Type your Name Here

American Intercontinental University

MGMT412 – Project Management

Date of Submission

**Unit 5 Individual Project**

**Introduction**

*Provide a brief introduction (2-3 sentences) for the purposes of previewing what will be covered. Remember to always indent the first line of a paragraph (use the tab key). The margins, font size, spacing, and font type (italics or plain) are set in APA format. Please do not change the names of the headings and subheadings, and do not change the font or style of font.*

*(Delete the information provided in the instructions.)*

**Time Required to Complete Jobs**

Mike was hired as a project manager to install hardwood floors for the company Awesome Floor and Tile. They will be installing new flooring into a local office building. Mike comes up with the list of work and estimates the time. A list of activities and their optimistic completion time, the most likely completion time, and the pessimistic completion time (all in days) are estimated in the table.

|  |  |  |  |
| --- | --- | --- | --- |
| **Activities** | **OT** | **MT** | **PT** |
| Activity 1 | 2 | 3 | 4 |
| Activity 2 | 3 | 6 | 9 |
| Activity 3 | 4 | 8 | 12 |
| Activity 4 | 6 | 8 | 10 |
| Activity 5 | 8 | 10 | 12 |
| Activity 6 | 10 | 14 | 18 |
| Activity 7 | 4 | 6 | 8 |

Activity 2 starts immediately after Activity 1.
Activity 3, Activity 4, and Activity 5 start concurrently after Activity 2.
Activity 6 does not start until after Activity 3, Activity 4, and Activity 5 are completed.
The carpet installation project is complete after Activity 7 is completed.

**Determine and Explain Key Calculations**

Determine and explain the expected completion time and the variance for each activity. Determine and explain the total project completion time and the critical path for the project. Determine and explain Early Start (ES), Early Finish (EF), Late Start (LS), and slack for each activity. What is the probability that this project will be finished in 40 days or less?

*This should be 1-2 paragraphs in length. (Delete the information provided in the instructions.)*

**Benefits of Using Project Management Techniques**

Define how to gather the project requirements. Analyze whether there are any potential changes that could impact overall project schedule and project finishing times. Explain the best methods for managing the change requests and what kind of process this project should involve. Analyze implications of changes in project scheduling. How do changes impact the calculations and the critical path? Evaluate applications of project management techniques in terms of the firm's business operational goals and requirements.

*This should be 2-3 paragraphs in length. (Delete the information provided in the instructions.)*

**Conclusion**

 Add some concluding remarks in a sentence or two.

*This should be 1-2 sentences. (Delete the information provided in the instructions.)*

**References**

NOTE: The reference list starts on a new page after your conclusion.

*(Edit these references, add additional ones you used and delete the references you did not use.)*

**eBook - AIU Course Textbook**

Author, A. A. (Year). *Title of book in italics.* City, State Abbreviation: Publisher Name.

Retrieved from <http://wow.coursesmart.com/>

**M.U.S.E. Materials**

American InterContinental University. (Year). *Unit title: Presentation title* [Multimedia

presentation]. Retrieved from American InterContinental University Virtual Campus,

Course Code-Session Number-Section Number: https://mycampus.aiu-online.com/

**intellipath**

 American InterContinental University. (Year). *Unit title: Presentation title* [intellipath].

Retrieved from American InterContinental University Virtual Campus, Course

Code-Session Number-Section Number: https://mycampus.aiu-online.com/

**Journal Article – Retrieved from Library Database – with DOI**

Author last name, A. A. (Year). Title or article. *Title of Journal in Italics, Volume Number*

*in Italics* (Issue Number if Available), Pages. doi:

**Journal Article – Retrieved from Library Database – No DOI**

Author last name, A. A. (Year). Title or article. *Title of Journal in Italics, Volume Number*

*in Italics* (Issue Number if Available), Pages. Retrieved from URL of journal homepage

**Journal Article – Retrieved from Web**

Author last name, A. A. (Year). Title or article. *Title of Journal in Italics, Volume Number*

*in Italics* (Issue Number if Available), Pages. Retrieved from URL

**Website Article – Author Listed**

Author last name, A. A. (Year, Month Day). Title of article. *Title of Website in Italics*. Retrieved

from URL

**Website Article – No Author Listed**

Title or article. (Year). *Title of Website in Italics.* Retrieved from URL

Mike was hired as a project manager to install hardwood floors for the company Awesome Floor and Tile. They will be installing new flooring into a local office building. Mike comes up with the list of work and estimates the time. A list of activities and their optimistic completion time, the most likely completion time, and the pessimistic completion time (all in days) are estimated in a given table. Following are the activities that are required to install the hardwood floor in the offices:

* **Activity 1:** Measure office room dimensions
* **Activity 2:** Estimate cost
* **Activity 3:** Material requisition
* **Activity 4:** Workforce requisition
* **Activity 5:** Special tool requisition
* **Activity 6:** Installation
* **Activity 7:** Inspection and customer acceptance

Activity 2 starts immediately after Activity 1.

Activity 3, Activity 4, and Activity 5 start concurrently after Activity 2.

Activity 6 does not start until after Activity 3, Activity 4, and Activity 5 are completed.

The carpet installation project is complete after Activity 7 is completed.

**Your assignment is to write a report that addresses the following:**If OT = Optimistic Time, MT = Most Likely Time, and PT = Pessimistic Time, use a Program Evaluation Review Estimate (PERT) to compute the statistical time for each activity, as in the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Activities** | **OT** | **MT** | **PT** |
| Activity 1 | 2 | 3 | 4 |
| Activity 2 | 3 | 6 | 9 |
| Activity 3 | 4 | 8 | 12 |
| Activity 4 | 6 | 8 | 10 |
| Activity 5 | 8 | 10 | 12 |
| Activity 6 | 10 | 14 | 18 |
| Activity 7 | 4 | 6 | 8 |

You must also do the following:

* Determine and explain the expected completion time and the variance for each activity.
* Determine and explain the total project completion time and the critical path for the project.
* Determine and explain Early Start (ES), Early Finish (EF), Late Start (LS), and slack for each activity.
* What is the probability that this project will be finished in 40 days or less? Explain.
* Define how to gather the project requirements.
* Analyze whether there are any potential changes that could impact overall project schedule and project finishing time.
* Explain the best methods for managing the change requests and what kind of process this project should involve.
* Analyze implications of changes in project scheduling.
* Explain the best methods for managing the change requests and what kind of process this project should involve.
* Evaluate applications of project management techniques in terms of the firm’s business operational goals and requirements.

**Please submit** **your assignment in an APA-formatted paper.**

**Submitting your assignment in APA format means, at a minimum, you will need the following:**

* **Title page:** Remember the running head. The title should be in all capitals.
* **Body:** The body of your paper begins on the page following the title page and abstract page and must be double-spaced (be careful not to triple- or quadruple-space between paragraphs). The type face should be 12-pt. Times Roman or 12-pt. Courier in regular black type. Do not use color, bold type, or italics except as required for APA-level headings and references. The deliverable length of the body of your paper for this assignment is 2–3 pages. In-body academic citations to support your decisions and analysis are required. A variety of academic sources is encouraged.
* **Reference page:** References that align with your in-body academic sources are listed on the final page of your paper. The references must be in APA format using appropriate spacing, hang indention, italics, and upper- and lowercase usage as appropriate for the type of resource used. Remember, the Reference Page is not a bibliography but a further listing of the abbreviated in-body citations used in the paper. Every referenced item must have a corresponding in-body citation.

Your assignment will be graded in accordance with the following criteria. Click [here](https://class.aiuniv.edu/LCMSFileSharePreview/Resources/MSWordDocument/BUS_IP_Rubric_Standard.docx) to view the grading rubric.

**For assistance with your assignment, please use your text, Web resources, and all course materials.**

This assignment will also be assessed using the Common Assessment criteria provided [here](http://resources.careered.com/LCMSFileSharePreview/Resources/MSWordDocument/AABA%20and%20BBA%20Specializations%20Rubric%202018.docx).

**Reading Assignment**

PMI: Chapters 3, 5–6, and 9–13, as needed

Not Editable

**Assignment Objectives**

* Assess the general functions of management as depicted by planning, organizing, leading, and controlling

**Model Answer**

The student’s submission should be in the form of an APA-formatted paper that addresses the questions and calculations requested. There are various ways in which to present the information. Below are each of the elements of the assignment and the supporting formulae and data.

**Determine the expected completion time and the variance for each activity**

PERT Formula

* Expected Time = ET
* Optimistic Time = OT
* Most Likely Time = MT
* Pessimistic Time = PT

Expected Time = (Optimistic Time + 4 x Most likely time + Pessimistic time) / 6
In other words, ET = (OT + 4 x MT + PT) / 6

**Task Variance Formula**

* Pessimistic Time = PT
* Optimistic Time = OT

The Variance of the Task = [(P – O) / 6]2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Activities | OT | MT | PT | Pert Estimate | Variance |
| Activity 1 | 2 | 3 | 4 | 3 | 0.11111111 |
| Activity 2 | 3 | 6 | 9 | 6 | 1 |
| Activity 3 | 4 | 8 | 12 | 8 | 1.77777778 |
| Activity 4 | 6 | 8 | 10 | 8 | 0.44444444 |
| Activity 5 | 8 | 10 | 12 | 10 | 0.44444444 |
| Activity 6 | 10 | 14 | 18 | 14 | 1.77777778 |
| Activity 7 | 4 | 6 | 8 | 6 | 0.44444444 |

**Determine the total project completion time and the critical path for the project**

The student's answer should identify the critical path items and explain that the longest path time through the project is the critical path. This means that any task along this path must be completed on time or the project completion time will be effected. Therefore, these tasks are critical. The task times along the critical path are summed to determine the project completion time.
 **Network Diagram (PERT or CPM)**



Critical Path = 1,2,5,6,7 = 39 days

Total project completion time = 39 days

**Determine Early Start (ES), Early Finish (EF), Late Start (LS), and slack for each activity**

The Early Start is determined by making a “Forward Pass” through the Network Diagram and finding the earliest time the Project Activity can begin based on its sequence and the preceding tasks. The Late Start Time is calculated by making a “Backward Pass” (starting at the end) through the Network Diagram and determining the last possible day that a task could begin and still be completed on time. Slack time is determined by subtracting the Early Start time from the Late Start time for each task. Note that tasks on the critical path have no slack time.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Early Start | Late Start | Early Finish | Slack Time |
| Activity 1 | 0 | 0 | 6 | 0 |
| Activity 2 | 3 | 3 | 9 | 0 |
| Activity 3 | 9 | 11 | 17 | 2 |
| Activity 4 | 9 | 11 | 17 | 2 |
| Activity 5 | 9 | 9 | 19 | 0 |
| Activity 6 | 19 | 19 | 33 | 0 |
| Activity 7 | 33 | 33 | 39 | 0 |

**What is the probability that this project will finish the project in 40 days or less?**

The probability of completing the project within a given time estimate is determined by finding the Z value for the specified time in relation to the project. This is done by applying the formula below to calculate Z for the critical path and looking up the value in a Z table to determine the probability.

**Formula for Z and Path Variance:**

Z = (Specified Time – Expected Time/Standard Deviation)

Path Variance = Sum of the Task Variances on the Path

Standard Deviation is the Square Root of Variance. So, once the Variance is known, the Standard Deviation can be calculated by finding the Square Root.

**Answer**

Path Variance for the critical path = 3.77778 Std. Dev. = 1.9437

Specified Time = 40 Days

Expected Time (PERT Estimate) = 39 Days

Z = (40 – 39)/1.9437 = .5144

Using the Z Table we see that a Z value of 0.51 yields a Probability of 69.50% that the project could be completed in 40 Days or less.

**Define how to gather the project requirements**

Gathering requirements is the process of determining, documenting, and managing stakeholder needs and requirements to meet objectives. Students should discuss how to work with different stakeholders to collect project requirements. Students can also discuss what kind of methods they could use to gather project requirements like brainstorming, meetings, and lessons learned review, etc.

**Analyze whether there are any potential changes that could impact overall project schedule and project finishing time.**

Student answers will vary. The general discussion should recognize the importance of critical path task management. The activities on the critical path have no slack time and therefore, must occur on time to maintain the project schedule. Any change that delays a critical path item should be examined closely by the project manager for recovery and impact.

**Analyze implications of changes in project scheduling.**

Student answers will vary. The general discussion should recognize the importance of critical path task management. The activities on the critical path have no slack time and therefore, must occur on time to maintain the project schedule. Any change that delays a critical path item should be examined closely by the Project Manager for recovery and impact.

**Explain the best methods to managing the change requests and what kind of process this project should involve.**

A *change request* is a formal proposal to modify any project document, deliverables, or baseline. The students should discuss the potential change requests from different stakeholders, the change impacts, and the change requests’ approval/deny processes. The students can also discuss the roles and responsibilities that different stakeholders should play in the change requests.

**Evaluate application of project management techniques in terms of the firm's business operational goals and requirements.**

Student answers will vary. The students should demonstrate good knowledge of the importance of project management to the growth and adaption of a business. The students should discuss the need to match the project management technique applied to the type of business project undertaken. Some discussion of Agile, Scrum, or traditional techniques may be included.