Indian Institute of Technology, Kanpur

Proposal for a New Course

1. Course No: DMSxxx    DMS712

2. Course Title: Revenue Management

3. Units: 3-0-0-0 [5]            Duration of Course: Modular

4. Proposing Department:  Management Sciences

5. Proposing Instructor(s): Vinay Ramani & Sri Vanamalla V

   Other faculty members interested in teaching the proposed course: Avijit Khanra, Faiz Hamid

6.  Course Description:

   This course provides an introduction to the theory and practice of Revenue Management. The course uses tools from microeconomics, game theory, and operations research to study how firms should manage production capacity, perishable assets, product availability across different selling channels, and inventory to maximize revenue. Revenue management is applied across diverse industries such as airlines, hospitality, sports, advertising and internet service provision.

7. Learning Objectives: On completion of this course, participants will

(i)    Gain a better understanding of revenue management practices such as capacity control, overbooking, forecasting.

(ii)   Develop the ability to use quantitative models of revenue management for better decisions

8. Course Contents  (*preferably in the form of 5 to 10 broad titles*):

| Sl. No | Broad Title | Topics | No. of Lectures |
|---|---|---|---|
| 1 | Introduction to Revenue Management | Taxonomy of perishable asset revenue management | 1 |
| 2 | Review of pricing Techniques | Dynamic pricing, market segmentation | 2 |
| 3 | Dynamic Programming Fundamentals | Deterministic dynamic programming, Probabilistic dynamic programming | 3 |
| 4 | Demand Forecasting | Time series forecasting | 2 |
| 5 | Operational Model of Revenue Management | Inventory Management, Newsvendor model, Overbooking, differentiation, pricing and entry | 4 |

| 6 | Network Revenue Management | Linear Programming approach, specific industry example | 2 |
|---|---|---|---|

9. Textbook:

1) Pricing and Revenue Optimization by *Robert L. Phillips. Stanford Business Book, 2005.*

2) The Theory and Practice of Revenue Management *by Kalyan Talluri and van Ryzin, Springer, 2004.*

Reference Articles:

(i) Boyd, E. A., & Bilegan, I. C. (2003). Revenue management and e-commerce. *Management science*, *49*(10), 1363-1386.

(ii) Chen, N., & Hu, M. (2023). Frontiers in Service Science: Data-Driven Revenue Management: The Interplay of Data, Model, and Decisions. *Service Science*, *15*(2), 79-91.

(iii) Klein, R., Koch, S., Steinhardt, C., & Strauss, A. K. (2020). A review of revenue management: recent generalizations and advances in industry applications. *European Journal of Operational Research*, *284*(2), 397-412

(iv) Weatherford, L. R., & Bodily, S. E. (1992). A taxonomy and research overview of perishable-asset revenue management: Yield management, overbooking, and pricing. *Operations Research, 40*(5), 831-844.

Dated: 22/07/2024 _____ Proposers: Vinay Ramani & Sri Vanamalla V

Dated: 22/07/2024 _____ DPGC Convener: _____

The course is approved / not approved

Chairman, SUGC/SPGC

Dated: _____