) and apply their understanding in authentic situations.

Cost Estimation: Students can apply of basic cost estimation principles to estimate labor and material costs in an authentic situation.

Students have completed at least one team-based challenge involving an authentic construction project that involves hands-on experience with, at minimum, framing, drywalling, and finishing.

CROSS-CUTTING COMPETENCIES

Employability Competencies:
- Generally, see the Statewide Recommended Essential Employability Entrepreneurial Competencies (p. 20 of this Guide)
- For ACE pathways, priority emphasis on: Communication; Problem-Solving; Initiative

& Self-Drive; Reliability & Accountability; Adaptability & Flexibility

Technical Math:
- Generally, see the Statewide Transitional Math, Competencies, and Policies — Transition to Technical Math Content Competencies (p. 15-18)
CONSTRUCTION TRADES II  
*Scaffolding upon Construction Trades I; tailored to lead into both construction trades and energy technician pathways*

**Career Decision Making:** Students can use their understanding of the physical demands, education requirements, transportation needs, and earning potential of various construction career pathways in order to make an informed decision as to whether to pursue postsecondary training and employment in a particular pathway. Students are aware of and prepared for local apprenticeship application, interview, testing, and fitness demonstration processes and requirements.

**Safety Compliance:** Students can use their knowledge of safety principles and regulations in order to maintain a secure work environment, safely engage in construction processes, and comply with local, federal, and jobsite health and safety demands. Students are prepared to attain or renew CPR and First Aid certifications from an accrediting body.

**Work at Height:** Students can use their understanding of ladders, scaffolding, safety harnesses, and rigging to engage in safe work at height construction practices; students understand work at height expectations in various trade areas. If work at height cannot be safely experienced or a classroom setting or is restricted by insurance policies, students may be able to utilize virtual reality and augmented reality systems to experience work at height expectations in different trade areas.

**Cost Estimation:** Students can use their knowledge of material and labor costs and technical math principles to accurately estimate both the material and labor costs of an authentic project.

**Energy Utilization and Efficiency:** Students can apply their understanding of building envelopes and mechanical, electrical, and plumbing (MEP) systems in an authentic assessment of impacts on a building's energy utilization and efficiency.

**Construction Application:** Students can use their knowledge of schematic reading and apply fundamental construction skills and techniques to, with minimal supervision, interpret the requirements of schematics and safely construct or install an authentic project. Ideally, students are allowed to choose an area of specialization such as carpentry, plumbing, electrical, or masonry.

**Students have engaged in** a career development experience of a minimum of 60 hours with a construction employer.

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CROSS-CUTTING COMPETENCIES  
*Foundations of Production & Manufacturing Processes (Minimum 3 - 6 Dual Credit Hours)*

**Employability Competencies:**
- General, see the State's Recommended Essential Employability Competencies (p. 6)
- For ACE pathways, priority emphasis on: Communication; Problem-Solving; Initiative & Self-Drive; Reliability & Accountability; Adaptability & Flexibility

**Technical Math:**
- Generally, see the Statewide Transitional Math, Competencies, and Policies — Transition to Technical Math Content Competencies (p. 15-18)
INTRODUCTION TO COMPUTER AIDED DRAFTING (CAD)

Key Competencies

Students can use their understanding of the construction drawing process and various trades to read and interpret authentic architectural and engineering drawings, including drawings from various trades areas.

**CAD Hardware:** Students can use their knowledge of a CAD workstation to identify and use its hardware configurations.

**Basic Drawing Functions:** Students can use their knowledge of CAD software to construct and revise 2-D Drawings, including basic draw, editing, and layering.

**View Selections:** Students can utilize their understanding of appropriate CAD drawing views to choose among orthographic, section, auxiliary, and pictorial where appropriate.

**Notation:** Students can produce appropriate drawing notes, symbols, and schedules.

**Dimensioning and Tolerance:** Students can apply their understanding of basic dimensioning and tolerancing concepts in authentic scenarios.

**2D and 3D Comparison:** Students can demonstrate an understanding of how 2D and 3D CAD operations and software are each used in authentic scenarios and processes.

**Reading and Interpretation:** Students can use their understanding of the construction drawing process and various trades to read and interpret authentic architectural and engineering drawings, including drawings from various trades areas.
Model Programs of Study in Action: Kankakee Community College
Department Overview

- Electrical Engineering Technology
  - Renewable Energy Technology
    - Renewable Energy Technology Track, AAS
  - Industrial Electrical Technology Track, AAS
  - Industrial Instrumentation and Process Control Track, AAS
  - Industrial Machinery Maintenance Track, AAS
- Air Conditioning and Refrigeration
- Automotive
- Machine Tool Technology, Advanced Cert

- Manufacturing Technology
- Millwright, Advanced Certificate
- Global Supply Chain, Certificate
- Supply Chain Management, Certificate
- Welding
- Computer Graphic Technology
- Agriculture and Horticulture
- Law Enforcement
- Education
Dual Credit/Dual Enrollment Options

Career Center

• Welding
• AutoCAD
• Law Enforcement

Tech Math
Successes

- Nucor Steel
- CSL Berhig
- Job Placement
Challenges

- Enrollment
- Turn over in management
- Changing the way companies think about training
- Budget
- Incoming High schoolers: Math skills
What’s Next?

HIGH SCHOOL NUMBERS ON THE DECLINE

FLEXIBILITY
Something still circling in my mind is...

Something that squares with my thinking is...

3 Takeaways I have are...
Share Your Feedback

Survey QR Code

Survey Questions

1. Model Programs of Study
   Assess the implementation of the Model Programs of Study.

2. Advisory Committee
   Assess the effectiveness of the committee or join an upcoming committee.

3. Webinar Review
   Assess the effectiveness of the Webinar session.
Next Steps:
Upcoming Statewide Model Programs of Study Webinars

Finance and Business Services
March 15, 2022 | 2–3:30 p.m.

Arts and Communications
April 19, 2022 | 2–3:30 p.m.
Next Steps:
Potential Statewide Model POS Guides Creation

Select from the following:

- HUMAN & PUBLIC SERVICES (Non-Education)
- HOSPITALITY & TOURISM Culinary and Hospitality
Explore the **Resource Hub** and [sign up for the newsletter](#).

- **Highlight and explore innovative models for work-based learning, initial focus on virtual**
- **Engage in conversations on creating sustainable, high-quality models that provide broader and more equitable access, focusing on building social capital for Black and Latinx students**

- **Build connections among communities to share best practices, learnings and resources**
- **Identify needs for state policy changes or support systems**
Thank You

Survey: https://niu.az1.qualtrics.com/jfe/form/SV_4VhZXbPLe740vC6
Guides: edsystemsniu.org/guides