.STUDENT REPORT
ASSEMBLY LINE BALANCING
KILLBRIDGE-WESTER HEURISTIC METHOD

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Class Tutorial: ...

INTEGRATED MANUFACTURING SYSTEM LABORATORY

INDUSTRIAL ENGINEERING STUDY PROGRAM

FACULTY OF INDUSTRIAL TECHNOLOGY

ISLAMIC UNIVERSITY OF INDONESIA

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ASSEMBLY LINE BALANCING
KILBRIDGE-WESTER HEURISTIC METHOD

1.1 Purpose

The following are the learning objectives of the practical line balancing module using the Kilbridge-Wester Heuristic method:

1. Understand the concept and theory of the Kilbridge-Wester Heuristic method.
2. Understand the inputs and outputs of calculations with the Kilbridge-Wester Heuristic method.
3. Determine the calculation and analysis of bottlenecks in the efficiency of the production track.
4. Can determine the best workstation composition with the Kilbridge-Wester Heuristic method.
5. Can know the bottlenecks on the assembly line and can create new assembly line alternatives without bottlenecks.

1.2 Assignment

Perform calculations, make analyses, and find the best assembly line balancing solution based on predetermined case studies using the Kilbridge-Wester Heuristic method.

1.3 Theoretical Basis

1.3.1 Inductive Studies

The inductive study contains a literature review table consisting of 2 journals related to the application of ALB using the KWH method (1 national journal and 1 international journal) with the research deadline being the last 5 years.

Table 1. 1 Literature Review

No	Heading	Year	Method	Discussion	Conclusion
1.					
2.					

1.3.2 Deductive Studies

Deductive studies provide a theoretical basis from credible or reliable sources as a reference in working on case studies.

1.4 Data Processing

1.4.1 Data Input

The input data is based on the sequence of the assembly process from the case study that has been given. Includes work element time on each workstation, working hours of 8 hours, cycle time for each workstation of 120 seconds and the amount of demand of 150 products.

1.4.2 Bottleneck Analysis Based on 2 Assemblies

Analysis of bottlenecks in each propeller assembly.

Table 1. 2 Assembly Bottleneck Analysis 1

Workstation	Process Time (seconds)	Idle Time (seconds)	Bottlenecks
1			Yes or No
2			Yes or No
3			Yes or No
4			Yes or No

Table 1. 3 Assembly Bottleneck Analysis 2

Workstation	Process Time (seconds)	Idle Time (seconds)	Bottlenecks
1			Yes or No
2			Yes or No
3			Yes or No
4			Yes or No

1.4.3 Initial Conditions of the Assembly Line

Contains the calculation of the parameters of the initial condition of the assembly line in the form of data on working hours, number of products, time of work elements that have been obtained, bottleneck analysis based on cycle time after the tutorial, precedence diagram, and calculation of line balancing parameters for **initial conditions.**

- Average Analysis of Bottleneck Assembly 1 and 2

  Provide an explanation of when an assembly line can be said to be a bottleneck, fill in the table below according to the results obtained, and perform an analysis of each workstation in the bottleneck decision table following.

Table 1. 4 Alternative Bottleneck

Workstation	Process Time (seconds)	Idle Time (seconds)	Bottlenecks
1			*Yes or No*
2			*Yes or No*
3			*Yes or No*
4			*Yes or No*

1.4.4 Alternative Calculation of Assembly Line Starting Conditions

Data processing is based on workstation time data and work element time. The calculation is presented in a table and carried out as many as 3 iterations with different cycle times.

a. Alternative 1
   - Cycle Time and Work Element Time
   - Table of division and subtraction of working elements
   - Line Balancing Parameters

b. Alternative 2

   Contains the same thing as in Alternative 1.

c. Alternative 3

   Contains the same thing as in Alternative 1.

d. Alternative Comparison

Contains a comparison table of line balancing parameters from 3 alternatives that have been calculated. The comparison is presented in the form of a graph.

1.5 Analysis

1.5.1 Best Alternative Solution

It contains a comparative analysis of the three alternatives that have been calculated and looks for the best alternative to be proposed.

1.5.2 Comparison of Initial Conditions with Proposed Alternatives

Contains a comparative analysis of initial conditions with the best alternatives ranging from cycle time to line balancing parameters. Included is a comparison chart of line balancing parameters, initial conditions, and proposed alternative assembly lines.

1.5.3 Precedence Diagram

Contains a precedence diagram based on the selected iteration.

1.6 Conclusion

The conclusion answers the purpose of the existing tutorial.

REFERENCES

STUDENT REPORT FORMAT

Information	Conditions
Page Size	A4
Margins	Top: 3 cm, Bottom: 3 cm, Right: 3 cm, Left: 4 cm
Space	1.5 with Before: 0, After: 0
Alignment	Paragraph: Justify Image, Table, Caption: Center
Font	Times New Roman
Font Color	Black
Caption	Caption uses an automatic caption. Image or graphic captions are located below the image, table captions are located above the table
Citations and References	Use the APA format
Remove red text when consulting student reports	