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# Pathways in Domicology: Deconstruction Workforce Development

# A Curriculum Building Template

NATHANIEL HOOPER, MSW

MICHIGAN STATE UNIVERSITY
CENTER FOR COMMUNITY AND
ECONOMIC DEVELOPMENT

**Introduction:**

The following document has been compiled by the Michigan State University Domicology Research Team in an effort to provide a basic curricular framework through which interested organizations can provide skills training and workforce development opportunities in the completion of Deconstruction projects. The materials compiled below are in no sense an exhaustive review of relevant resources, but instead have been selected and sequenced based on a review of multiple Deconstruction curricula. Included in this template are recommended hours of contact, resources, and competencies associated with a number of topical areas related to Deconstruction and Material Reuse. These materials are presented to aide in developing a classroom based training module, and are intended to encourage the development of knowledge and skills that are especially pertinent to working effectively in a construction environment. A classroom based module of this type should be used in conjunction with a site based training module, as there is no substitute for the necessity of hands-on training in Deconstruction and related fields. Organizations are encouraged to utilize this curricular guide to their fullest potential, and as such should add/remove other sessions and program components as they best see fit to serve the needs of their particular cohort.

**Authors Note:**

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**Session 1: Introduction to Domicology**

RESOURCES

A. *Introduction to Domicology*. MSU Center for Community and Economic Development. Available Online: https://youtu.be/MKFDlaQDdO8
B. *Vacant Properties: True cost to Communities*. Smart Growth America. Available Online: https://smartgrowthamerica.org/vacant-properties-the-true-cost-to-communities/

**Session 2: Deconstruction vs Demolition (4 Hours in Person)**

COMPETENCIES

1. Demonstrate knowledge of distinctions between demolition and deconstruction
2. Demonstrate knowledge of benefits of deconstruction (social, environmental, economic)
3. Demonstrate knowledge of barriers to deconstruction

RESOURCES

A. *Deconstruction and Reuse Go Guide*, Delta Institute. Part 1: Overview of Deconstruction and Reuse. Available online: https://rebuildingexchange.org/wp-content/uploads/2017/11/DeconstructionAndReuseGoGuide2ndEd_Web-1.pdf
    a. Introduction and Overview of Deconstruction (*Pg.* 4-14)
B. *Lifecycle Assessment Framework for Demolition and Deconstruction of Buildings*, Arya Anuranjita / Michigan State University. Available Online: https://domicology.msu.edu/upload/lifecycleassessment_anuranjita.pdf
    a. *Impact Assessment and Deconstruction vs Demolition Case Studies (Pg. 75-90)*

**Session 3: Worksite Safety / OSHA PT 1 (5 hours Online or In-Person)**

RESOURCES

A. OSHA 10 In-Person or Online Training
    a. Online: https://www.oshaeducationcenter.com/osha-10-hour-training-construction.aspx
    b. List of In-Person Trainers: https://www.oshaeducationcenter.com/osha-10-hour-training-construction.aspx
B. *Fall Protection in Residential Construction*. OSHA. Available online:

C. *Construction Safety Standards; Demolition*. MI OSHA. Available online: https://www.michigan.gov/documents/lara/lara_miosha_CS_20_4-22-2013_418678_7.pdf

**Session 4: Worksite Safety / OSHA PT 2 (5 Hours Online of In-Person)**

COMPETENCIES

1. Completion of OSHA 10 safety certification
2. Demonstrate ability to identify and mitigate common worksite hazards
3. Demonstrate ability to understand worksite safety requirements

RESOURCES

A. *Demolition Safety Manual*, National Demolition Association. Available online: https://www.demolitionassociation.com/store_product.asp?prodid=38
B. *Construction Safety and Health Management System (Accident Prevention Program).* LARA. Available online:
    a. (step 1.) https://www.michigan.gov/lara/0,4601,7-154-89334_11407_15368-39938--,00.html
    b. (step 2.) Click link for 'sample accident prevention program (sp #1)'

**Session 5: Worksite Math and Basic Worksite Skills (Varies)**

COMPETENCIES

1. Demonstrate the ability to read and understand a residential blueprint
2. Demonstrate competency in basic worksite math skills

Two worksite math options are presented for consideration: Option A is an online self-paced construction math training program. Option B is a series of worksite math modules that allow for in-person instruction. Training organizations should select based on the needs of their training cohort and the capacity of their instructors

RESOURCES

A. *Essential Construction Math 102.* http://constructionclasses.com/online/registration/
    a. *Cost varies depending on registration*
    b. *Corresponding Textbooks are available through this website*
B. *Construction Math Toolbox*. Construction Center for Excellence. Available for free: http://constructionclasses.com/online/registration/
    a. *Toolbox includes 14 modules*
    b. *Included are additional resources and strategies for educators*
C. *Introduction to Blueprint Reading*. Available Online ($150 Per student): https://www.vdci.edu/online-pfc-101-introduction-to-blueprint-reading

**Session 6: Deconstruction – Site Planning and Survey (4 Hours in Person)**

COMPETENCIES

1. Demonstrate ability to understand site safety plan and major components
2. Demonstrate ability to conduct material survey

RESOURCES

A. *Demolition and Disposal Plan*. Demolition Services Inc. Available Online: https://www.nab.usace.army.mil/Portals/63/docs/SpringValley/Glenbrook_Rd._Demolition_and_Disposal_Plan.pdf
B. *A Guide to Deconstruction.* Deconstruction Institute. Available Online: http://www.fairmontwv.gov/DocumentCenter/View/1394/A-Guide-to-Deconstruction?bidId=
    a. Site Planning and Safety Guide ( Pg. 15-25)
    b. Site Survey Guide (Pg. 26-30)
    c. Site Organizational Plan Guide (Pg. 38-47)
    d. Sample Survey and Sample Schedule (Pg. 75-81)
C. *Deconstruction and Building Material Reuse*. Delta Institute. Available Online: https://delta-institute.org/delta/wp-content/uploads/FINAL-Decon-Go-Guide-Refresh.pdf
    a. Conducting a Deconstruction Assessment (Pg. 11-15)

SAMPLE FORMS

D. *Deconstruction Training Manual.* California EPA. Available Online: https://www2.calrecycle.ca.gov/Publications/Download/416
    a. Materials Inventory Form (Pg. 36 – 41)

**Session 7: Environmental Survey, Hazardous Material Identification and Remediation (4 Hours in Person)**

It is recommended that organizations interested in conducting Deconstruction training seek guidance from OSHA and DEQ in determining liability regarding the potential exposure of trainees to ACM (asbestos containing material) and other hazardous materials. Federal minimum standards for work with hazardous materials are set my OSHA; individual states and local levels of government are also able to enforce their own regulations, as long as these regulations are more stringent than the federal minimum.

RESOURCES

A. *Asbestos Standards for the Construction Industry.* OSHA. Available Online: https://www.osha.gov/Publications/OSHA3096/3096.html

B. *Lead in the Construction Industry*. OSHA. Available Online: https://www.osha.gov/Publications/osha3142.pdf
C. *Acquiring an asbestos Abatement License*. LARA. Available Online: https://www.michigan.gov/documents/CIS_WSH_conlic_33817_7.PDF
D. *Understanding the Asbestos NESHAP*. Michigan DEQ. Available Online: https://www.michigan.gov/documents/deq/deq-aqd-field-tpu-asbestos_NESHAP_fact_sheet_449332_7.pdf

**Session 8: Deconstruction – Tasks (Varies)**

RESOURCES

A. *Three Skim Model*. Delta Institute. Available Online: https://delta-institute.org/delta/wp-content/uploads/Delta-Decon-Flyer-2015.pdf
B. *Deconstruction Training Manual*. California EPA. Available Online: https://www2.calrecycle.ca.gov/Publications/Download/416
    a. The Deconstruction Process (Pg. 23-30)
C. *A Guide to Deconstruction*. Deconstruction Institute. Available Online: http://www.fairmontwv.gov/DocumentCenter/View/1394/A-Guide-to-Deconstruction?bidId=
    a. The Deconstruction Process (Pg. 49 – 56)

**Session 9: Deconstruction – Recycling and Reuse (Varies)**

RESOURCES

A. *Market-Smart Deconstruction and Material Recovery at Brownfield Sites.* US Army Corps of Engineers. Available Online: https://usace.contentdm.oclc.org/digital/api/collection/p266001coll1/id/4650/download
    a. Introduction to Construction and Demolition Materials Recycling (Pg. 17-28)
    b. Material Reuse Guide (Pg. 83 – 93)
B. *Deconstruction and Materials Reuse*. CIB International Council for Research and Innovation in Building. Available Online: https://pdfs.semanticscholar.org/3424/217bff23b4afb6804f808d75049807d8008a.pdf
    a. Paper 1: A system for estimating residential construction and demolition debris
C. A Guide to Deconstruction. Deconstruction Institute. Available Online: http://www.fairmontwv.gov/DocumentCenter/View/1394/A-Guide-to-Deconstruction?bidId=
    a. Pete Hendricks Seven Samurai Principles for Deconstruction (Pg. 14)

**Conclusion and Recommendations:**

Though this guide will help to demystify certain aspects of program / curricular development, organizations seeking to pursue such programming should note that there are a number of contextual factors that contribute to the viability of Deconstruction in a particular region. Overall feasibility of such a program will depend on other factors such as: housing characteristics, potential for community partnership, proximity to industries that can reuse materials, funding structures, workforce development needs, etc.

In addition to this, organizations seeking to pursue Deconstruction workforce training should be keenly aware of the particular training needs of their cohort, and should structure their curriculum and program design accordingly. In order to maximize the positive outcomes for trainees, it is advised that training organizations integrate additional training programs / certificate programs into their own. This will impart graduating trainees with an increasingly diverse array of certifications and experience that will allow them higher degrees of mobility within the skilled trades and other related industries. Some examples of additional training opportunities could be: Pre Apprenticeship Certification Training (PACT), OSHA 30, Asbestos/Lead Competent Person Training, etc.