CURRICULUM ARCHITECTURE DESIGN
VIA A GROUP PROCESS

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DEFINITION:

Curriculum Architecture...

- Identifies the component modules of training

- Provides for flexible, sequenced paths through the curriculum

- Identifies estimated lengths, delivery methods, development priorities

... Required to support the performance requirements of an individual job or a function (multiple jobs)
CURRICULUM ARCHITECTURE USES

- Strategic Planning for Training
  - Development forecasting and planning
  - Delivery forecasting and planning
  - Facility planning

- Training Operations
  - Developing individual training plans
  - Setting course content parameters
  - Responding to change-driven maintenance requirements

CURRICULUM ARCHITECTURE BENEFITS

- Provides a visible link between training deliverables and performance requirements (by job)

- Allows for priority-driven, phased development/implementation (via client input)

- Allows quick restructuring of training to respond to organizational change (task responsibilities)

- Provides data required for
  - development strategies and activities planning
  - delivery strategies and activities planning
  - administrative systems design
  - training organization design and resource planning
CURRICULUM ARCHITECTURE DESIGN PROCESS

1. Project Planning
   - Scope project
   - Establish Advisory Council
   - Develop plan

2. Performance Modeling
   - Model performance for each function/job in target audience

3. Knowledge and Skill Identification
   - Establish knowledge and skill categories
   - Identify knowledge and skill items

4. Curriculum Design Criteria Establishment
   - Identify Curriculum Architecture design criteria

5. Curriculum Architecture Design
   - Design curriculum structure
   - Sort knowledge and skills into structure
1. **PROJECT PLANNING**

**Output:** Project plan identifying
- Project scope (target audiences)
- Project participants and roles/responsibilities
- Process steps

**Process:**

1. Identify organizations/functions/jobs to be analyzed.

2. Identify target audience specifications.
   - experience levels
   - types/parameters of training needs to be addressed

3. Establish advisory councils (clients).

4. Develop project plan.

**Goal:** The goal of this step is to:
- Appropriately scope the project
- Create client buy-in/ownership
- Get client to identify individuals to give input and make decisions during the design project.
2. PERFORMANCE MODELING

Output: Performance model (organization/function/job/task)
- Mission statement
- Accomplishments/areas of responsibility
- Outputs
- Tasks
- Measures
- Standards
- Typical deficiencies
- Deficiency causes (dE/dK)

Process:
1. Orient group to project/process/outputs.
2. Complete the performance model.

Goal: The goal is to get the group to achieve a general consensus on what performance is desired/required prior to identifying knowledge and skills.
3. IDENTIFY KNOWLEDGE AND SKILLS

Output: Knowledge/skill matrix

Process:

1. Establish knowledge and skill categories (or review).

2. Complete knowledge/skill matrix, identify training topics (per category) via a systematic review of the performance model.

Goal: The goal is to break training content requirements into discreet components/topics, link each back to performance, and gather relevant data for each.
POTENTIAL KNOWLEDGE AND SKILL CATEGORIES

The following list of potential knowledge and skill categories can be used to identify the discreet components/topics of required training content.

- Organizational orientations
- Company policies/procedures/methods
- External regulations/codes/standards
- Records/reports
- Theories/concepts
- Equipment/tools
- Technical skills
- Computer systems
- Product knowledge
- Interpersonal skills
- Management skills
- Internal/external resources
- Etc.

Review/revise/select as appropriate. The purpose of these categories is to prompt the group's thinking process when identifying individual component pieces of training content.
4. **ESTABLISH CURRICULUM DESIGN CRITERIA**

**Output:** Curriculum Design Criteria

**Process:**

1. Review target audience data.
   - Function/jobs
   - Population sizes
   - Locations
   - Learning styles
   - Types of training required
   - Etc.

2. Identify constraints.
   - Delivery locations
   - Delivery methods
   - Target audience location
   - Minimum/maximum time off job for training
   - Cultural limitations

3. Establish and weigh curriculum design criteria.
   - Increased timing flexibility
   - Reduced redundant training
   - Minimize delivery cost
   - Increase flexibility of training planning/minimize unnecessary training
   - Increase ease of revisions/updating/maintenance
   - Increase ease of evaluation
   - Increase ease of administration (registration/scheduling)
   - Minimize development cost
   - Maximize use of existing curriculum
   - Etc.
5. DESIGN CURRICULUM ARCHITECTURE

Outputs:
- Curriculum Architecture
- Suggested training paths/development plans/delivery forecasts/etc.

Process:

1. Design macro curriculum structure based on
   - target audience data
   - constraints identified
   - design criteria established.

2. Sort training topics into curriculum structure.

3. Develop
   - training paths
   - development plans
   - delivery forecasts
   - etc.
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FUNCTIONAL/JOB MODEL

Sales

Meeting Date: XXXXXXXXXXXXXXXXXXXXXXX

Mission: Sell profitable work.

Major Duties:

I. Search and Qualify Potential Jobs/Adds/Service

II. Influence Outcome

III. Estimate Project

IV. Develop Bid Strategy

V. Follow-Up and Close

VI. Job Follow-Up
I. SEARCH AND QUALIFY POTENTIAL JOBS/ADDs/SERVICE

Outputs
- Initial list of prospects
- Meeting/phone call notes
- Personal log/files
- Letter to potential customer

Tasks
- Review prospective jobs/leads
  - existing customers
  - Dodge reports
  - construction reports/construction papers
  - home office leads
  - local paper
  - consulting firm/contractors
  - service sales leads
- Qualify prospective jobs/leads
  - make personal judgement (gut feeling)
  - contact potential client (owner/consulting firm/contractor)
  - establish/identify customer/client's needs
  - determine whether you can meet those needs
<table>
<thead>
<tr>
<th>Measures</th>
<th>Typical Deficiencies</th>
<th>Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Appropriateness of client interaction</td>
<td>• Wasted time/misdirected efforts</td>
<td>• Lack of experience</td>
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<tr>
<td>• Feedback from customers</td>
<td>• Bad qualifying decisions</td>
<td>• Poor training</td>
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<tr>
<td>• High potential jobs lost/gained</td>
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<td>• Poor supervision</td>
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<td>• Time to complete</td>
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<td>• Lack of capability</td>
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<tr>
<td>• Appropriate use of resources</td>
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<td>- poor job assignments</td>
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<tr>
<td>- internal</td>
<td></td>
<td>- poor development</td>
</tr>
<tr>
<td>- external</td>
<td></td>
<td>• Lack of knowledge of:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- control systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- market area</td>
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<tr>
<td></td>
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<td>- people (potential clients)</td>
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</table>
# Knowledge/Skill Matrix

**Meeting Date:** XXXXXXXXXX

<table>
<thead>
<tr>
<th>Knowledge/Skill Category:</th>
<th>Job Model Linkages</th>
<th>Equipment Linkage</th>
<th>Est Hrs</th>
<th>Del* Pri</th>
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<tr>
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<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
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<td><strong>POLICIES/PROCEDURES (Powers)</strong></td>
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<tr>
<td>1. Large Bid Review</td>
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<td>2. Standard Office Practice</td>
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<td>3. Estimate Bid Review (region/in-branch)</td>
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<td>4. Contract Administration</td>
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<td>5. Field Accounting</td>
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<td>6. Office Services</td>
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<td>7. Booking</td>
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<tr>
<td>8. Estimating</td>
<td>X</td>
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BASIC CURRICULUM FRAMEWORK

Orientation

Task Overview

Task Modules

Skill/Knowledge Modules
Curriculum Architecture
Design & Manufacturing Engineering Functions

ORIENTATION

Design Engineering Job Overview

Task Modules
1 2 3 4 M 6 7 M 9 10 11

Manufacturing Engineering Job Overview

Task Modules
1 2 M 2 2 2 3 2 4 M M 3 4 5

Skills & Knowledge Modules
S-1 Product Technology
S-2 Process Technology
S-3 Business Concepts
S-4 Quality & ADT
S-5 Skills

S-6 Tools
S-7 Computer Programs
S-8 Systems
S-9 Theory/Concepts
S-10 Professional Skills
Curriculum Architecture

The overall curriculum structure for XXXXX basic technical training is represented in the diagram below.

** XXXXX-BASIC TECHNICAL TRAINING **

Modular Curriculum Architecture*

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** XXXXX SYSTEMS OVERVIEW **

** Mechanical Systems Basics **
- Heat Generation Systems
- Heat Reduction Systems
- Combination Systems
- Air Delivery Systems
- Terminal Units
- Pumping Systems

** Electrical Systems Basics **
- Power Wiring
- Control Wiring
- Communications Wiring

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** Control Systems Basics **
- Sensors
- Controllers
- Controlled Devices
- Auxiliary Equipment

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** HVAC Systems Applications **

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Note: This modular structure identifies the major blocks of training. Each block may be further subdivided into topical *chapters or distinct training modules; i.e., heat generation systems may be divided into:
- Steam Boilers
- Heat Pumps
- Solars
- Hot Water Boilers
- Converters

** Note: Both mechanical and electrical systems basics are prerequisites for control system basics. **
Curriculum Structure

Orientation

Initial Task Modules
Managing the Department
Managing Human Performance
Establishing Organizational Interfaces
Personnel Administration
Personnel Planning & Staffing
Advanced Performance Improvement

Advanced Task Modules
Strategic Planning

Ongoing Training Modules
Communication Skills Series
Management Skills Series

Note: ———— represents prerequisite relationships
For further reading, see the following articles:

"How to Build a Training Structure That Won't Keep Burning Down", Training Magazine, September 1984, Pages 77 - 83.