

# Syllabus

## Course: Manufacturing Competitiveness

### Detailed Syllabus

#### Week 1

1. **Subtopic: Concept of manufacturing core elements**

Description: Capital, Labour & Material, are interchangeable inputs in a manufacturing system. Interplay of these factors leads to the work flow from regions of high cost to low cost

2. **Subtopic: Modern manufacturing organization**

The purpose of modern manufacturing organisation is more than the use of the resources and manufacturing products & components which have long life. Many other activities now are expected from manufacturing organisations besides just a robust production system.

3. Summary

#### Week 2

1 **Subtopic: Taiichi Ohno & his system**

The core of Taiichi Ohno system has a purpose which has led to the development of many tools which help achieve the purpose. The assumptions and restrictions that his system has which lead the great application of the flow concept. Focus on core assumptions of his System.

2      **Subtopic: Henry Ford & assembly line**

The approach of increasing flow and the assumptions of Henry Fords environment that lead to the final creation of the assembly line. How a few of his tools and approach supported him in his aim to improve productivity to levels still unseen even today.

3      **Subtopic: Toyota production system or lean manufacturing**

The assumptions of TPS or Lean and limits under which the systems can work. Lean being the great English version of the Japanese systems has a necessary condition to be met before we can apply it. However, using a few tools of lean does not amount to implementing lean.

4      **Subtopic: The Principles of flow**

The principles of flow are the universal concept that can be applied to any manufacturing organisation. Understanding these principles allows us to increase throughput of an organisation and clearly understand why Ford's and Ohno's systems were successful and similar in concept but the application of this flow concept in two different environment lead to creation of two great manufacturing systems.

**Week 3**

1      **Subtopic: Financial Measurement**

The companies use too many measurements to take effective decisions. The approach here to simplify and reduce it to just three namely an absolute measure, a relative measure and the survival measure. The measure are Profit (Absolute) , Return on Investment ( Relative) and Cash Flow ( Survival) .

2      **Subtopic: Efficiency Measurement**

The prime driving reasoning is "If you optimise a sub system you sub optimise the whole system". Too many efficiency measurements are local and in trying to improve one departments efficiency we create a problem of coordination in other department. Chose singular all encompassing measurement.

3     **Subtopic: Cost or throughput-based decision**

Purpose of the organisation is to increase throughput of the system. Hence the linkages within the departments create a system that can deliver throughput more consistently. The cost world assumes that the sum of all sub parts will be the sum of the whole. This leads to policies and measures that are counterproductive to increasing throughput. Sometimes throughput based decisions are counter intuitive.

4     **Subtopic: Operations decision making**

Introduction to a measurement that make operations decision easy. Theory of constraints based measurements of T (Throughput) , OE ( Operating Expense) and I (Investments). In Short to medium terms these have shown great results on operations decision making. How operating expense guides decision making and what makes a good investment criterion for operations

**Week 4**

1.     **Subtopic: Focusing on the factor which is limiting your ability to make money creates the correct priority for managing manufacturing operations**

This is a systematic exercise with a small example taken from the early days when theory of constraints was exposing how our cost world approach to decision making leads to unsatisfactory outcomes. The practise of cost base decision making without considering the systems constraints have significant impact on profits and even then, trying to correct these negative impacts on profits using the cost mind set will further damage the throughput. It focuses of how our current production improvements need to be evaluated and how efficiency driven approach can lead to long throughput times and even profit loss. How to find out your profitable products and know what is stopping you from making more profits.

## **Week 5**

### **1. Subtopic: Conditions for outsourcing**

The good and bad conditions for outsourcing. Conditions that can lead to good outsourcing or a threat from out sourcing. Out sourcing done with an aim to make supply chain more competitive is not the same as doing cost calculation and buying cheap. Making Supply chain competitive is driven by far more parameters than just cost. How to spot a threat in outsourcing.

### **2. Subtopic: Will outsourcing reduce cost**

Ability to see if the outsourcing will Result is reducing overall cost is something that needs more than just a few cost saving calculations. Many impacts of outsourcing are felt in other departments than the production or purchase. The measure should show how operating expense is going down, throughput going up and how investments is going down. Only then can we be sure that out sourcing will reduce cost. Too many outsourcing decisions have had negative impact on long term profits.

### **3. Subtopic: Decision Making**

The process of supplier selection in manufacturing organisation. Why multiple suppliers are used and how to build reliability in sourcing. Either one is supplying or buying the decision making and selection process is similar. Where Quality, Purchase, Production and R & D departments sit as a decision-making unit.

### **4. Subtopic: Making offer they can't refute**

Even if one has a beautiful solution it has little chance of acceptance if we are not able to make a compelling offer. The psychology of making an offer or creating a buy in and the steps to follow that will increase the chances of acceptance. Many organisations even suppliers have had brilliant solutions to supply chain issues, but these don't get accepted. Even within an organisation a great buy in will be created if the offer is properly structured and it removes a significant pain of the customer it is being addressed. This part deals with how to construct an offer that is compelling and what not to do. The sequence of steps to follow and when to take the next step so that the whole process of buy in is quick and robust.