

BASAVESHWAR ENGINEERING COLLEGE(AUTONOMOUS), BAGALKOT
DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING

COURSE PLAN

Title of the Course	: Operations Management	Course Code	: UIP750C
Credits	: 04	Contact Hours/ Week	: 5(3-2-0)
Total Hours	: 40 hours of Teaching and 28 hours of Tutorial	Tutorial Hours	: 02
CIE Marks	: 50	SEE Marks	: 50
Semester	: VII	Year	: 2021-22
Name and Signature of the Faculty	: Dr.C.M.Javalagi	Name and Signature of Head of the Department	: Dr.V.S.Puranik

1. Prerequisites: Management and Entrepreneurship

2. Course Objectives:

The Course objectives are:	
2.1	To describe how the operations have strategic, tactical and operational importance and how they can provide a competitive advantage and to consider System design and capacity decisions
2.2	To classify inventory management system
2.3	To appreciate techniques of location and facility planning; line balancing; and capacity planning in operations management
2.4	To consider the methods of forecasting and aggregate planning with various methods of the techniques
2.5	To understand the concepts and underlying parameters of Material Requirements planning (MRP)
2.6	To analyse the Single Machine Scheduling, Flow Shop Scheduling and job shop scheduling

3. Course Outcomes:

At the end of the course the student should be able to:	
3.1	Illustrate how operations management is important for an organization and analyse the facility location decisions and the inventory systems
3.2	Evaluate forecasting methods and apply them to real life problems
3.3	Analyse aggregate planning and MPS, also compare different aggregate planning methods.
3.4	Illustrate the importance of materials requirements planning and controlling. Analyse design of service systems
3.5	Analyse the flow shop and job shop scheduling

4. Course Articulation Matrix: Mapping of Course Outcomes (CO) with Programme Outcomes (PO) and Programme Specific Outcomes (PSO)

		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
No	Programme Outcomes Course Outcomes															
The students will be able to:																
3.1	Illustrate how operations management is important for an organization and analyse the facility location decisions, and the inventory systems		2	2	2							2		2	3	
3.2	Evaluate forecasting methods and apply them to real life situations and problems		2	3	3	2						2		2	3	
3.3	Analyse aggregate planning and MPS, also compare different aggregate planning methods.		2	3	3	2						2		2	2	
3.4	Illustrate the importance of materials requirements planning and controlling and Analyse design of service systems		2	3	3	2						2		3	3	
3.5	Analyse the flow shop and job shop scheduling		2	3	3	2						1		2	2	

PO2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

5. Competencies Addressed in the course and Corresponding Performance Indicators

5.1 Programme Outcome: Any of 1 to 12 PO's:

PO	Competency (CA)	Performance Indicators (PI)
PO2	2.1: Demonstrate an ability to identify and formulate complex engineering problem	2.1.1: Articulate problem statements and identify objectives 2.1.2: Identify engineering systems, variables, and parameters to solve the problems
	2.2: Demonstrate an ability to formulate a solution plan and methodology for an engineering problem	2.2.2: Identify existing processes/solution methods for solving the problem, including forming justified approximations and assumptions 2.2.3: Compare and contrast alternative solution processes to select the best process.
	2.3: Demonstrate an ability to formulate and interpret a model	2.3.1: Combine scientific principles and engineering concepts to formulate model/s (mathematical or otherwise) of a system or process that is appropriate in terms of applicability and required accuracy. 2.3.2: Identify assumptions (mathematical and physical) necessary to allow modeling of a system at the level of accuracy required.
	2.4: Demonstrate an ability to execute a solution process and analyze results	2.4.1: Apply engineering mathematics and computations to solve mathematical models. Produce and validate results through skillful use of contemporary engineering tools and models 2.4.3: Extract desired understanding and conclusions consistent with objectives and limitations of the analysis
PO3	3.1: Demonstrate an ability to define a complex/ open-ended problem in engineering terms	3.1.1: Recognize that need analysis is key to good problem definition 3.1.4: Explore and synthesize engineering requirements considering health, safety risks, environmental, cultural and societal issues 3.1.5: Determine design objectives, functional requirements and arrive at specifications
	3.2: Demonstrate an ability to generate a diverse set of alternative design solutions	3.2.1: Apply formal idea generation tools to develop multiple engineering design solutions 3.2.2: Build models/prototypes to develop a diverse set of design solutions 3.2.3: Identify suitable criteria for the evaluation of alternate design solutions
	3.3: Demonstrate an ability to select an optimal design scheme for further development	3.3.1: Apply formal decision-making tools to select optimal engineering design solutions for further development
PO4	4.1: Demonstrate an ability to conduct investigations of technical issues consistent with their level of knowledge and understanding	4.1.1: Define a problem, its scope and importance for purposes of investigation 4.1.3: Apply appropriate instrumentation and/or software tools to make measurements of physical quantities 4.1.4: Establish a relationship between measured data and underlying physical principles.
	4.3: Demonstrate an ability to analyze data and reach a valid conclusion	4.3.1: Use appropriate procedures, tools, and techniques to conduct experiments and collect data 4.3.2: Analyze data for trends and correlations, stating possible errors and limitations 4.3.3: Represent data (in tabular and/or graphical forms) so as to facilitate analysis and explanation of the data, and drawing of conclusions

PO	Competency (CA)	Performance Indicators (PI)
		4.3.4: Synthesize information and knowledge about the problem from the raw data to reach appropriate conclusions
PO5	5.1 Demonstrate an ability to identify/create modern engineering tools, techniques and resources	5.1.1: Identify modern engineering tools such as computer-aided drafting, modeling and analysis; techniques and resources for engineering activities 5.1.3: Create/adapt/modify/extend tools and techniques to solve industrial engineering problems
	5.3 Demonstrate an ability to evaluate the suitability and limitations of tools used to solve an engineering problem	5.3.1: Discuss limitations and validate tools, techniques and resources 5.3.2: Verify the credibility of results from tool use with reference to the accuracy and limitations, and the assumptions inherent in their use.
PO11	11.1 Demonstrate an ability to evaluate the economic and financial performance of an engineering activity	11.1.1: Describe various economic and financial costs/benefits of an engineering activity 11.1.2: Analyze different forms of financial statements to evaluate the financial status of an engineering project 11.1.3: Identify business opportunities, carryout feasibility study and prepare project proposals
	11.2 Demonstrate an ability to compare and contrast the costs/benefits of alternate proposals for an engineering activity	11.2.1: Analyze and select the most appropriate proposal based on economic and financial considerations

6. Details of Course Planning:

6.1.1 Unit Learning Outcomes (ULO): UNIT-I

No.	Unit Learning Outcome (ULO)	CO	BLL	PI addressed
The students will be able to:				
1	Describe operations management concepts and appreciate its historical development	CO1	L2	2.1.1
2	Understand the schematic model of operations management	CO1	L2	2.1.1
3	Acquire the knowledge of operations system decisions	CO1	L2	2.1.2
4	Demonstrate the differences between manufacturing and service systems	CO1	L3	2.1.2
5	Assess design and system capacity	CO1	L3	2.1.2
6	Describe the concepts of facility location and layout	CO1	L2	2.1.1
7	Demonstrate concepts of Location break-even analysis	CO1	L3	11.1.1
8	Analyse qualitative factor analysis	CO1	L4	2.4.1
9	Analyse different types of layouts and application of computers to layouts	CO1	L4	3.2.1
10	Classify different types of inventories	CO1	L3	4.1.1
11	Explain different types of inventory costs	CO1	L2	11.1.1
12	Demonstrate the use of selective control methods for a different situation	CO1	L3	4.3.1

6.1.2 Course Content: UNIT-I

Hours Required	Topic to be covered	Mode of Delivery
01	Operations Management Concepts: Introduction, historical developments, Functions of operations management	Chalk and talk in classroom/Lecture combined with discussions/ PPT/ Case Studies
01	Environment of operations. Operations system decisions.	
01	System Design and Capacity Planning: Introduction, manufacturing and service systems,	
01	Design and system capacity, Capacity planning	
01	Facility Location and Layout: Location planning for goods and services. Economic analysis (Location break-even analysis, cost minimization),	
01	Qualitative factor analysis, Facility layout, analysis, Selection of layout (minimizing cost in job shop layout, line balancing in assembly line layout).	
01	Determination of layout, types of layouts, computer application of layouts.	
01	Inventory Management: Definition, Inventory planning for independent demand items,	
01	Types of inventories, Inventory costs, Inventory control for deterministic demand items,	
01	Inventory control systems, Selective control of inventory, other issues in inventory planning and control.	
(10 hours of Teaching +7hours of Tutorial)		

6.1.3 Review Questions: UNIT-I

No	Review Questions	ULO	BLL	PI addressed
1.	Define operations management. Trace briefly the historical events leading to the study of operations management.	1	L2	2.1.1
2.	What are the key terms involved in operations management?	2	L2	2.1.1
3.	Explain with a neat sketch operations system decision.	3	L2	2.1.2
4.	Differentiate between manufacturing and service systems with examples	4	L3	2.1.2
5.	With the help of a neat sketch, show the relationship between design and system capacity. Describe them briefly.	5	L3	2.1.2
6.	Explain factors influencing plant location	6	L2	11.1.1
7.	Explain various steps involved in locational break-even analysis with an example	7	L3	3.1.1
8.	Mr. X is interested in setting up a food processing plant. He has carried out the quantitative factor analysis and finalized three locations A, B, and C. However, he is interested in using qualitative factor analysis for the final decision. Help Mr. X by developing qualitative factor analysis to decide for the food processing plant.	8	L4	2.4.1
9.	Briefly explain different types of plant layout	9	L2	2.1.1
10.	You are given an assignment of developing an economic evaluation of four potential plant sites. The analysis is to be applicable to a relatively wide range of volumes. It is to be presented to the board of directors in summary form for their consideration. Describe how you would develop and present the data.	9	L4	3.2.1
11.	How does the systematic layout planning approach differ from the basic load-distance analysis?	9	L3	3.2.1
12.	Do organizations need to carry inventory? Why?	10	L2	4.1.3
13.	On what basis would you recommend the periodic review system of inventory control?	11	L2	4.1.3
14.	Derive an expression for Economic Order Quantity (EOQ)?	11	L3	4.1.3
15.	When it is appropriate to use the ABC classification scheme and the FSN	12	L3	4.3.1

No	Review Questions	ULO	BLL	PI addressed
	classification scheme?			
16.	Numerical questions on above topics	--	L3,L4	--

6.1.4 Representative Case-Study 1:

Inventory Management in a Consumer Products Company

A consumer products company dealing in cosmetics and other personal-care products was exploring ways to reduce inventory levels across their outbound supply chain and improve inventory record accuracy at their storage points. The company had a supply chain network of three factories with bonded stock rooms (BSRs) attached for dispatch to the depots and 35 depots for servicing distributors. Goods moved from the factory to the BSRs. The BSRs dispatched stocks to one centralized depot. Other depots received stocks from this depot and sold them to distributors. These depots were holding high levels of inventory of old/withdrawn stocks and damaged stocks for a long time (over three months). The total average

inventory holding at the BSRs was 8.2 weeks of sales and at the depots was 6.5 weeks of sales. There were several reasons for high levels of inventory. Some of them are discussed here. Sales and dispatch forecasts were not in line with actual sales. Furthermore, there was no process to periodically review and refine the annual forecasts utilizing market feedback. Stocking across all points in the distribution chain was driven by a push-oriented system that did not have any provision for factoring in market requirements. Actual safety stocks maintained at depots were significantly higher than the target safety stocks agreed on at the beginning of the operating year. No system was in place to monitor and correct this practice. There was also a high level of old/damaged/slow-moving stocks. Dead stock was allowed to accumulate in the system mainly because there was an absence of visibility into inventory details across stocking points. The process to monitor and act on dead stock was not adhered to and records of slow-moving/old/damaged stocks were not maintained methodically at the stocking points. A study was conducted focusing on the inventory-related issues at the BSRs and depots. This included inventory holding as a proportion of sales, practices employed for tracking goods in the warehouse, and the proportion of fast- and slow-moving stocks to the total inventory. The study also looked at the inventory planning process pertaining to forecast accuracy, the process of reviewing and revising forecasts, the level of safety stock at each location, combined with the process to review and reset the same. An IT solution was implemented for computing the forecast using consolidated orders, with factoring for promotions and seasonality. The IT solution also enabled the organization to calculate safety stock levels based on the number of weeks of sales target. Demand planning and forecasting were made a periodic activity using the IT solution to align forecasting with market orders and actual sales. The process of setting safety stocks at depots was made periodic and dynamic, based on updated sales data. Furthermore, norms were set to act on damaged/old and other dead stocks. Clear steps were laid down regarding the liquidation or destruction of these stocks. An accountability chain was set up in the organization to monitor and authorize activities in this regard, based on the visibility provided by the IT solution. The overall benefit of the exercise was that the organization was able to ensure availability of fresh stocks in the market. This was achieved mainly by reducing inventory levels across the chain and also through better stock management at the depots. The company achieved a stock-level reduction from 8.2 weeks to 5.5 weeks at the BSRs and from 6.5 weeks to 4 weeks at the depots. Transparency of saleable and damaged stocks quantities across the supply chain resulted in more accurate demand planning, stock allocation, and production.

Source: K. Ravichandran and Debjyoti Paul, "Best Practices in Inventory Management," <http://forumcentral.sify.com/athena/login/casestudyinventory.pdf>. Last accessed on 15 December 2008.

6.2.1 Unit Learning Outcomes (ULO): UNIT-II

No.	Unit Learning Outcome (ULO)	CO	BLL	PI addressed
The students will be able to:				
1	Acquire the knowledge of forecasting, its objectives etc.	CO2	L2	2.1.1
2	Apply various forecasting techniques to industrial situations	CO2	L3	2.1.2
3	Identify importance of aggregate planning and different methods of aggregate planning	CO3	L3	2.2.2
4	Compare different methods of solving Aggregate Planning Problem. (APP)	CO3	L3	2.2.3
5	Demonstrate the concepts of master production schedule.	CO3	L2	2.1.1
6	Analyze the situations of applying APP and MPS	CO3	L4	4.1.1

6.2.2 Course Content: UNIT-II

Hours Required	Topic to be covered	Mode of Delivery
01	Forecasting: Forecasting objectives and uses, forecasting variables	Chalk and talk in classroom/Lecture combined with discussions/ PPT/ Case Studies
01	Forecasting methodology, Opinion and Judgemental methods	
01	Time series methods	
01	Exponential smoothing	
01	Regression and correlation methods	
01	Aggregate Planning: Introduction: Objective of aggregate planning, Aggregate planning methods - policy guidelines	
01	Graphic and charting methods	
01	Transportation method of solving APP	
01	Transportation method of solving APP.... Cont.	
01	Master scheduling objective, master scheduling methods	
(10 hours Teaching +7 hours Tutorial)		

6.2.3 Review Questions: UNIT-II

No	Review Questions	ULO	BLL	PI addressed
1	What is forecasting? List the steps involved in forecasting	1	L1	2.1.1
2	Briefly explain the objectives of forecasting	1	L2	2.1.1
3	What are forecasting variables? Explain any one in detail.	1	L2	2.1.2
4	Name and explain demand patterns in forecasting	1	L3	2.1.2
5	Write short notes on i) Least squares method of forecasting ii) Exponential smoothing method of forecasting iii) Moving average method	2	L2	2.1.2
6	What is time series? What are the components of time series?	2	L2	2.1.2
7	List various techniques of forecasting under opinion and judgement method. Explain any two	2	L3	2.1.3
8	Write a brief note on seasonal indexes and they can be applied to situations.	2	L3	2.1.3

No	Review Questions	ULO	BLL	PI addressed
9	What is aggregate planning? Explain decision variables and associated costs in aggregate planning	3	L2	2.1.2
10	Explain the objectives of aggregate planning.	3	L3	2.1.1
11	Write a note on aggregate planning guidelines	3	L2	2.1.1
12	What are different methods for solving aggregate planning problems? Explain anyone.	4	L2	3.2.1
13	Name master scheduling policy guidelines	5	L2	2.2.1
14	What is Master Production Schedule? Explain the functions of MPS in detail.	5	L2	2.1.3
15	Differentiate between aggregate planning and master scheduling	6	L2	2.2.3
16	Numerical questions on above topics	--	L3,L4	

6.2.4 Representative Case-Study 2:

The Role of Forecasting in a Petrochemical-manufacturing Company

Forecasting has always been an important activity in manufacturing and service organizations. For a manufacturer of petrochemicals, its role is crucial as long-term contracts for feedstock (the prime raw material in the petrochemical industry) could provide the competitive advantage of cost-effective inputs. With the wild fluctuations in the price of crude in recent times, the value of forecasting is even greater. Consider the polyethylene plant of Reliance Industries Limited (India's largest petrochemical manufacturer) at Hazira, near Surat. Forecasting the requirement of polyethylene is no simple task. There are several complexities in the process. For example, exchange rate fluctuations and geopolitical movements (such as the Kuwait, Afghan, and Iraq wars) could significantly affect the demand-supply of feedstock. On the domestic front, the installed capacity and capacity projections of all the players in the sector and excise and customs tariff schedules could affect the demand-supply scenario for its final product. Let us understand the various steps involved in the forecasting process and the nature of decisions taken. The process starts with certain assumptions about the tariff structure for customs and excise, the prevailing local price, exchange rate fluctuations, import price, and the nature of competition. Based on these assumptions, the total market for polyethylene in the medium term of 18 to 36 months is arrived at. In the next step, an analysis of the supply-demand position is made on the basis of its own capacity and competitors' capacity and expansion plans during the year. Based on these, the demand to be met during the next planning year is arrived at. This is based on a series of forecasting exercises done at various levels and actual collection and analysis of the end-use data of the previous year. At this stage, a certain level of aggregation of data is required. For example, there will be several grades of polyethylene in production and several new grades will be introduced during the planning year. This data needs to be aggregated in order to analyse capacity requirements and match them with capacity availability. Similarly, the end-use data is collected at the tertiary level and progressively aggregated at regional and national levels. This data is used in the forecasting exercises carried out to estimate future demand. The output from forecasting is put to several important uses. The foremost use is balancing capacity availability to actual projected requirement for the planning year. This is done by some decisions on de-bottlenecking schedules, adjusting planned maintenance schedules and reworking some technology upgradation initiatives. Furthermore, the forecasting exercise directly leads to detailed production planning for the year. During this stage, the data is disaggregated into specific product variants and scheduling plans for each variant arrived at. At this stage, changeover considerations from one product variant to another are taken into consideration. The forecasting exercise also helps in establishing performance targets for the year for various departments such as production, materials, and marketing, as well as in the setting up of control systems.

6.3.1 Unit Learning Outcomes (ULO): UNIT-III

No.	Unit Learning Outcome (ULO)	CO	BLL	PI addressed
The students will be able to:				
1	Apply the concepts of MRP to real industrial problems	CO4	L3	2.1.1
2	Illustrate the MRP logic and understand implementation of MRP systems	CO4	L2	2.1.3
3	Analyse different products based on Bill of Materials (BOM)	CO4	L4	2.3.1
4	Appreciate the characteristic aspects of service systems	CO4	L2	3.1.1
5	Show the importance of customer contact in service systems	CO4	L2	3.1.2
6	Demonstrate complexity in service systems	CO4	L2	3.1.2
7	Identify service positioning and service blueprinting	CO4	L3	2.3.2
8	Plan various aspects of addressing capacity issues in services	CO4	L2	2.3.1
9	Demonstrate various aspects of service quality	CO4	L2	2.1.3

6.3.2 Course Content: UNIT-III

Hours Required	Topic to be covered	Mode of Delivery
01	Material Requirements Planning: Underlying concepts	Chalk and talk in classroom/Lecture combined with discussions/PPT/ Case Studies
01	System parameters	
01	MRP Logic	
01	MRP Logic <i>Cont..</i>	
01	MRP implementation	
01	Design of service systems: Characteristic aspects, Customer Contact in Service Systems,	
01	Complexity and Divergence in Service Systems,	
01	Service Positioning, Service Blueprinting,	
01	Other Aspects of Addressing Capacity Issues in Services,	
01	Service Quality	
	(10 hours Teaching +7 hours Tutorial)	

6.3.3 Review Questions: UNIT-III

No	Review Questions	ULO	BLL	PI addressed
1	Define materials requirement planning. Explain the fundamental concepts of MRP.	1	L2	2.1.1
2	State limitations of MRP.	1	L2	2.3.1
3	Explain the important system parameters of MRP system.	1	L2	2.4.1
4	What are the major outputs from a MRP system? Explain with help of a neat sketch.	2	L3	2.4.2
5	Define the following terms i) Lot Size ii) Bill of materials iii) Parent and component items iv) Dependent demand v) Scheduled receipt vi) Planned receipt	2	L1	2.1.1

No	Review Questions	ULO	BLL	PI addressed
6	Write a note on MRP implementation.	3	L2	2.1.1
7	Is process design in service systems any different from that in manufacturing systems?	4	L3	2.2.3
8	What do we mean by service positioning? What are the factors that determine service positioning?	5	L2	2.1.1
9	What do we mean by customer contact in service organizations? How does it affect the design of service systems?	6	L4	4.1.1
10	What factors significantly determine the design of service systems?	7	L2	3.1.1
11	How do address capacity issues in services?	8	L2	2.4.1
12	How is service quality measured?	9	L3	2.2.2
13	Numerical questions on above topics	--	L3,L4	

6.3.4 Representative Case-Study 3:

ERP Implementation at HPCL

Hindustan Petroleum Corporation Limited (HPCL) is a Fortune 500 company with an annual turnover of over `914.48 million for the financial year ended March 2007. The company has successfully implemented JD Edwards Enterprise One ERP spanning about 400 locations and 4,000 employees across the nation. The ERP implementation programme was started in 2000. The availability of sound technical infrastructure was necessary for implementing such a large initiative. This meant building a centralized data centre where the servers and applications could be hosted as well as having efficient connectivity for all locations spread across India's geography. Around 400 locations were completed over a period of two and a half years. As each location was selected for inclusion, the related infrastructure (like WAN, lease lines, VPN and VSATs) was built simultaneously depending on the availability.

As HPCL enjoys a national presence, it was important to determine the path for the ERP rollout. Several business processes were analysed for determining the points affecting the process look. The project was kicked off by a 25-member in-house team comprising representatives from all functional areas. After the completion of the first phase of the project, which included system configuration, more employees were inducted into the team and its size expanded to 100 people. In addition to this, a team of 100 consultants was also working on it. The locations due for the "Go-Live" stage in a particular month were given top priority and a "work backwards" system was followed to arrive at separate tasks and their deadlines for those locations. These tasks included the procurement of hardware, applications for communication links, and testing and liaisoning with local people at the location. Post-implementation, the company noticed substantial improvement in efficiency. For example, before the implementation, the annual financial accounts closure would take approximately a month while the monthly closing would take 15 to 20 days. In 2007-08, the monthly and quarterly closing was completed in about five days while the annual closing took a mere 10 to 12 days.

The second major benefit of the centralized ERP implementation was that it compelled the company to look at various other services that could be offered to customers with the help of IT. It was also realized that they could improve transparency by making more information available to their customers, vendors, and transporters on a real-time basis. With the help of the Web, they can log in and check the status of loads, orders, and payments.

The implementation gave the company an opportunity to relook at all its business processes from the beginning. Several processes in manufacturing, planning, procurement, and employee benefits that were earlier done manually were automated. The ERP enabled the generation of various day-end MIS reports on a regular basis. This helped to revamp the way in which reporting was done to the top management. HPCL's ERP implementation can potentially provide several clues to other large organizations wishing to derive benefits from ERP/IT adoption.

Source: Based on Abhishek Raval, "HPCL Refines Business Process with ERP Implementation," accessed at <http://biztech2.in.com/india/casestudies/enterprise-solutions/hpcl-refines-business-processes-with-erp-implementation/28091/0>.

6.3.5 Representative Case-Study 4:

Design of Luxury Services

Designing an operating system for services is a different cup of tea altogether. There are specific issues that need to be factored in when we address the issue of design. Let us try to understand this with an example—that of offering luxury services to high-net worth individuals. According to an estimate by KSA Technopak, nearly 1.8 million Indian households earn more than USD 100,000 or more per year and spend about USD 10,000 or more on luxury or premium goods and services. This amounts to a market potential of USD 18 billion. Only select players in categories such as hotels and jewellery retail are offering such luxury services. What are the requirements for offering such services? First, companies need to carve out a unique position as customers are very individualistic and conscious about logos and brands. In the case of luxury services (and also in most other services), the shopping experience is very crucial. Once a customer walks through the door, he/she must be convinced to spend on the services and products offered. Raymond claims to have sold 1000 shirts priced at `12,000 and 100 suits at over `100,000 per piece in its Manzoni range in 2007.

Designing services is also about the tiny details that please the customer. Whether it is buying a very expensive handbag or spending an afternoon in a spa, service excellence is all about the nature and quality of staff interaction with the customers. Therefore, designing services with greater interaction with the customers require that the right people are in place to deliver the experience. This is especially true of a luxury service where experience is at the root of brand building. The Murjani Group, which deals with luxury brands, believes in carefully selecting employees and putting them through an extensive training programme. This educates them about the brand and prepares them for special circumstances such as the arrival of a celebrity at the store. The Indian Hotels Company Limited, better known as Taj Hotels Resorts and Palaces, redesigned its structural appearance and repositioned its brands to achieve service excellence. Furthermore, it also put in place some unique processes and defined service standards. It invested substantially in training its employees. Another aspect of services is the need to address the issue of personalization. Ferrari, the luxury carmaker, has a personalization programme called “One-to-One” for its top-end model, the 612 Scaglietti. The idea is to let the customers design their own car with the help of a company advisor.

Such service requirements place commensurate demand on the design of the operating system as well. Service systems must allow personalization, customer interaction, and variety. All these add to the complexity of the service offering. The experience of the service delivery process influences the service quality and lets the company build its brand. The design of services must address these issues and provide the operations manager with alternatives. The operations manager must also be aware of the implications of these alternatives. We shall take a closer look at these aspects in the chapter.

Source: Based on P. Singh, “Luxurious Ride,” *Business World*, 28 July 2008, pp. 36–48.

6.4.1 Unit Learning Outcomes (ULO): UNIT-IV

No.	Unit Learning Outcome (ULO)	CO	BLL	PI addressed
The students will be able to:				
1	Explain scheduling and the objectives of scheduling	CO5	L2	2.1.1
2	Compare the scheduling strategies	CO5	L4	2.1.2
3	Understand scheduling guidelines	CO5	L2	2.1.1
4	Discuss scheduling methodology	CO5	L2	2.2.3

5	Identify the importance of priority and capacity control	CO5	L2	2.3.1
6	Explain single, flow-shop and job-shop scheduling	CO5	L3	2.1.2
7	Apply the concept of SPT rules, Weighted mean flow time to single machine scheduling	CO5	L3	2.3.1
8	Solve the problems associated with flow-shop scheduling	CO5	L3	2.4.1
9	Compare CDS heuristic, Palmer's heuristic	CO5	L4	3.1.4
10	Analyze the job shop scheduling problems.	CO5	L4	2.1.2

6.4.2 Course Content: UNIT-IV

Hours Required	Topic to be covered	Mode of Delivery
01	Scheduling and Controlling: Introduction, objectives of scheduling,	Chalk and talk in classroom/Lecture combined with discussions/ PPT/ Case Studies
01	Scheduling strategies, scheduling and loading guidelines.	
01	Brief discussion on scheduling, methodology - Gantt charts, schedule boards and priority decision rules.	
01	Priority and Capacity control.	
01	Single Machine Scheduling: Concept, measures of performance,	
01	SPT rules. Weighted mean flow time	
01	EDD rules, minimizing total tardiness	
01	Flow Shop Scheduling: Introduction, Johnson's problem,	
01	CDS heuristic, Palmer's heuristic	
01	Job shop scheduling: Types of schedules, heuristic procedure, 2 jobs M machine scheduling	

6.4.3 Review Questions: UNIT-IV

No	Review Questions	ULO	BLL	PI addressed
1	What is scheduling? Enumerate its objectives.	1	L2	2.1.1
2	Compare different scheduling strategies	2	L4	2.1.2
3	Identify some characteristics necessary to have a production activity control system run effectively	2	L2	2.1.2
4	What are the major restrictions in applying Johnson's rule?	3	L2	2.1.3
5	What are the objectives of production activity control?	3	L2	2.2.2
6	Explain the following scheduling methodology i) Gantt Charts, Schedule boards and computer graphics ii) Priority Decision rules	3	L2	2.4.1
7	Discuss SPT and EDD priority rules for sequencing the jobs.	3	L2	4.1.2
8	Explain flow-shop scheduling and job-shop scheduling.	4	L2	2.1.1
9	What is CDS heuristics? Explain its stages.	4	L2	2.2.2
10	Discuss the Johnson's rule for solving flow shop scheduling problems with example.	5	L3	2.4.1
11	What are the assumptions in flow shop scheduling?	6	L2	2.1.1
12	Distinguish between single machine scheduling and flow shop scheduling	10	L3	2.1.2
13	Numerical questions on above topics	--	L3, L4	

7. Books:

Textbooks:

1. Operations Management- Monks, J.G., McGraw-Hill International Editions, 1987. ISBN 0-07-100579-X
2. Production and Operations Management- Pannervelam. R, 2nd edition PHI. ISBN-978-81-203- 2767-2
3. Operations Management Theory and Practice- B.Mahadevan, 3 Edition, Pearson ISBN 978-96-325-4109-2
4. Productions & Operations management – Adam & Ebert.5th edition PHI

Reference Books:

1. Modern Production/Operations Management- Buffa, Wiley Eastern Ltd., 4th edition
2. Production and Operations Management- Chary, S.N, Tata-McGraw Hill., 3rd edition
3. Operations management – James Dilworth. PHI, 3rd edition
4. Operations Management – Lee J Karjewski and Larry P Ritzman, strategy and Analysis, 6th Edn, Pearson Education Asia

Online Resource: <https://nptel.ac.in/courses/112/107/112107238/>

<https://nptel.ac.in/courses/110/106/110106046/>

<https://nptel.ac.in/courses/110/106/110106045/>

E-books: <http://bookboon.com/en/operations-management-ebook>

MOOC Course: <https://www.edx.org/course/operations-management>

5. Evaluation Scheme:

Assessment	Marks	Weightage
CIE-I	15	15
CIE-II	15	15
CIE-III	15	15
Assignments/Quizzes/ Case Study/Course Project/ Term Paper/Field Work	05	05
SEE	100	50
Total	150	100

6. Details of Assignment:

Assn.	Questions/Case Study/Quiz	Marks	CO	BLL	PI	CA	PO
1	Write answers to review questions	1	--	ALL	--	--	--
2	Solve the given numerical problems (Minimum of 10 numerical minimum two from each Unit)	1	--	ALL	--	--	--
3	Online quiz on all the units having minimum 20 questions	1	ALL	L4, L5, L6	--	--	--
4	Visit an industry and study how they manage their inventory and submit a report on the study	1	1	L5	4.1.1	4.1	4
5	Visit the various websites of major manufacturing	1	ALL	L5	--	--	--

Assn.	Questions/Case Study/Quiz	Marks	CO	BLL	PI	CA	PO
	industries and write a report on modern operations management tools used by companies						

USN	2	B	A						
-----	---	---	---	--	--	--	--	--	--

7. SEE Model Question Paper

B.E. Seventh Semester End Examinations, December 2019

Operations Management

Duration: 3 Hours

Max. Marks: 100

NOTE: Answer any **FIVE** full questions selecting at least **ONE** from each unit.

Q.No	Question	Marks	BLL	CO	PI																		
UNIT - I																							
1.	a) Define operations management. Explain the main functions of the operation management.	(06)	L2	1	2.1.1																		
	b) Define productivity and discuss the different ways of improving productivity.	(08)	L2	1	2.1.2																		
	c) Why system capacity is less than design capacity? Justify.	(06)	L2	1	2.3.1																		
2.	a) Discuss the process layout with advantages and disadvantages	(08)	L2	2	2.1.2																		
	b) A plant produces 15000 units per month. Find the beak even level, if the fixed cost is Rs 75000/month selling price is Rs 8/unit and variable cost Rs 2.50/unit. Also determine the expected profit or loss.	(06)	L3	3	11.1.1																		
	c) Explain the objectives of plant layout.	(06)	L2	2	2.1.1																		
UNIT - II																							
3.	a) Define forecasting and discuss the different types of demand pattern in forecasting.	(08)	L2	5	2.1.2																		
	b) A company manufacturing tractors find that there exists a relationship between sales of tractor and index of agriculture income. The following data has been collected by the company for the last five years. Fit a regression line. Estimate the sales of tractors for the year 1993 for the given index of 250.	(12)	L3	5	3.3.1																		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Years</th> <th>1998</th> <th>1989</th> <th>1990</th> <th>1991</th> <th>1992</th> </tr> </thead> <tbody> <tr> <td>Demand 1000's</td> <td>100</td> <td>112</td> <td>130</td> <td>150</td> <td>280</td> </tr> <tr> <td>Index of agriculture income</td> <td>125</td> <td>140</td> <td>180</td> <td>190</td> <td>220</td> </tr> </tbody> </table>	Years	1998	1989	1990	1991	1992	Demand 1000's	100	112	130	150	280	Index of agriculture income	125	140	180	190	220				
Years	1998	1989	1990	1991	1992																		
Demand 1000's	100	112	130	150	280																		
Index of agriculture income	125	140	180	190	220																		
4.	a) Define aggregate planning and explain the objectives of aggregate	(04)	L2	5	2.1.2																		

Q.No	Question	Marks	BLL	CO	PI																																																					
	planning.																																																									
	b) Discuss the different strategies of aggregate planning.	(06)	L2	5	2.1.1																																																					
	c) A company producing solar heaters has the information about production capacity and demand forecast given below:	(10)	L3	5	3.3.1																																																					
	<table border="1"> <thead> <tr> <th>Period</th> <th>Regular time (RT)</th> <th>One time (OT)</th> <th>Subcontract</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>900</td> <td>350</td> <td>600</td> </tr> <tr> <td>2</td> <td>1000</td> <td>350</td> <td>600</td> </tr> <tr> <td>3</td> <td>1100</td> <td>350</td> <td>600</td> </tr> <tr> <td>4</td> <td>700</td> <td>350</td> <td>600</td> </tr> </tbody> </table>	Period	Regular time (RT)	One time (OT)	Subcontract	1	900	350	600	2	1000	350	600	3	1100	350	600	4	700	350	600																																					
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4	700	350	600																																																							
	<p>Demand forecast</p> <table border="1"> <thead> <tr> <th>Period</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>Unit of demand</td> <td>700</td> <td>1000</td> <td>2000</td> <td>1200</td> </tr> </tbody> </table> <p>Available inventory = 200 units, final inventory 150 units, regular time cost/unit = Rs 125 over time cost/units = Rs150 Subcontract cost/unit = Rs 175 inventory cost/unit/period = 25 Determine the optimum production levels and total cost using transportation method.</p>	Period	1	2	3	4	Unit of demand	700	1000	2000	1200																																															
Period	1	2	3	4																																																						
Unit of demand	700	1000	2000	1200																																																						
	UNIT - III																																																									
5.	a) Define MRP, explain the different terminology of MRP.	(06)	L2	5	2.1.1																																																					
	b) Explain BOM with an example	(06)	L2	5	2.1.2																																																					
	c) Compute MRP and find the amount of inventory on hand at the end of week.	(08)	L2	5	3.3.1																																																					
	<table border="1"> <thead> <tr> <th rowspan="2">Order Qty=500 Lt =4 weeks</th> <th colspan="8">Week</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>Projected Requirements</td> <td>150</td> <td>150</td> <td>150</td> <td>150</td> <td>200</td> <td>200</td> <td>180</td> <td>320</td> </tr> <tr> <td>Receipts</td> <td></td> <td></td> <td>500</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>On hand at end of period =300</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Planned order release</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Order Qty=500 Lt =4 weeks	Week								1	2	3	4	5	6	7	8	Projected Requirements	150	150	150	150	200	200	180	320	Receipts			500						On hand at end of period =300									Planned order release												
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6.	a) What factors significantly determine the design of service systems?	(06)	L2	4	2.1.2																																																					
	b) How do address capacity issues in services?	(06)	L2	4	2.1.2																																																					
	c) How is service quality measured?	(08)	L2	4	2.1.1																																																					
	UNIT - IV																																																									
7.	a) Discuss SPT and EDD priority rules for sequencing the jobs.	(06)	L2	5	3.1.1																																																					

Q.No	Question					Marks	BLL	CO	PI																													
	b)	Consider the following single machine problem. Find optimal sequence which will minimize the member of tardy jobs.					(08)	L3	5	3.3.1																												
		<table border="1"> <thead> <tr> <th>Job(i)</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>ti</td> <td>15</td> <td>8</td> <td>17</td> <td>9</td> <td>12</td> </tr> <tr> <td>dj</td> <td>20</td> <td>15</td> <td>30</td> <td>17</td> <td>25</td> </tr> </tbody> </table>					Job(i)	1	2	3	4	5	ti	15	8	17	9	12	dj	20	15	30	17	25														
Job(i)	1	2	3	4	5																																	
ti	15	8	17	9	12																																	
dj	20	15	30	17	25																																	
	c)	Consider the following flow shop problem.					(06)	L3	5	3.3.1																												
		<table border="1"> <thead> <tr> <th>Job</th> <th>M/c1</th> <th>M/c2</th> <th>M/c3</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10</td> <td>15</td> <td>23</td> </tr> <tr> <td>2</td> <td>8</td> <td>10</td> <td>7</td> </tr> <tr> <td>3</td> <td>12</td> <td>7</td> <td>10</td> </tr> <tr> <td>4</td> <td>15</td> <td>20</td> <td>06</td> </tr> </tbody> </table> <p>Find the optimal schedule for the above problem using CDS Heuristic method.</p>					Job	M/c1	M/c2	M/c3	1	10	15	23	2	8	10	7	3	12	7	10	4	15	20	06												
Job	M/c1	M/c2	M/c3																																			
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8.	a)	Discuss the Johnson's rule for solving flow shop scheduling problem with example					(08)	L2	5	2.1.2																												
	b)	An use the graphical method to minimize the time headed to process the following jobs on m/c. Also find job which should be done first and calculate total time required to complete the jobs.					(12)	L3	5	3.1.3																												
		<table border="1"> <thead> <tr> <th>Job 1</th> <th>Sequence time</th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>2</td> <td>3</td> <td>4</td> <td>6</td> <td>2</td> </tr> <tr> <th>Job 2</th> <th>Sequence time</th> <th>C</th> <th>A</th> <th>D</th> <th>E</th> <th>B</th> </tr> <tr> <td></td> <td></td> <td>4</td> <td>5</td> <td>3</td> <td>2</td> <td>6</td> </tr> </tbody> </table>					Job 1	Sequence time	A	B	C	D	E			2	3	4	6	2	Job 2	Sequence time	C	A	D	E	B			4	5	3	2	6				
Job 1	Sequence time	A	B	C	D	E																																
		2	3	4	6	2																																
Job 2	Sequence time	C	A	D	E	B																																
		4	5	3	2	6																																

BLL-Bloom's Learning Level

CO- Course Outcome

PI-Performance Indicator

- Adhoc Reports
- Home
- Scholarship Management
- Account
- Vouchers
- Payment
- Health Module
- Transactions
- Reports
- Details
- Users
- Schemes
- Agencies
- MIS Process
- Funds
- Transfers
- Grances
- Expenditures
- Bank
- Deduction Filing
- Sanitation Certificate
- Accounting System Integration

Expenditure Details

Sanction Number: BEC/BGK/TEQIP-III/Academic/2020/291 **Sanction Date:** 19/02/2021

Voucher Number: BP-2020-21-360

Account Number: 3702002100031759 **Agency Name In Bank:** NATIONAL PROJECT IMPLEMENTATION UNIT

Plan Scheme: 2038-Technical Education Quality Improvement Programme of Government of India (EAP) **Project:**

Status: Created **Bank name:** PUNJAB NATIONAL BANK

Amount: 7000.00 **Remarks:**

Created By: SGKAMBALIMATH **Created On:** 02/03/2021

Modified By: SGKAMBALIMATH **Modified On:** 02/03/2021

Purpose for Expenditure: Expenditure towards Honorarium conducted Remedial Classes on "Engineering Mathematics-III" for 3rd Sem (BE) students Mathematics Department from 3rd to 31st Dec-2020 **Uploaded Sanction Letter:** [Academic_2020_291.pdf](#)

Payment Details:

Favouring	Cheque/Account No.	Amount	IFSC/MICR Code	Instrument Type	Instrument Date	Narration For PassBook
MAHADEV MALLIKARJUN BIRADAR	37550100000269	7000.00	BARB0BAGALK	EPaymentUsingDigitalSignature	3/2/2021 12:00:00 AM	

Scheme Component Details:

Component Name	Amount	Tax Amount for Global Component	Balance Amount
1 3 2 1 Improve students learning	7000.00	N/A	7000.00

Vendor/Beneficiary Details:

Account No.	Name	Amount
37550100000269 - MAHADEV MALLIK	Mahadev M Biradar(VAKABK00005968)	7000.00

Successfully Saved For Submitted

[Cancel Transaction](#) [Back](#)

Handwritten signature

Raveshwar Engineering College(Autonomous) Bagalkot
 Department of Mathematics
Report of Remedial Class Conducted from 3rd to 31st Dec 2020

S.N	Name of Faculty Member	Subject with Subject Code	Department	Total Classes Engaged	Number of Students Registered	Category wise				Gender Wise	
						GM	OBC	SC	ST	Male	Female
1	Dr Mahadev Biradar	Engineering Mathematics-III	Mathematics	30	147	39	89	13	06	61	86

Remedial Mathematics Class

People (33)

- 2BA19EC042 Mahalaxm...
- 2BA19EC049shoalb Kill...
- 2BA19EC067.PRATIKSH...
- 2BA19EC072 Puneet ch...
- 2BA19EC074 Raqib Mak...
- 2BA19EC082 Sahana So...
- 2BA19EC083 Samartha ...
- 2BA19EE054 Tejaswini ...
- 2BA19ME012 Akshayaku...

Remedial Mathematics Class

Turn on captions Present now

Search the web and Windows

6:03 PM 12/11/2020



Welcome: **ANIL DEVANGAVI**
 User Type: **AGENCYDO**
 Agency: **Basaveshwar Engineering College-Science & Technology**
Entrepreneurs Park
 Financial Year: **2020-2021**



SGKAMBALIMATH
 Login
 Change Password
 Login History

Public Financial Management System-PFMS
(formerly CPMS)

1/o Controller General of Accounts, Ministry of Finance

- dhocReports
- Home
- Scholarship Management
- Agency Account
- Agency Details
- Payment
- Health Module
- Agency Functions
- Agency Reports
- Agency Details
- Agency Masters
- Agency Schemes
- Agency Agencies
- MIS Process
- Funds
- Agency Transfers
- Agency Advances
- Agency Expenditures
- Agency
- Agency Deduction Filing
- Agency Sanction Certificate
- Agency Accounting System Integration

Expenditure Details

Sanction Number:	BEC/BGK/TEQIP-III/Academic/2020/288	Sanction Date:	01/02/2021	
Voucher Number:	BP-2020-21-357	Agency Name In Bank:	NATIONAL PROJECT IMPLEMENTATION UNIT	
Account Number:	3702002100031759	Project:		
Plan Scheme:	2038-Technical Education Quality Improvement Programme of Government of India (EAP)		Bank name:	PUNJAB NATIONAL BANK
Status:	Created	Remarks:		
Amount:	7000.00	Created On:	02/03/2021	
Created By:	SGKAMBALIMATH	Modified On:	02/03/2021	
Modified By:	SGKAMBALIMATH	Uploaded Sanction Letter:	Academic_2020_288.pdf	
Purpose for Expenditure:	Expenditure towards honorarium conducted Remedial Classes on "Advanced C Programming" for 5th Sem (BE) students C S Engg Department from 3rd to 31st Dec-2020			

Payment Details:

Favouring	Cheque/Account No.	Amount	IFSC/MICR Code	Instrument Type	Instrument Date	NarrationForPassBook
SANJEEVAKUMAR MALLIKARJUN HATTURE	37550100000411	7000.00	BARB0BAGALK	EPaymentUsingDigitalSignature	3/2/2021 12:00:00 AM	

Scheme Component Details:

Component Name	Amount	Tax Amount for Global Component	Balance Amount
[1.3.2.1] Improve students learning	7000.00	N/A	7000.00

Vendor/Beneficiary Details:

Account No.	Name	Amount
37550100000411 - SANJEEVAKUMAR	Sanjeevkumar Hatture(VAKABK00001540)	7000.00

Successfully Saved For Submitted

From: Dr. Sanjeevakumar M. Hatture
Associate Professor,
Department of CSE,
Basaveshwar Engineering College (Autonomous),
Bagalkot

BASAVESHWAR ENGG. COLLEGE TEQIP
BAGALKOT

Forward No: *CS*

Date: *29-1-21*

SS
Asst.

To,
The Principal
Basaveshwar Engineering College (Autonomous),
Bagalkot

[Forwarded Through the Head of Department]

Sub: Request to sanction the honorarium for conducting remedial classes under TEQIP-III reg..

Respected Sir,

As per your directions, I have conducted the remedial classes for the course "Advanced C Programming (UCS559L)" under the Equity Assurance Plan of TEQIP-III. The remedial classes are conducted from 03-12-2020 to 31-12-2020 for V semester students. The details of the remedial class conduction are given in the following.

S.N	Total Classes Engaged	Number of Students Registered	Category wise Students Registration				Gender Wise Students Registration	
			GM	OBC	SC	ST	Male	Female
1	34	66	27	29	08	02	40	26

Kindly sanction the honorarium for conducting remedial classes under TEQIP-III.

Thanking You.

Date: 25-01-2021

Yours faithfully

SS
(Sanjeevakumar M. Hatture)

Forwarded to the Principal,

SS
25/1/2021

Professor and Head
Department of Computer Science and Engg.
Basaveshwar Engg. College,
BAGALKOT-587102. Karnataka

101
Nodal Officer (EAP)

SS
29/01/2021



Welcome: ANIL DEVANGAVI
 User Type: AGENCYDO
 Agency: Basaveshwar Engineering College-Science & Technology
 Entrepreneurs Park
 Financial Year: 2020-2021



SGKAMBALIMATH
 Login History

Public Financial Management System-PFMS
 (formerly CPMS) /o Controller General of Accounts, Ministry of Finance

- Home
- Reports
- Account Management
- Account
- Users
- Payment
- Health Module
- Functions
- Reports
- Details
- Users
- Schemes
- Agencies
- MIS Process
- Funds
- Transfers
- Agencies
- Expenditures
- Account
- Deduction Filing
- Statement Certificate
- Accounting System Integration

Expenditure Details

Sanction Number: BEC/BGK/TEQIP-III/Academic/2020/305 **Sanction Date:** 19/02/2021

Voucher Number: BP-2020-21-383

Account Number: 3702002100031759 **Agency Name In Bank:** NATIONAL PROJECT IMPLEMENTATION UNIT

Plan Scheme: 2038-Technical Education Quality Improvement Programme of Government of India (EAP) **Project:**

Status: Submitted **Bank name:** PUNJAB NATIONAL BANK

Amount: 8000.00 **Remarks:**

Created By: SGKAMBALIMATH **Created On:** 04/03/2021

Modified By: SGKAMBALIMATH **Modified On:** 04/03/2021

Purpose for Expenditure: Expenditure towards honorarium conducted Remedial Classes on "Engineering under the Equity Assurance Plan" for 7th Sem (BE) students Mechanical Engg Department from 3rd to 31st Dec-2020 **Uploaded Sanction Letter:** [Academic_2020_305.pdf](#)

Payment Details:

Favouring	Cheque/Account No.	Amount	IFSC/MICR Code	Instrument Type	Instrument Date	NarrationForPassBook
VIVEKANAND B S	37550100000316	8000.00	BARB0BAGALK	EPaymentUsingDigitalSignature	3/4/2021 12:00:00 AM	

Scheme Component Details:

Component Name	Amount	Tax Amount for Global Component	Balance Amount
[1.3.2.1] Improve students learning	8000.00	N/A	8000.00

Vendor/Beneficiary Details:

Account No.	Name	Amount
37550100000316 - VIVEKANAND B S	Vivekanand B S(VAKABK00007774)	8000.00

[Back](#)

From-
Prof.B.S.Vivekanand
Assistant Professor
Dept of Mechanical Engg
BEC, Bagalkot

To,
The Principal
Basaveshwar Engg. College (Autonomous),
Bagalkot

Sir,

(Forwarded through HOD)

Sub: Request to sanction the honorarium for conducting remedial classes under TEQIP-III reg..

As per your directions, I have conducted the remedial classes for the course Control Engineering (UME703C) under the equity assurance plan of TEQIP-III. The remedial classes are conducted from 03.12.2020 to 31.12.2020 for 7th semester students. The details of the remedial classes conduction are given in the following.


Name of Faculty Member	Subject with Subject Code	Dept	Total Classes Engaged	Number of Students Registered	Category wise students regn				Gender Wise	
					GM	OBC	SC	ST	Male	Female
B .S. Vivekanand	Control Engg. UME703C	Mechanical	15	11(Online) + 03(offline)	3	8	2	1	14	--

Kindly sanction the honorarium for conducting remedial classes under TEQIP-III.

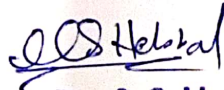
Thanking you,

Date: 09.02.2021

Yours faithfully,


(Prof.B.S.Vivekanand)

forwarded for needful action.


Prof. & Head,
Dept. of Mechanical Engineering
Basaveshwar Engineering College
BAGALKOT - 587 102.

101
FAP
Nodal Officer

to 10/2/2021

- Proc Reports
- Account
- Payment
- Health Module
- Functions
- Reports
- Details
- Schemes
- Agencies
- MIS Process
- Funds
- Transfers
- Advances
- Expenditures
- Deduction Filing
- Sanction Certificate
- Accounting System Integration

Expenditure Details

Sanction Number: BEC/BGK/TEQIP-III/Academic/2020/284 **Sanction Date:** 23/01/2021

Voucher Number: BP-2020-21-350 **Agency Name In Bank:** NATIONAL PROJECT IMPLEMENTATION UNIT

Account Number: 3702002100031759 **Project:**

Plan Scheme: 2038-Technical Education Quality Improvement Programme of Government of India (EAP) **Bank name:** PUNJAB NATIONAL BANK

Status: Submitted **Remarks:**

Amount: 8000.00 **Created On:** 17/02/2021

Created By: SGKAMBALIMATH **Modified On:** 17/02/2021

Modified By: SGKAMBALIMATH **Uploaded Sanction Letter:** Academic_2020_284.pdf

Purpose for Expenditure: Expenditure towards honorarium conducted Remedial Classes on Network Analysis for 3rd Sem (BE) students EBCE Department 3-12-20 To 31-12-20

Payment Details:

Favouring	Cheque/ Account No.	Amount	IFSC/MICR Code	Instrument type	Instrument Date	Narration For PassBook
MAMATA JAGADEESH SATARADDI	37550100000332	8000.00	BARB0BAGALK	EPaymentUsingDigitalSignature	2/17/2021 12:00:00 AM	

Scheme Component Details:

Component Name	Amount	Tax Amount for Global Component	Balance Amount
[1.3.2.1] Improve students learning	8000.00	N/A	8000.00

Vendor/Beneficiary Details:

Account No.	Name	Amount
37550100000332 - MAMATA JAGADEE	Mamata Sataraddi(VAKABK00000732)	8000.00

Back

Report of Remedial Class Conducted from 3rd to 31st December 2020

S.N	Name of Faculty Member	Subject with Subject Code	Department	Total Classes Engaged	Number of Students Registered	Category wise				Gender Wise	
						GM	OBC	SC	ST	Male	Female
1	Mamata J. Sataraddi	Network Analysis (UEC343C)	Electronics and Communication Engineering	28	31	11	17	2	1	8	23

Documents Attached

- List and Attendance of the students
- Screen Shots of the online classes conducted



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 (formerly CPMS)
 Controller General of Accounts, Ministry of Finance

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**Expenditure
Details**

Sanction Number: BEC/BGK/TEQIP-III/Academic/2020/286 **Sanction Date:** 21/01/2021

Voucher Number: BP-2020-21-352

Account Number: 3702002100031759 **Agency Name In Bank:** NATIONAL PROJECT IMPLEMENTATION UNIT

Plan Scheme: 2038-Technical Education Quality Improvement Programme of Government of India (EAP) **Project:**

Status: Created **Bank name:** PUNJAB NATIONAL BANK

Amount: 7000.00 **Remarks:**

Created By: SGKAMBALIMATH **Created On:** 17/02/2021

Modified By: SGKAMBALIMATH **Modified On:** 17/02/2021

Purpose for Expenditure: Expenditure towards honorarium conducted Remedial Classes on Structural Analysis-II for 5th Sem (BE) students Civil Engg. Department from 3rd to 31st Dec-2020 **Uploaded Sanction Letter:** Academic_2020_286.pr

Payment Details:

Favouring	Cheque/Account No.	Amount	IFSC/MICR Code	Instrument Type	Instrument Date	NarrationForPassBool
PRAKASH SANGAPA BANGARASHETTI	8684101001687	7000.00	CNRB0008684	EPaymentUsingDigitalSignature	2/17/2021 12:00:00 AM	

Scheme Component Details:

Component Name	Amount	Tax Amount for Global Component	Balance Amount
[1.3.2.1] Improve students learning	7000.00	N/A	7000.00

Vendor/Beneficiary Details:

Account No.	Name	Amount
8684101001687 - PRAKASH SANGAPA ▼	Prakash Bangarashetti(VAKABK00007196)	7000.00

Successfully Saved For Submitted



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Report of remedial classes conducted from 03-12-2020 to 31-12-2020

S.N	Name of Faculty Member	Subject with Subject Code	Department	Total Classes Engaged	Number of Students Registered	Category wise				Gender Wise	
						GM	OBC	SC	ST	Male	Female
1	P.S.Bangarashetti	Structural Analysis – II UCV542C/UCV502C	Civil Engg.	30 hrs.	07	01	02	03	01	05	02

↖

P.S. Bangarashetti
12-01-2021
(P.S. Bangarashetti)

Shri

