# IT510 \* Module 1 Reading

Please read through this PDF, as it will introduce you to some of the requirements for the Module and help guide you in completing the Assessment. The last few pages should especially be helpful if you are a career-changer.

### Part 1: Introduction

### Library Works and Additional Source Material

To find the resources identified for this course, go to More Tools in the top navigation and choose Library. Then in the Library page, look on the left for a link meant just for this course.

When searching for source material to complete Assessments, use items that are suitable for master's level study. If you are not sure a source is appropriate, email your professor to ask.

Be careful, too, that you use sources appropriately. Remember that good paraphrasing includes avoiding three or more ordinary words copied in a row, plus ensuring that the sentence and paragraphing structure is not the same as the original. Proper citation and referencing are also necessary, and there is a special PDF prepared to help you with this important step. The Writing Center can also assist with writing, citation/referencing, and APA formatting. All of your Purdue Global courses will use APA 7th edition guidelines, although some Assessments may require alterative formatting (again, read instructions carefully).

### **Formal Writing**

Your work for this course is expected to exhibit professionalism in written work. Formal writing includes but is not limited to writing out contractions, avoiding chat-speak (including emoticons, all-caps, and abbreviations), writing without exclamation points and conversational questions, avoiding first-person wording (I, me, my, myself, we, our, us), using factual evidence rather than emotional wording, and ensuring that your grammar, punctuation, and spelling are accurate. (Make sure you check for and correct any incomplete sentences, run-ons, comma splices, and subject-verb disagreements, for example.) These rules are crucial with Assessment submissions even in courses that are not "writing" courses.

Occasionally an Assessment might be appropriately written in first person. For example, an audio transcript that imitates a phone call or a persuasive speech for a particular client might benefit from the personalization. In these cases, the Assessment instructions should indicate what is appropriate, or you can ask your professor for guidance.

Writing in Discussion Boards can be a little more relaxed, as both the purpose and the setting for this kind of communication are different than with Assessment. Contractions, an occasional exclamation point, and first-person instances will make the posts seem more relaxed and inviting. Chat-speak should still be avoided, of course, and grammar, punctuation, and spelling still checked for accuracy.

### Part 2: Methodologies and Analysis Procedures

### SDLC and Other Development Methods

While the textbook will be crucial in completing parts of the Assessment, the following content is provided to get you started on Module topics in case your book has not yet arrived.

**Project methods** are important, as they provide an established structure that ensures consistency and completeness and helps to avoid known problems when possible.

The systems development life cycle (SDLC) is comprised of several steps. Not all sources exactly agree as to these steps; there are typically six to nine in any given explanation. For the purposes of this course and to match the explanations given in the textbook, seven steps are provided below.

The traditional SDLC has also been called the **waterfall** method, as one step is completed before another is started; it is a linear path.

- 1. Identification of objectives, needs, and opportunities
  - The analyst may be brought in due to already-identified problems; the first true step to resolution is to identify what is truly needed.
- 2. Gathering requirements and needs of the user
  - This includes questioning, observing, and evaluating human–computer interaction.
- 3. Analyzing system structure
  - Diagramming, decision tables, and other visual formats are developed to investigate possibilities.
- 4. System design
  - Logical design of the database, network, input, and output are completed.
- 5. System development
  - Both coders and users work with the analyst in this active phase.
- 6. Testing and maintenance
  - While ongoing testing has likely been performed, full system testing at this point is still necessary, and maintenance begins once the system is complete.
- 7. Implementation and final evaluation
  - The analyst handles system conversion and training of users. A final evaluation with "lessons learned" is crucial for ensuring that the project has met the objectives, needs, and opportunities identified in the first step.

(Kendall & Kendall, 2019)

#### Agile Development

This software development life cycle is based on values identified as communication, courage, feedback, and simplicity. Incremental (piece-by-piece) development and teamwork are crucial. Agile may be a logical development choice when someone on the team is experienced in using this method, and the client accepts the idea of incremental enhancements. Main steps are:

- 1. Exploring stakeholders, technology, and opportunities; this step may take a long time, as it gathers the information needed for the system
- 2. Planning setting goals, keeping risks in mind
- 3. Development iterations of testing, feedback, and making changes; typically, about 3 weeks for each iteration
- 4. Production revisions and refinements are completed in shorter iterations
- 5. Maintenance keeping the product running well

A particular Agile method is called **scrum**, in which 2- to 4-week quick "sprints" produce a workable part of the project as a whole. Team members work closely together. More detail is in the textbook, Chapter 6 (Kendall & Kendall, 2019).

#### **Object-Oriented Systems Analysis and Design**

This method is valuable when a system is expected to be enhanced or changed in the near future; it is flexible for rapid response. Diagramming is an integral part of O-O techniques. The term "objects" refers to either things (such as *students*) or events (such as *course enrollments*). Once an object is determined, its characteristics and activities constitute its "class" — for example, the class for *students* would include address, email, phone number, etc. This method focuses on how to use objects once identified. A typical order O-O of steps is shown here:

- 1. Use cases determining "actors" and main events
- 2. Analysis sequence and timing for actions:
  - Unified Modeling Language (UML) diagrams
  - Class diagrams
  - Statechart diagrams
- 3. Systems design modifying the system and the diagrams to match
- 4. Systems development including documentation

(Kendall & Kendall, 2019)

There is also a **spiral model** in which planning/evaluation, risk assessment, design, and construction are revisited in a recurring pattern that can be diagrammed as a spiral. More can be learned about this highly detailed method through a web search and/or project management coursework.

# **SWOT** Analysis

This simple analytical tool explores a company's possibilities and become aware of potential problems.

- Strengths and Weaknesses are positive and negative aspects based on *internal* factors ones that the company can control (at least to an extent).
- **Opportunities** and **Threats** are positive and negative aspects based on *external* factors ones that come from competition, environmental, or other factors.

Example scenario: Global Springfield Hair Designs has a Facebook<sup>®</sup> page but no website. As you might expect, the business is a hair salon. There are four chairs, and the salon is open M–F from 10 a.m. to 6 p.m. The salon is located in a flood zone, but there have not been any floods in two decades. Business income has been steady. The owner, Felix, has recently hired two new stylists; both recently graduated from cosmetology school. Haircuts, styling, color treatments, and other services are set at competitive rates. Recently, a chain of hair salons in the area went out of business.

SWOT	Positives	Negatives	
Internal	Strengths	Weaknesses	
	New stylists hired	The new stylists do not have a lot of	
	Income is steady	experience yet.	
	Social media is being used.	No website	
		No weekend hours	
External	Opportunities	Threats	
	Could expand into skin and nail treatments	<ul> <li>Flooding (environmental impact) is possible.</li> </ul>	
	<ul> <li>New customer base might be generated by a website.</li> <li>The website could allow for</li> </ul>	<ul> <li>Other salons may work more quickly to entice customers from the bankrupt chain.</li> </ul>	
	scheduling appointments online.	Demand may decrease due to home haircuts even post-pandemic.	

Sometimes weaknesses are also opportunities (such as the lack of website); the interpretation of circumstances and discussion thereof with a client can turn negative issues into the potential for positive change. When you create your SWOT analysis in one of the Assessment documents, make sure you do not simply duplicate one item as a weakness and opportunity; provide details to prove their placement in the chart, like you see above.

# Part 3: Diagramming for the Assessment

### First steps with Visio

Crucial: choose the most logical "template" so appropriate shapes for your project are provided. Templates save a lot of time; you can search for shapes later if you do not see everything you need. The Assessment instructions tell you which template to use for each kind of diagram.

#### The Basics:

- Click and drag shapes from the Shapes pane onto the Stage (main page on the right).
- Resize shapes as needed by clicking and dragging the circular points (often on all corners and all sides) as shown here:



 To connect one shape to another, go to the Home ribbon > Tools and click on Connector:



 Click on one shape's side or corner circle and drag the mouse to another shape's side or corner circle. The line should lock into place, which means you can move shapes around and the lines will still be attached. The locked ends look like tiny bullseyes:



- By default, the line might actually be an arrow. You can change the ends of the line by right-clicking and choosing Format Shape, then clicking Line to find options.
- When you are done creating lines to connect shapes, click on Pointer Tool to get out of Connector mode.
- Do not use arrow shapes such as this they do not provide connections:
- To add text in a shape, most shapes allow a simple double-click and you can then type.

- The font is small by default. Use the tools in the Home ribbon to change font style and size.
- Readability is important!
- To add text elsewhere on the diagram (perhaps for a title), click the "A Text" link in the Tools section of the Home ribbon. When you are done, click the Pointer Tool link to return to normal.
- If you want to change the colors, font, etc., go to the Design ribbon and experiment. Again, readability is very important.
- To add your binary "yes" or "no" (or "true" or "false"), right-click on the arrow and choose "Edit text." Type the word you want and click elsewhere to close the text box.
- You are encouraged to experiment with formatting. Try various design themes and variants. The default font is small, so you might like to consider highlighting all (Control+A, or Command+A for Macs) and choosing a larger size from the Home ribbon tools. Keep the font simple and the design easy to read.
- To delete an arrow or a shape, click on it and press your delete key.

# Your First Diagrams: Flowcharts

Use a separate page for your two flowcharts in one of the Assessment documents. This will simplify the embedding. The first page is shown by default; at the bottom task bar, look for the plus sign in a circle to add a second page to your Visio file. Approved shapes are below. Do not use any other shapes for this module's flowcharting.



Rules:

- There must be one start, and all paths must lead to the same single end.
- All decisions must have binary results (yes/no, or true/false).
- The process shape is for an action.
- The data shape is used for reading or writing from a database (see Example 2).
- The on-page reference is used to connect arrows. Without these, you might have overlapping arrows or combined arrow ends that are hard to read. The circle also has other uses, but this is the purpose for this shape for the Assessment.

While it is an important practice to read through example diagrams such as the ones below, please take heed of the warning presented in the Assessment instructions. Just like when you write with words, the structure of your diagrams must not be copied.

#### **Example 1. Decision Flowchart**

In the example on the following page, there are three decisions, each with a yes and no option that leads to something else. Watch the arrow directions; simple lines cannot be used, because you need a directional *flow.* There is one start and one end, and there is no way for the process to stop until it reaches the end.



#### **Example 2. Calculation Flowchart**

The flowchart below takes four items - StudentID, Exam1, Exam2, and Exam3 - to "READ" (pull data) from a database. It then uses a simple math calculation to average the three exam grades.

Next, a decision shape asks if the average grade is at least 90, and if so, the grade is A. If false, the flowchart asks if the average grade is at least 80. If true, the grade is a B, and if false, follow the rest of the arrows. Note the on-page references (circles) that combine arrows for readability before the system has finalized the student's grade.

In the last rhombus shape, the system provides the StudentID and final grade as output ("WRITE").



# Important: Embedding Visio

Screenshots are not acceptable for your diagrams in this course. There are distinct advantages of using Microsoft Visio to *embed* diagrams in Word documents instead:

- Most clients have Word, but few have Visio. Your clients will be able to review the diagrams inside a Word document.
- Since you have Visio, you will be able to edit your diagrams without having to reopen your original Visio file. Simply double-click on the embedded diagram and Visio will open *inside* Word.

This is an easy process. First, copy in Visio:

- Use Control+A (or Command+A for Macs) to highlight all of a diagram. Then use the keyboard commands Control+C (Command+C) to copy it.
- Alternatively, you can click on Copy on the left end of the Home ribbon:



Then paste into Word:

- Click where you wish the diagram to appear under an appropriate subheading. Use Control+V (Command+V) to paste your diagram into Word.
- Alternatively, you can go to Paste on the left end of the Home ribbon (choose **Paste**, *not* Picture: hover your mouse over the icons to know which is the correct one):



If you click on **Paste Special** instead of an icon, the dialogue box below will pop up.

- 1. Choose "Microsoft Visio Drawing Object."
- 2. Make sure the radio button selected on the left is "Paste" (not Paste link).
- 3. Then click OK.

Paste Special	al	?	×	
Source: Micro C:\U	rosoft Visio Drawing Jsers\Tamara Fudge\Desktop\go.vsdx\Drawing\~Page-1			
● <u>P</u> aste: ○ Paste link:	As: Microsoft Visio Drawing Object Device Independent Bitmap Picture (Enhanced Metafile)	icon		
Result	Inserts the contents of the Clipboard into your document so that you can edit it using Microsoft Visio Drawing.			

#### Check Your Work (Do not skip this.)

There are several ways to verify if your diagram is correctly embedded:

1. Single-click your diagram in the Word document. You should see a slightly dotted line and square corners around the diagram, and the task bar at the bottom of the window should

indicate that it is Visio. If you see a solid line and round dots on corners of the diagram and there is no mention of Visio in the window's task bar, it is an image and not embedded properly.

- 2. Double-click your diagram in the Word document. Wait a moment, and Visio should open right there inside your Word document if it is indeed embedded. If it does not open, your diagram is not embedded.
- 3. Right-click the diagram. Embedded Visio will have some options such as "Visio Object." A simple image will have more options, including "Change Picture," "Edit Alt Text," and "Format Picture," all of which indicate it is not embedded Visio.

## Part 4: Additional Information

### Memos

The purpose of a memo is to provide internal communication within a workplace. There is *no* salutation or signature for a memo; this information is already in the block at the top. The word "memo" can be either small case or all capital letters and can be somewhat larger than the rest of the text.

#### MEMO

To:RecipientFrom:Your Name, Your PositionRe:Description of the ContentDate:Date in some understandable format

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Write paragraphs that succinctly describe the purpose for your communication. These paragraphs should be short and easy to read.

The top part (to, from, etc.) can be double-spaced, but the paragraphs under it should be single-spaced with a blank line between the paragraphs as you see here. Do *not* indent first lines.

Example:

#### MEMO

To: Front office personnelFrom: Bobbi Smith, Network AdministratorRe: Inability to access ChorosDate: 12 August 2021

\_\_\_\_\_

There are several issues with accessing the Choros network today. We hope to have a resolution as quickly as possible.

In the meantime, it is recommended that you avoid using Choros. Please maintain your regular notes in Google Drive for now. When the system is back up, the tech team will be able to retrieve your notes for you.

Thank you for your patience. The estimated time for resolution of the issue is by the end of the workday.

## Quizzes

You are encouraged to take the non-graded quizzes. In this module, the first one will solidify your understanding of the SDLC and other processes, and the second one covers decisions that may need to be made regarding software. The questions are all multiple choice (with just one potential answer) and true-false.

## Reminders

The list below is offered in this module as a one-time reminder of responsibilities. You may like to create a to-do list or write deadlines on a calendar to ensure that all requirements are met.

- Complete all parts of the module, including the reading.
- Ask your professor questions before submitting work.
- Take advantage of the Academic Success Center tutors and materials when necessary.
- Ensure your work is your own and sources are cited properly using APA citation/referencing rules.
- Use appropriate master's-level source material.
- Read and re-read instructions carefully to maximize your point potential.
  - You are more likely to pass the module if your work completely fulfills requirements.
     Follow rules and read instructions carefully! Re-reading instructions prior to submitting work is also a good measure to ensure better grades as well as more complete learning.

# **Getting Help**

To find the Academic Success Center, look for My Studies > Academic Success Center from your home page (where your courses are listed, not inside this classroom). There you will find a plethora of information for writing, math, science, business, and technology. You can also connect with tutors. This is a free service for Purdue Global students; if you have not investigated it prior to this term, it is a good idea to check it out and see what great help is available.

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### If You Are New to IT

This section is presented for those who are new to the field or just wish to solidify understanding of computer concepts relevant to the module or the course. It is a good idea for seasoned professionals to scan this information, too, in case there is something new to learn.

### Hardware and Software

The ebooks listed below are in the course's Library list as "optional." Click on More Tools > Library and look for Required Readings in the left Library menu. Consider the following ebooks and chapters for supplemental reading:

Meyers, M., Jernigan, A., & Lachance, D. (2019). *CompTIA IT fundamentals+ all-in-one exam guide* (*exam fc0-u61*) (2nd ed.). McGraw Hill. https://libauth.purdueglobal.edu/sso/skillport?context=144895

- Chapter 2: "System Hardware"
- Chapter 5: "Understanding Operating Systems"
- Chapter 9: "Using and Managing Application Software"

Meyers, M. (2019). CompTIA A+ certification all-in-one exam guide (exams 220-1001 & 220-1002) (10th ed.). McGraw Hill. https://libauth.purdueglobal.edu/sso/skillport?context=144455

- Chapter 3: "CPUs"
- Chapter 4: "RAM"
- Chapter 5: "Firmware"
- Chapter 6: "Motherboards"
- Chapter 7: "Power Supplies"
- Chapter 16: "Troubleshooting Operating Systems"
- Chapter 17: "Display Technologies"

### Hardware Terminology for the Emergent IT Professional

**Analog vs. digital:** Analog signals are frequencies with smooth and continuous changes; the word comes from "analogy," which thus *represents* unaltered waves that contain information. Digital signals are frequencies that change abruptly because the signals are changed into numerical values.

**Bandwidth:** The amount of data measured in bits that can be transmitted over time (generally per second). This is not the same as network speed.

**Binary code:** The underlying code for computing based on 0s and 1s assigned in a string of bits (binary digits).

**BIOS:** The computer's basic input/output system, which is necessary to connect the processing unit to the operating system.

**Boot:** Short for "bootstraps," to boot your computer means to turn it on. The boot process then loads instructions from ROM and the operating system.

**Cache:** Short-term memory, such as that used for the hard disk, memory (for applications), and browsers. This helps the computer to work more quickly, rather than starting processes from a dead stop. It is pronounced as "cash."

**Disruptive technology:** Any technology that changes how companies and industries do business. An example would be artificial intelligence used for answering customer questions online.

**Encryption:** Rewriting information into a secret code so that sensitive information cannot be read during transfer of data.

**Ethernet:** A method of connecting computers into a local area network. Data is streamed into packets (frames) for transmission.

**IP (Internet Protocol) address:** A numeric identification for networked computing devices and related hardware. This address is comprised of an identifier for the network(s) and then the exact location/device.

Kernel: The computer's controlling program; it connects the hardware to the software.

**Liquid crystal display (LCD):** A common panel display technology for computers, smart phones, and other screens that places liquid crystal between electrodes to enact back-lit visual elements. The screen is organized as a grid of pixels (see below).

**MAC (media access control) address:** An identifying number assigned by manufacturers and unique to each device.

**Pixels and resolution:** Picture elements (pixels) are tiny dots of color on a screen. The higher the resolution, the tinier the dots, and therefore smoother the lines, images, etc. will appear on the screen.

**Platform:** A general term for identifying a computer's operating system. An example would be to identify a computer that uses Linux Ubuntu OS as operating on a "Linux platform."

**Protocol:** A set of rules. Examples are TCP/IP, http for delivering content via a web browser, ftp for uploading items to a server, SMTP for mail, MAC addresses, and others.

**TCP/IP (Transmission Control Protocol/Internet Protocol):** A set of protocols to allow computers to communicate over the Internet.

**USB (Universal Serial Bus):** A connection for devices, such as connecting a digital camera to a computer, a flash drive to a computer, or a smart phone to a power source.

You are encouraged to use your favorite search engine and learn more about each of these terms. You may also want to search online for more information about video and sound cards, input/output devices, and USB, ethernet, and HDMI ports.

### **Software Basics**

A computer cannot work without an **operating system**. This software enables the connection between hardware and other software; it also schedules tasks such as updates, and controls the keyboard, mouse, and other peripheral devices. The most commonly used operating systems for laptops and desktop computers are Microsoft Windows<sup>®</sup>, Apple iOS<sup>®</sup>, and Linux<sup>®</sup>. Your phone and tablet also require an operating system to work; you can find this information in your Settings.

**Productivity software** is a term for programs used to create informational documentation. This could take the form of documents, worksheets, presentations, database programs, and more. Microsoft Office<sup>®</sup>, which is required for your coursework, is an example of a productivity software suite. There are free options such as LibreOffice<sup>®</sup> and OpenOffice<sup>®</sup>; you may have also used Google Docs<sup>™</sup> for similar purposes.

You needed a **browser** to get into the classroom; this is software, too. Drivers are needed to connect devices with your operating system, and an operating system typically comes with several utilities that monitor the system and keep things running. You probably have a media player, email program (unless you only use email inside a browser), games, graphics creation software, and many other kinds of programs.

An **antivirus** program should be running on your computer to check for and prevent known viruses and other malware.

# Software Terminology for the Emergent IT Professional

**Malware:** Malicious software such as viruses, Trojan horses, and worms which can be introduced into a system to create harm.

**Open-source software:** The underlying code is supplied, allowing the potential for much more customization. There are a variety of licensing agreements, but typically, open-source software is free. Using open-source software might include some security risks, and the only help available is usually online discussion forums, however. A company that uses open-source software needs an excellent tech team to mitigate problems.

**Plug-in:** A small application that can be added to your browser. A common example is Adobe<sup>®</sup> Acrobat<sup>®</sup> (so that you can read PDFs in the browser window).

**Proprietary software**: Also called "off the shelf"; the underlying code in this software is not available to the user. Prices may be set for a one-time download or a monthly payment for use in the cloud (software as a service). The company owning it will offer tech support and let you know when updates are available.

You are encouraged to use your favorite search engine and learn more about each of these terms.