

STEP-BY-STEP CURRICULUM PLANNING

The goal of planning the curriculum is to make the link between what is taught and the skills learners will actually apply in their jobs. You define the who, what, when, and how of your instruction.

How to use this guide:

- Proficient course developers may use the guide to as a model to evaluate the content of their course document.
- Experienced course developers may use the guide to clarify the course development process.
- Inexperienced course developers may use the guide to define and document course content.

Step-by-Step Guide to Planning Student Learning

*Curriculum planning is typically divided into two phases. These are referred to as **above-the-line** development and **below-the-line** development. The “line” is a symbolic separation between **what** a learner will learn and **how** the learner will learn it.*

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Above-the-Line Curriculum Development

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Step 1: Define What Students Must Learn

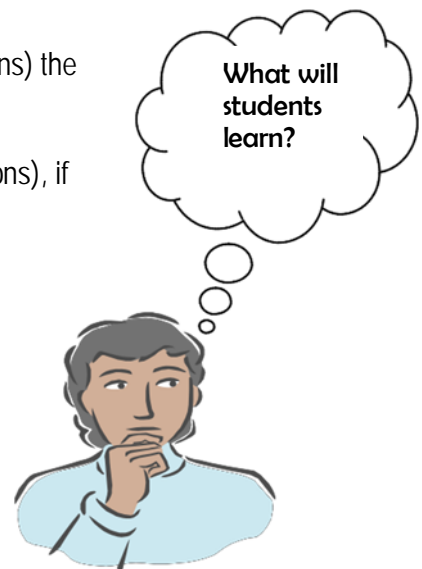
- What external standards (industry, regulating bodies, or accrediting institutions) must they meet or exceed?
- What major skills, knowledge, abilities, and attitudes must students have when they've completed the course?
- What have your occupational partners indicated your learners should know by the time the learners have completed this course?
- How many credits will a student earn for successful completion of your course?

Course Credits	General Knowledge Areas to be Identified
1	3-6
2	6-12
3	9-18
4	12-24
5	15-30

As a guideline, for every credit to be earned, three to six general areas of knowledge should be identified.

DO

1. Clearly and concisely describe the major competencies (skills, knowledge, abilities, and attitudes) that students should learn in the course. Be sure each competency is measurable and observable. Begin by thinking about **what** is to be learned in this course
2. List any external standards (occupational, skill or accrediting institutions) the learner must meet in your **course**.
3. List any external standards (occupational, skill, or accrediting institutions), if known, that the learner must meet in your **program**.



Step-by-Step Curriculum Planning (Above-the-Line Development)

Examples: To achieve the major skills, knowledge, attitudes, and abilities to successfully complete this course, a learner must ...

DO	WHAT?
Create	a website
Interpret	printed materials
Solve	rational equations
Recognize	whole numbers
Explain	the characteristics and function of computer software.
Format	text and paragraphs in word processing documents
Analyze	fluid dynamics and IV pumps
Administer	medications safely
Perform	basic stress or vibration calculations
Differentiate	the concepts of air and ground ambulance operations
Examine	the causes of food borne related illnesses
Identify	the major groups of plants used in the horticulture industry
Complete	a job costing analysis
Design	a simple loop water supply system

Step 1: Define What Students Must Learn (Competencies)

- a. Identify **major** skills, knowledge, abilities, and attitudes must students have when they've completed the course. Consider occupational standards and the recommendations of your occupational partners.
- b. Identify a minimum of three areas of skill/knowledge/ability/attitude for every course credit to be earned. Identify no more than six for every course credit to be earned.
- c. Simply create a list. Do NOT consider specific verbs or learning approaches to associate with what must be learned.

To achieve the major skills, knowledge, attitudes, and abilities to successfully complete this course, a learner must ...

Do	What?
use	computer

Step 2: Identify the Category and Level of Learning

What learning characteristics will the student rely on to acquire the knowledge, skills, behaviors, and attitudes associated with each major competency? There is more than one way to acquire learning.

1. Learning involved with **thinking** (cognitive)
2. Learning involved with **behaviors and attitudes** (affective)
3. Learning involved with **physical skill**, movement, and coordination (psychomotor)

DO

1. Using the information provided on the next pages, identify the learning domain (type) and level of learning (simple to complex) associated with each of the competencies you have listed.

Do	What?
use	Computer <i>(cognitive, applying)</i>

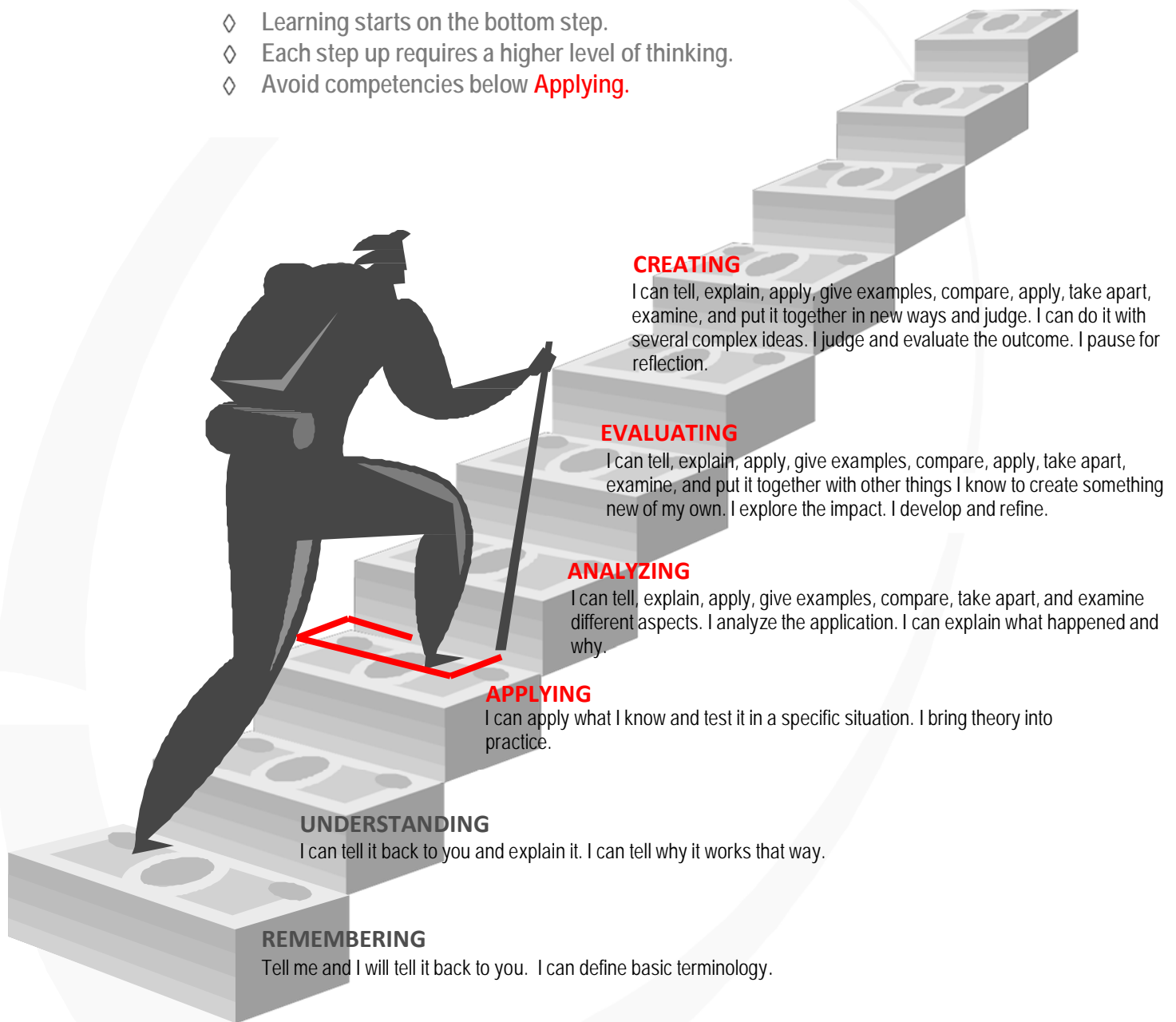
Step-by-Step Curriculum Planning (Above-the-Line Development)

Cognitive: Mental Skills (Knowledge)

Will learners focus on thinking? Will they deal with facts, concepts, rules, principles, and problem-solving? This type of learning is associated with the **cognitive domain**.

- Analyze how advertising influences buying behavior
- Describe your rationale for selecting the pricing policy
- Examine color theory

- ◇ Learning starts on the bottom step.
- ◇ Each step up requires a higher level of thinking.
- ◇ Avoid competencies below **Applying**.



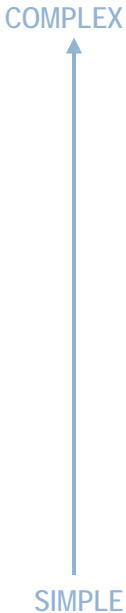
IMPORTANT!

Competencies associated with the **cognitive** learning domain must be from the **applying** level or higher.

Psychomotor: Manual or Physical skills (Skills)

Will learners focus on doing or performing? Will they deal with physical responses, the development of manipulative skills, and the mental and physical activity? This type of learning is associated with the psychomotor domain.

- Solder a resistor to a circuit board
- Prepare chemical solutions
- Use a computer



Level	Description	Examples
Adapting	Requires learners to modify applications of skill to fit special requirements or problems <i>adapt, alter, change, design, originate, revise</i>	<ul style="list-style-type: none"> • Adapt procedures for stopping an auto-feed • Adjust valve to allow for optimal flow
Practicing	Requires learners to perform learned skills habitually with confidence and proficiency (practitioner level) <i>construct, repair, measure, organize, build, dismantle</i>	<ul style="list-style-type: none"> • Stop an auto-feed safely in response to a malfunction • Open valve as demonstrated to allow unrestricted flow
Imitating	Requires learners to perform an action as demonstrated (imitation, trial and error). <i>construct, repair, measure, organize, build, dismantle</i>	<ul style="list-style-type: none"> • Stop an auto-feed safely as demonstrated in response to a malfunction • Open valve as demonstrated to allow unrestricted flow
Perceiving	Requires learners to use the senses to obtain cues that guide motor activity. <i>Identify, select, isolate, differentiate, relate</i>	<ul style="list-style-type: none"> • Select the appropriate time to stop an auto-feed • Detect operation of valve


IMPORTANT!

Competencies associated with the psychomotor learning domain must be from the **practice** level or higher.

Affective: Growth in Feelings or Emotional Areas (Attitude)

Will learners focus on valuing and developing attitudes and interests? Will they develop appreciations and social or emotional adjustments with choices or direction of influence? This type of learning is associated with the affective domain.

- Follow laboratory safety guidelines
- Assess how a political candidate's platform aligns with your personal values
- Contribute to team efforts for ensuring product meets national quality standards



Level	Description	Examples
Internalizing	Requires learners to respond consistently according to a set of values; exhibiting a characteristic life style. <i>influence, discriminate, act, revise, verify, propose, qualify, serve</i>	<ul style="list-style-type: none"> • Serve as a mentor to an individual • Influence a peer to use safe work habits
Organizing	Requires learners to determine how new values, interests, and attitudes relate to those already held. <i>formulate, complete, defend, modify, solve, alter, perform, weigh alternatives, establish, resolve</i>	<ul style="list-style-type: none"> • Resolve conflicts between behaviors and attitudes to develop productive work habits • Formulate a plan for maintaining a safe work environment
Valuing	Requires learners to attach personal worth to a particular value, attitude, or interest. <i>Initiate, integrate, adhere to, justify, demonstrate, join</i>	<ul style="list-style-type: none"> • Justify the value of teaching productive work habits • Join an organizational safety committee
Responding	Requires learners to observably change behavior because of a stimulus. <i>assist, answer, conform, help, perform, show, interest, show preference, exhibit</i>	<ul style="list-style-type: none"> • Exhibit productive work characteristics and behaviors • Avoid dangers in the workplace
Receiving	Requires learners to show an awareness of the benefits of a particular value, attitude, or interest. Receiving ranges from simple awareness to conscious willingness to receive, to selective attention by the learner. <i>describe, follow, identify, reply, give</i>	<ul style="list-style-type: none"> • List characteristics and behaviors that represent productive work habits • Show awareness of dangers in the work environment

IMPORTANT!

Competencies associated with the affective learning domain must be from the **valuing** level or higher.

Step 2: Identify the Category and Level of Learning (Competencies)

- a. For each content area identified in **Step 1**, consider category of learning (cognitive, affective, psychomotor) and level of learning (simple to complex) that is associated with the content area. Use the **Learning Categories and Levels** information available to you.
- b. Select a verb from the verb list that matches the category and level of learning you wish to associate with the content you've identified.
- c. Review the list of content areas you created in Step 1. Are the words you initially provided in the "Do" column appropriate to the category and level of learning you've determined is appropriate for the content? Are they verbs associated with (at a minimum) the **applying** (cognitive domain), **practicing** (psychomotor), or **valuing** (affective) levels?
- d. Revise the list created in Step 1 by replacing existing words in the "Do" column with the verbs you've selected from the verb list. Identify the learning category and level as well.

To achieve the major skills, knowledge, attitudes, and abilities to successfully complete this course, a learner must ...

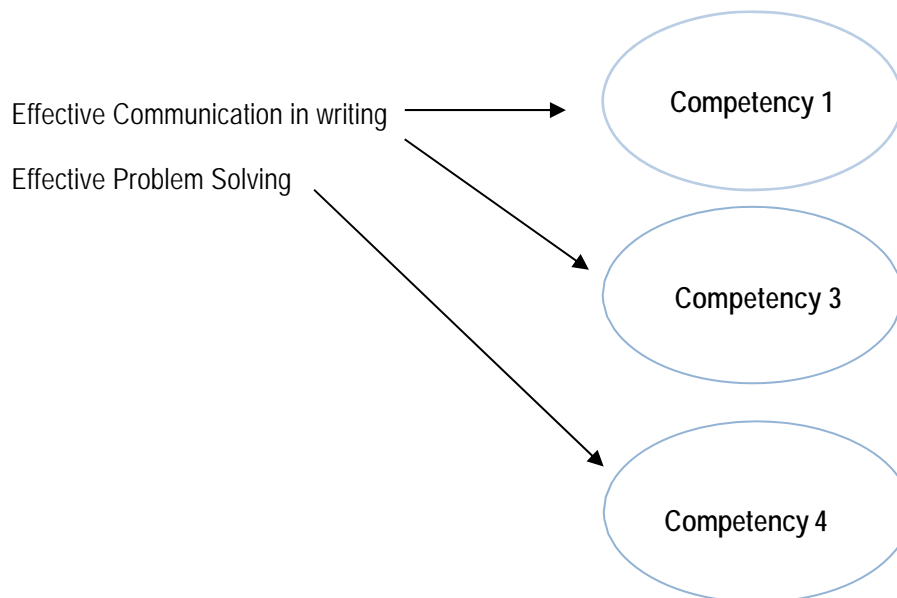
Do	What?
use operate	a computer (<i>cognitive, applying</i>)

Step 3: Link Career Essentials to What Students Must Learn

Career Essentials are the broad life skills valued by employers that are transferrable to the work place and go beyond the context of a specific course.

1. Effective Communication in writing
2. Effective Communication through speaking and listening
3. Mathematical Competency
4. Effective Problem Solving
5. Technology Competency
6. Professionalism
7. Global Awareness

Which of the career essentials will be **directly demonstrated** in your course? Review the competencies you developed and associate at least one career essential statement with each competency statement. You may associate more than one career essential with a competency but remember all Career Essentials will need assessment.



Step 3: Link Career Essentials to What Students Must Learn (Competencies)

- a. Review **career essentials** for learners. These are the broad life skills valued by employers that are transferrable to the work place and go beyond the context of a specific course.
 - 1. Effective Communication in writing
 - 2. Effective Communication through speaking and listening
 - 3. Mathematical Competency
 - 4. Effective Problem Solving
 - 5. Technology Competency
 - 6. Professionalism
 - 7. Global Awareness

- b. Identify which of the career essentials will be directly demonstrated in your course? Review the content areas you developed and associate at least one career essential statement with a competency. You may associate more than one core ability with a competency however, assessment is required for each linked Career Essential.

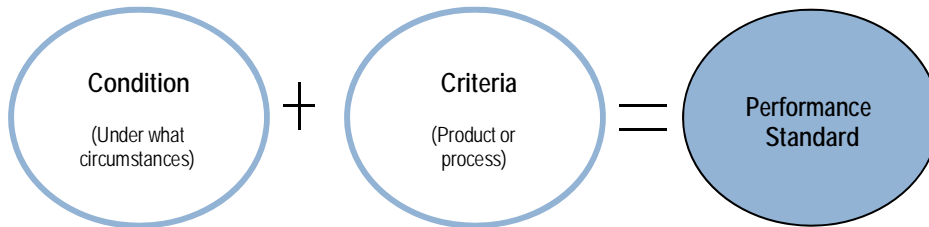
To achieve the major skills, knowledge, attitudes, and abilities to successfully complete this course, a learner must ...

Do	What?
operate	a computer (<i>cognitive, applying</i>), core abilities 4 and 6

Step 4: Identify How You Will Know Students Have Learned

- How will you know if students have learned?
- What will you measure?
- What “yardstick” will you use to measure?
- Under what conditions will you measure learner performance?

Performance standards help you to assess learner competency. They consist of two parts – conditions and criteria.



Performance Conditions Specify Under What Circumstances Evaluation Will Occur.

Performance Conditions Must

- Describe performance of the competency not the knowledge of it.
- Match the performance indicated by the verb in the competency (learning level)

Performance Conditions Should Avoid

- Describing performance as: homework assignment, class discussions, knowledge-based quizzes and tests

Performance Conditions Should Include (as many as applicable)

- Resources/references allowed
- Resources/references not allowed
- Environment
- Information provided to learner
- Time constraints

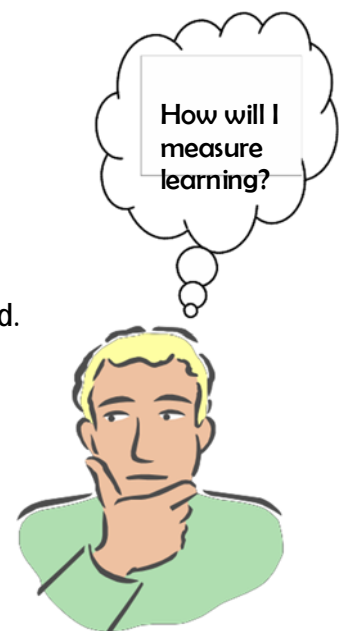
Performance Criteria Identify Whether A Process Or Product Will Be Evaluated.

Product Evaluation

- Criteria provides the characteristics of the “ideal” product
- Criteria statement begins with the name of the product evaluated

Process Evaluation

- Criteria provides an outline of the steps in the process
- Criteria statement begins with the word “learner” or “you”



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DO

FOR EACH COMPETENCY:

1. Describe the **conditions** under which evaluation will occur.
2. Identify whether a **process** or **product** will be evaluated. If a product, name the product.
3. Develop specific **criteria** statements.

Example is shown below. External standards are fictitious.

Competency

- Describe the characteristics of computer software.

External course standards

- International Association of Technology Professionals (IATP)
- American Society of Software Engineers

External program standards

- none

Conditions

- Through contribution to group discussion
- Without use of references or personal notes
- Within one week of completion of instruction

Criteria

- **Process** (learner is evaluated not computer software)
- Learner performance will be successful when
 - ◇ Learner correctly identifies the components of business computer software with 90% accuracy ^{PH}
 - ◇ Learner accurately explains the characteristics of business computer software without hesitation or prompting
 - ◇ Learner correctly describes common business computer software applications

DEVELOP PERFORMANCE-BASED CONDITIONS

Non-Performance Based Condition	Performance-Based Condition
Explain the dates of important events	List the ten major events of
Describe mental disorders	Classify observed cases of mental disorders with 75% precision
Understand mathematical word problems	Distinguish between relevant and irrelevant numbers in word problems
Understand how to write a paper	Judge the best approach for writing a paper given three examples

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Performance Standards Examples *(include but not limited to)*

PERFORMANCE CONDITIONS	Operate a Computer
Performance Format	
In a written product	
Through demonstration	
In an oral presentation	
Through contribution to a group project	
Through actual performance of the skill	X
Resources Given	
Using notes and references	
Using any available equipment in the [classroom/online course/lab/office]	X
With the use of a calculator	
Provided access to all references and materials in the classroom	X
Resources Denied	
Without notes	
Without personal references	
Without a calculator	
Using only the equipment/resources provided in the [classroom/online course/lab/office]	
Environment	
In a classroom setting	
In a simulated work environment	X
In a lab/clinic/industrial setting	
Information Given	
Given a written description of _____	
Provided in a case study	X
Using the [facts/data/information] provided	
Deadlines	
By the end of the _____ unit	(second unit)
Before beginning the _____ unit	
Within _____ [hours/days/weeks/months] after completion of instruction	
Within _____ attempts	2
PERFORMANCE CRITERIA	
Is a product or process to be measured?	Process: Learner
Provide Specific Criteria	<ul style="list-style-type: none"> ● identify the basic components of a computer system with 90% accuracy ● use the left and right mouse buttons correctly ● use the keyboard and keyboard shortcuts correctly ● define basic peripheral devices with 90% accuracy ● save, view, and retrieve data on storage devices successfully ● define accurately the procedural steps to install a peripheral device
Are the criteria observable and measureable?	Yes
What's the "yardstick" for measurement? <i>(avoid instructor judgment)</i>	basic component assessment, keyboard shortcut and mouse button function, peripheral device assessment, and data storage and retrieval

Step-by-Step Curriculum Planning (Above-the-Line Development)

PERFORMANCE CONDITIONS	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5
Performance Format					
In a written product					
Through demonstration					
In an oral presentation					
Through contribution to a group project					
Through actual performance of the skill					
Resources Given					
Using notes and references					
Using any available equipment in the [classroom/online course/lab/office]					
With the use of a calculator					
Provided access to all references and materials in the classroom					
Resources Denied					
Without notes					
Without personal references					
Without a calculator					
Using only the equipment/resources provided in the [classroom/online course/lab/office]					
Environment					
In a classroom setting					
In a simulated work environment					
In a lab/clinic/industrial setting					
Information Given					
Given a written description of _____					
Provided in a case study					
Using the [facts/data/information] provided					
Deadlines					
By the end of the _____ unit					
Before beginning the _____ unit					
Within _____ [hours/days/weeks/months] after completion of instruction					
Within _____ attempts					
PERFORMANCE CRITERIA	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5
Is a product or process to be measured?					
Specific criteria provided?					
Criteria measurable and observable?					
"Yardstick" for measurement?					

Copy the performance tables above and adjust competency heading to complete for all other competencies beyond competency 5.

Step 5: Describe Supporting Things Students Need to Learn

(Learning Objectives)

- Describe the **minor** skills, knowledge, abilities, and attitudes associated with each content area identified in Step 1.
- Describe a minimum of two **minor** areas of skill/knowledge/ability/attitude for every content area identified in Step 1. Describe no more than ten for every content area identified.
- Answer the question, "What do students need to know to perform this (the content area) competently?" when describing **minor** areas.
- List any facts, concepts, procedures, processes, and principles that support the content area.
- Identify any prerequisite skills.
- Create clear, concise descriptions that are measureable and observable and begin with a single action verb.
- IMPORTANT:** Because you are describing skills, knowledge, abilities, and attitudes that support the performance of the competency, the verbs you select for each learning objective must be at a learning level **NO HIGHER THAN** the associated competencies learning levels (if the competency and learning objective are from the same domain). Therefore, verbs you select for learning objectives must be at the same level, or at a lower level, than the associated competencies learning levels. **Identify the learning category and level for each verb used.**

To achieve the major skills, knowledge, attitudes, and abilities to successfully complete this course, a learner must ...

Do	What?
operate	a computer (<i>cognitive, applying</i>), core abilities 4 and 6

What do students need to know to operate a computer competently?

Identify the basic components of a computer system. (<i>cognitive, understanding</i>)
Use the mouse and keyboard. (<i>cognitive, applying</i>)
Use storage devices (floppy disk, USB drive, CD, ZIP disk). (<i>cognitive, applying</i>)
Describe the boot process. (<i>cognitive, understanding</i>)
Define the function of peripheral devices. (<i>cognitive, remembering</i>)
Demonstrate the procedure to install peripheral devices. (<i>cognitive, applying</i>)

Step 5: Describe Supporting Things Students Need to Learn (cont.) (Learning Objectives)

To achieve the major skills, knowledge, attitudes, and abilities to successfully complete this course, a learner must ...

Do	What?
Verb	Description (domain, level), core ability X

What do students need to know to (identify content area)

Verb + description (domain, level)

Copy the learning objective table above and complete one table for each course competency.

Appendix A – Cognitive Domain Verb List

Remembering	Understanding	Applying		Analyzing		Evaluating	Creating	
Learner can repeat.	Learner can explain.	Learner can DO . Learners apply what they know and test it out in a specific situation, bringing theory into practice.		Learner can compare, break a concept down into components, show relationships, and recognize assumptions and logical reasoning.		Learners determine value, judge, criticize, and assess complex ideas to make decisions and support views.	Learners can create something new, combine elements to plan and form new structures, and theorize, design, and test concepts.	
Cite Count Define Describe Draw Duplicate Enumerate Give Identify Index Indicate Label List Match Meet Memorize Name Outline Quote Read Recall Recite Recognize Record Repeat Reproduce Select State Study Tabulate Tally Trace Write	Add Approximate Articulate Associate Characterize Clarify Classify Compare Compute Contrast Convert Defend Describe Detail Differentiate Discuss Distinguish Elaborate Estimate Example Explain Express Extend Factor Generalize Identify Infer Interact Interpolate Interpret Locate Observe Paraphrase Picture graphically Predict Recognize Relate Report Review Rewrite Select Summarize Translate Visualize	Acquire Adapt Allocate Alphabetize Amend Apply Ascertain Assign Attain Avoid Back up Brief Budget Calculate Capture Change Chart Choose Complete Compute Concatenate Conduct Consult Convey Coordinate Customize Demonstrate Depreciate Derive Determine Diminish Direct Discover Divide Dramatize Draw Employ Engineer Examine Execute Exercise Expand Explore Expose Express Figure Graph Guide Handle	Illustrate Implement Interconvert Interpret Investigate Manipulate Modify Multiply Obtain Operate Personalize Plot Practice Predict Prepare Price Process Produce Project Protect Provide Refer Round off Schedule Sequence Show Simplify Simulate Sketch Solve Subscribe Subtract Tabulate Tally Transcribe Use Utilize Write	Accept Administer Allow Analyze Anticipate Appraise Audit Blueprint Breadboard Breakdown Categorize Characterize Chart Check Chunk Classify Compare Confirm Contrast Correlate Corroborate Critique Delegate Detect Diagnose Diagram Differentiate Discriminate Dissect Distinguish Document Ensure Examine Experiment Explain Explore Extract Extrapolate Factor Figure out File Group Identify Illustrate Infer Interpret Interrupt Inventory Investigate Isolate Layout Limit Link	Manage Maximize Minimize Moderate Monitor Negotiate Optimize Order Outline Point out Prioritize Proofread Prove Query Question Reconcile Relate Reorganize Resolve Select Separate Size up Subdivide Summarize Systematize Test Train Transform Translate Troubleshoot	Advise Appraise Argue Assess Authenticate Compare Conclude Consolidate Counsel Criticize Critique Defend Determine Discriminate Estimate Evaluate Explain Grade Hire Judge Justify Measure Mediate Motivate Predict Prescribe Preserve Rank Rate Recommend Reconcile Release Resolve Review Revise Select Summarize Support Uphold Validate Value Verify	Animate Arbitrate Arrange Assemble Code Collect Combine Compile Compose Consolidate Construct Cope Correspond Create Cultivate Debug Depict Design Develop Devise Dictate Enhance Exchange Expand Explain Facilitate Forecast Format Formulate Frame Generalize Generate Handle Import Improve Incorporate Integrate Interface Join Lecture Model Modify Network Organize Originate Outline Overhaul Plan Portray Prescribe Produce Program	Rearrange Reconstruct Report Revise Rewrite Specify Summarize Synthesize Unify Write

Some verbs can be used at multiple levels of learning. These appear in multiple categories. The activities the learners engage in and the assessment requirements determine the level of Bloom's Taxonomy. This list is not comprehensive. Many other verbs may be appropriate for competencies and learning objectives.

Full verb list available in WIDS software

Appendix B – Affective Domain Verb List

(In Alphabetic Order for all Levels)

Receiving	Responding	Valuing	Organizing	Internalizing
acknowledge	aid	argue	adhere	act
ask	answer	challenge	alter	discriminate
attend	assist	complete	arrange	display
be open to	become animated	confront	build	influence
choose	cite	criticize	combine	listen
concentrate	clarify	debate	compare	modify
discuss	comply	demonstrate	complete	perform
do	contribute	differentiate	contrast	practice
feel	greet	explain	defend	practice
focus	interpret	explain	develop	propose
follow	label	follow	explain	qualify
follows	perform	form	formulate	question
gives	practice	initiate	generalize	revise
hear	present	invite	identify	serve
holds	provide reference/example	join	integrate	solve
identify	question	justify	modify	verify
listen	react	persuade	order	
locate	recite	propose	organize	
read	report	refute	prepare	
retain	respond	select	prioritize	
sits	seek	share	reconcile	
take part	seek	share	relate	
	select	study	synthesize	
	tells			
	tells			
	write			
Simple				Complex

Full verb list available in WIDS software

Appendix C - Psychomotor Domain Verb List

(In Alphabetic Order for all Levels)

accept	correlate	format	monitor	relax	take
access	create	frame	motivate	release	talk
activate	crop	function	move	remove	test
adjust	cultivate	fuse	nail	reorganize	time
administer	cut	greet	navigate	repair	tint
admit	design	grind	obtain	repeat	trace
aim	delegate	grip	open	replace	transfer
align	delete	grow	operate	reset	trim
apply	deliver	hammer	originate	restore	troubleshoot
arbitrate	demonstrate	hand wax	output	restrain	tune
arrange	design	handle	overhaul	resurface	turn on/off
assemble	desk-check	heat	pace off	resuscitate	type
balance	de-solder	hook	paint	retrieve	upgrade
bathe	dictate	hook up	pass	reverse	use
bend	dimension	identify	perform	rotate	utilize
bisect	direct	import	pilot	run beads	wash
bleed	disassemble	increase	plant	sand	wear
blend	disinfect	inflate	point	sanitize	weave
block out	dismantle	input	point out	save	weigh
break down	dispatch	insert	point to	saw	weld
bring	dispense	inspect	polish	scan	wire
buff	dispose	install	position	schedule	wrap
build	distribute	invoke	post	send	write
calibrate	draw	isolate	power up	serve	
call	drill	keep	preserve	set	
capture	dust	keyboard	preset	set up	
carve	edit	launch	press	settle	
change	eliminate	launder	pressure wash	sew	<p>All psychomotor verbs can be used at any of the levels below.</p> <ol style="list-style-type: none"> 1. perceiving 2. imitating 3. practicing 4. adapting <p style="text-align: right;">simple ↓ complex</p>
chunk	empty	lengthen	print	shampoo	
clean	enter	link	process	sharpen	
close	exchange	load	produce	shut down	
coach	expand	locate	program	sign on/off	
collect	extract	loosen	pull	simulate	
combine	face	make	push	sing	
compose	fasten	maneuver	raise	sketch	
conduct	feed	manipulate	rearrange	solder	
connect	figure	manufacture	reassemble	sort	
conserve	file	mask	rebuild	spell-check	
consolidate	find	meet	recharge	start	
construct	fit	melt	reconcile	stir	
control	fix	mend	recondition	store	
convey	flare	merge	reconstruct	straighten	
coordinate	flush	mix	record	strip	
copy	fold	moderate	reduce	subdivide	
correct	follow	mold	regulate	substitute	

Full verb list available in WIDS software