**ATEP Content Creation Overview …**

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Or a simple guide to the various templates in use!

At first glance, it is apparent that the ATEP project is a large and complex undertaking. And when you look at the scope of the project, with its three one year courses comprising four 8-week modules, each with its own multimedia extensions, you can see there is a lot to do.

However, it is possible to break the process down in a more manageable manner that will allow teams to undertake the development of the material in an organized way…

STEP 1: The Big Picture …

What learning are we aiming at?
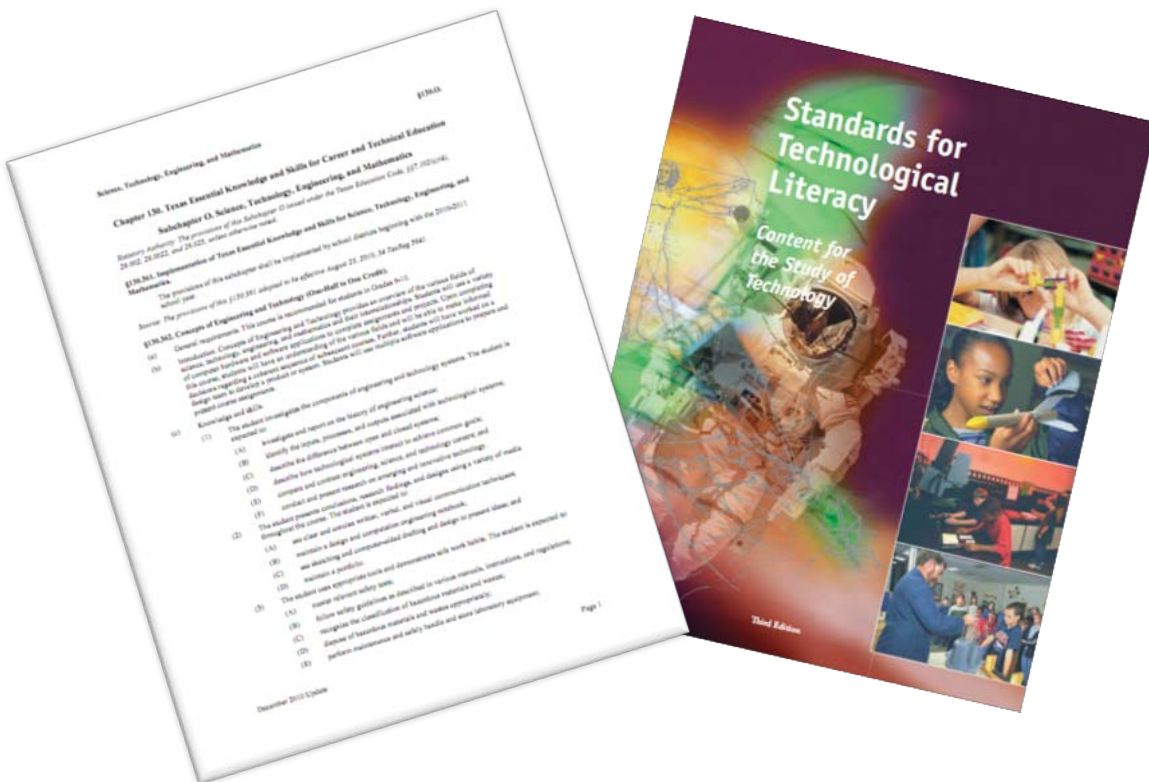
National, State or CTE or Industrial Skill Standards?

Or, do we work from and adapt the project ATEP Course and Module Outlines ? (CTRL-click to download from the Hofstra ATEP webpage)

COURSE AND MODULE OUTLINES —Draft October 2011

The following table illustrates course and module outlines for all three courses, to be refined in Year I. Although tentative course titles have been identified as examples, actual instructional content will be determined by the writing teams and developed according to the Wiggins and McTighe Understanding by Design methodology.

Table 2. Draft ATEP Course Topical Outlines (to be refined by development teams)
HS modules can be used as replacement curriculum in science, engineering and technology education, and CTE

| Biotechnology	Materials and Manufacturing	Information and Communication (ICT)
Module A – The World of Biotechnology Biotechnological Change Applying Biotechnology Core Skills for Biotechnology Raw Materials for Biotechnology: DNA and Proteins Biotechnology as Engineering Science Product Development Bioprocessing Agricultural Biotechnology Medicine and Biotechnology Electronics and Biotechnology The Future of Biotechnology Careers in Related Fields **Module B – Chemical Technology** Defining Chemical Technology Commodities, Polymers, and Feedstock Chemicals Specialty, Fine Chemicals, and Pharmaceuticals Current and Future Chemical Energy Sources Careers in Related Fields **Module C – Agricultural Technology** From the Green Revolution to the Gene Revolution Agricultural Engineering Problems and Solutions Food Processing and Preservation Careers in Related Fields **Module D – Medical Technology** History of Medical Technology Diagnosis, Therapeutics, Rehabilitation Scientific and Technological Medical Research Technological Advances Applied to Medical Technology Careers in Related Fields	**Module A – Properties and Processing Materials** Types of Materials Properties of Materials Strength of Materials Materials Science and Engineering Processing Materials Factors in Selecting Materials Careers in Related Fields **Module B – Manufacturing Systems** Manufacturing as a System Custom and Mass Production Quality and Quality Systems Automated Manufacturing Nanotechnology Manufacturing – Top Down, Bottom Up Safety and Ergonomics Careers in Related Fields **Module C – Automation and Control Systems** Human-Machine Interfaces CAD-CAM Robotics and CIM Systems Solid Modeling Statistical Process Control Next Generation Manufacturing Careers in Related Fields **Module D – Design for Manufacture** Design for Manufacturability Design for Sustainability Changes in Manufacturing Methods and Processes Supervisory and Managerial Procedures Used in Industry Manufacturing – A Global Enterprise Disposability, Environmental Impact Careers in Related Fields	**Module A – Electronic and Computer-Based Communication** Understanding Communication and Computer Systems Digital Logic, Memory, Architecture Digital Game Technology Cellular Technology/Telecom Satellite Communication and GPS Society and ICT Careers in Related Fields **Module B – Data Networking and Communication** Networking Technologies and Cloud Computing LANs, WANs, Networking Devices IP Addressing P to P and Client/Server Networking Network Operating System Software File Sharing Copyright Law Careers in Related Fields **Module C – System Connectivity** TCP/IP OSI Model Address Resolution Protocol Server Performance Considerations Network Architecture and Topology Careers in Related Fields **Module D – Behind the Internet Connection** User Needs, Requirements, Expectations Wireless Technologies Mobile Computing Devices Social Networking Tools and Networks VoIP (video and image) as "game changers" Firewalls Securing the Network Emerging Technologies in ICT Careers in Related Fields

The Team Leaders will work with the Writing Teams to determine the standards used to guide and focus the curriculum goals. Teams will need to select the standards to be addressed for each module and its supporting pages.

STEP 2: Online Content

The Stuff the Students Learn!

The standards will give focus to what is written, and also inform the assessments that are used to judge how well students are progressing through the content, and form the basis of the end of unit assessments.

However, the students do need to be able to access content that they will learn. The content can be drawn from the Engineering and Technology Textbook,
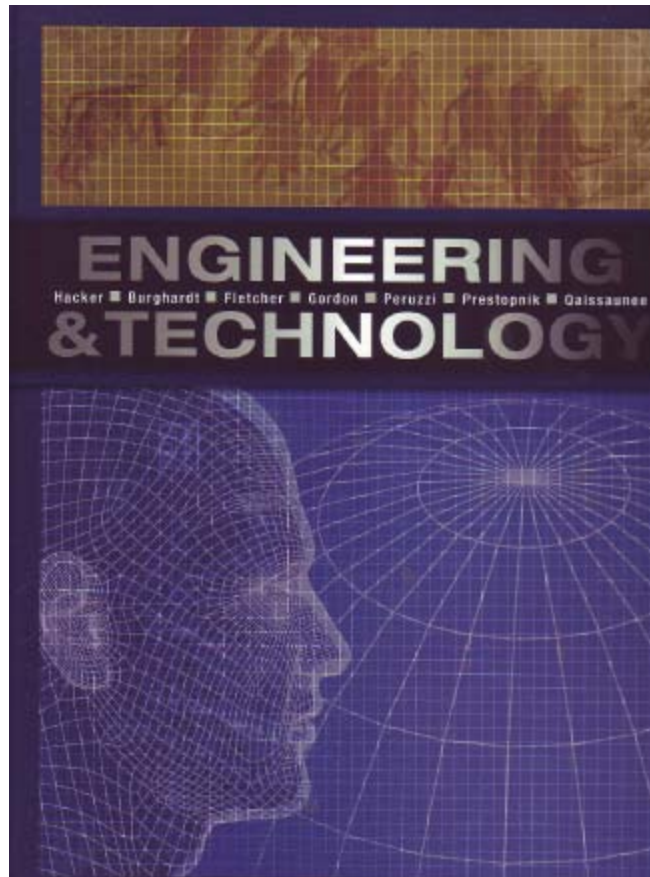
or from other sources that better fit the need to address the standards selected.

It should be noted that E&T does provide a starting point for the development of content, and can be mingled with materials from other sources. It also is a rich source of images that can be use without seeking additional copyright clearance.

Where the content is drawn from is left up to the writing teams, the content does need to be presented in an online manner.

Step 3: Online Delivery

The content that is delivered will not change one iota by being presented online. The major difference will be in the use of sequential web-type pages delivered in some form of learning management system. We will be moving from a continuous text flow seen in a text book, seen below, to …

TECHNOLOGY AND PEOPLE:
Formula One

Seth Rosenberg and Eyal Angel are two mechanical engineering students who decided to design and build their own Formula One-style racing car—from scratch, not from a kit. This was a challenging undertaking, but the two followed the engineering design process. They knew the type of car they wanted: one that was similar to Formula One racecars, which are lightweight and very fast. They used the Ariel Atom 2, a British racecar, as their benchmark model.

Automobiles are made of systems that in turn are made from components, and everything has to work together. Seth and Angel, as he prefers to be called, did not take any courses in automotive design, but they were confident that their education in engineering courses would enable them to learn more. And learn more they did. During the research and investigation phase, they developed their own knowledge and skills involving suspension systems, exhaust systems, braking systems, and chassis design.

When designing the chassis, Seth and Angel used two computer-aided design (CAD) systems to help them visualize and analyze the car's structure. Seth is a qualified welder and machinist, having worked in his grandfather's machine shop since he was in middle school. These skills were essential, as he was the lead fabricator in welding the tubular steel together. Seth and Angel needed to know the size requirements for the various components before constructing the frame.

Their final design had a 2.4-liter, turbocharged rear engine, rack and pinion steering, and a five-speed manual transmission, fitted together to create a 1,200-pound car. The engine and transmission were from a wrecked 2004 Dodge Neon purchased on eBay. The Neon is a sport compact car, and the stock drive shafts that connect the wheels to the transmission were not long enough for their Formula One. Therefore, Seth and Angel had to design a new length for the parts and order longer driveshafts from a custom driveshaft shop.

Figure 2.42 | Seth Rosenberg and Eyal Angel designed their own Formula One-style automobile.

a computer based delivery system ..

Both formats present information in a manner that can be used by teachers to guide learning. However, when using a textbook, access to information relies on students accessing the pages as set by the teacher. In an online environment, the teacher has considerable control over the learning sequence, the content encountered and unlike the textbook, can also introduce assessment points when appropriate. In addition, an online environment also offers the ability to offer automatic remediation or tutorials depending on student responses to ongoing or diagnostic assessments.

Step 4: Organizing Content

How do we share information with the student in an online world?

We have to use a series of short very focused webpage's … no more than 200-300 words per page, but you can add graphics to illustrate the words if it helps. Each page is linked to the next topic.
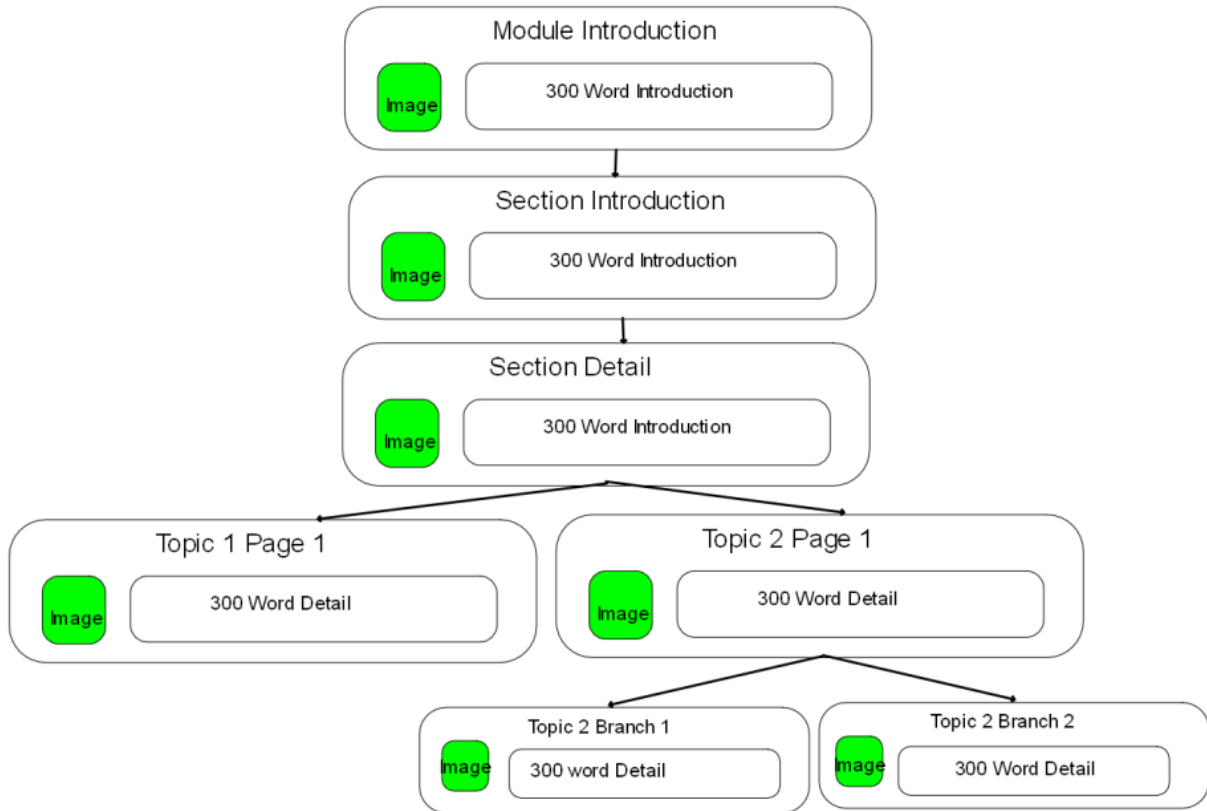
(to learn more about the thinking behind organizing webpages to deliver contiguous content, have a look at the following Web Style Guide)

Step 5: Outlining Your Content

Outlining Helps you Plan …

The use of an Outline document will the writing team identify and organize content elements. Below you will find a graphic showing the outline document. You will see that it is possible to create the outline document at the same time as you identify the content that is being inserted in the Content Templates.

You will also see that the Outline does set a limit to the number of 300 page elements (50 in total) that can be used in a module. It is suggested that no more than one media asset be used per element.

If you plan to use assessments to "check" student progress at the end of a section or topic, please show that with an asterisk on the outline.

Step 6: Using Templates

Producing content …

To help you, the support team has prepared a number of templates to help writing teams develop materials in a format that is suitable for use in an online delivery system. The templates loosely follow the above notion that content is linked to form a big picture. However, it might be a lot simpler if we just said that teams should image that they are writing a large format text book for the visually disabled. Each page is large, each page has a large picture, each page has few words (no more than 300, and it is better if we aim at 200), and each page has a link to the next page in the sequence.

Below you will find an image of the online template …

MODULE INTRODUCTION		
MODULE TITLE	DOMAIN BIO – ICT – MMT (users will select appropriate domain)	
INTRODUCTORY TEXT (300 words or less)		
Select images from the E&T cite page and figure number. Add [INSERT IMAGE HERE] marker showing image location in the above text		
TEACHERS NOTES	(Not visible to students)	
Pre-Requisite Knowledge		
Hints for Teachers		

CONTENT-1 TEMPLATE   →   Page 2   →   V2 Feb 2012

A module is often broken down into a number of sections. Here you will see the introductory page of one section …

SECTION INTRODUCTION		
MODULE TITLE	SECTION TITLE	SECTION #
INTRODUCTORY TEXT (300 words or less)		
Select images from the E&T: cite page and figure number. Add [INSERT IMAGE HERE] marker showing image location in the above text		
STANDARDS		
LEARNING OBJECTIVES		
KEY VOCABULARY AND DEFINITIONS		

Each section will often comprise multiple topics, and sub-topics to fully develop the learning that should be undertaken by students … here you will see an example of a topic (it must be stressed that there will be multiple topics)

SECTION DETAIL – PAGES				
Section #		TOPIC TITLE		TOTAL # OF PAGES IN TOPIC
TOPIC TEXT (300 words or less)				
Select images from the E&T: cite page and figure number. Add [INSERT IMAGE HERE] marker showing image location in the above text				
ASSESSMENT QUESTION(S) – SPECIFY METHOD				
TEACHER NOTES/ INSTRUCTIONS				

STEP 7: Using Assessments

How do you know?

One major advantage of an online delivery system is the easy with which assessments can be embedded into the learning experience. It is very important that every topic and sub-topic include assessment points, if they will improve learning or inform the instructor of student progress. In addition, it is essential that every section ends on a summative assessment that reveals the understanding of the topics covered in the preceding webpages.