EMERGING TECHNOLOGIES AND APPLICATION IN BUSINESS **23MBPC611**

(COURSE HANDBOOK)

MBA

COURSE HEAD:

Asst. Prof. Ramya Bharadwaj B S

1. GENERAL INFORMATION

Welcome to the course on "Emerging Technologies and Applications in Business"!

In this course, we will explore the transformative technologies that are reshaping the modern business world. As industries evolve through technological advancements, understanding these changes becomes essential for success. This course is designed to provide you with a comprehensive understanding of emerging technologies and how they can be applied effectively in business management.

We will begin by examining the historical evolution of technology, including the impact of the Industrial Revolutions, and move into the fourth industrial revolution, which is driven by cutting-edge innovations like Artificial Intelligence (AI), the Internet of Things (IoT), Augmented Reality (AR), Virtual Reality (VR), and Data Science.

Throughout the course, you will learn how data science serves as a powerful tool for decision-making, how AI and IoT are revolutionizing business operations, and the practical applications of AR and VR in diverse industries. We will also explore other emerging technologies, such as blockchain and cloud computing, and discuss the ethical considerations that come with technological advancements.

By the end of this course, you will be equipped with the knowledge to apply these technologies in real-world business contexts, making informed decisions and leading your organization into the future. Whether you're interested in management, technology, or innovation, this course will provide valuable insights and practical skills to enhance your career.

1.1. Course Objectives

- **Technology & Industrial Revolution:** Impart the knowledge of evolution of technologies through Industrial Revolutions.
- **Data Sciences & Decision making:** Provide an overview of data science as a tool for decision-making in Management.
- **Artificial Intelligence:** Educate about AI, IoT, AR and VR technologies.
- **Emerging technologies & Management:** Familiarize the students with other emerging technologies in the field of Management.

1.2. Course Outcomes

- **CO1**: Describe the technologies applicable in the field of Management.
- **CO2**: Apply the latest developments in the area of technology to support business.
- **CO3**: Compare the differences and similarities in AR, VR and MR technologies.
- **CO4**: Classify appropriate technology and tools for the given managerial task

1.3. Set Text and Suggested Sources

All the below mentioned books are available in the 1st Floor Library.

Key Text Books:

1. Rajendra Akerkar, "Introduction to Artificial Intelligence", 2nd Edition, Eastern Economy Edition,2014
2. Follet J. "Designing for Emerging Technologies" ,O'Reilly Media, 2014
3. Dr Deepak G Kulkarni, Dr. Prayag Gokhale, "Emerging Exponential Technologies", 1st Edition, Himalaya Publishing House, 2020.

Reference Books:

1. J, Song I, "Emerging Technologies for Emerging Markets",14th Edition, Springer Singapore, 2014
2. Sadiku M N O, "Emerging Internet-based Technologies", CRC Press, 2014
3. Del Rosal V, "Emerging Technologies and Future of Work", Emtechub, 2015

2. THE COURSE

2.1. Course Description

EMERGING TECHNOLOGIES AND APPLICATION IN BUSINESS			
Semester	**III**	CIE Marks	**50**
Course Code	**23MBPC611**	SEE Marks	**50**
Teaching Hrs/Week (L:T:P)	**4:0:0**	Exam Hrs	**03**
Total Hrs	**52**	Credits	**04**

The Emerging Technologies and Application in Business course designed to provide students with foundational knowledge in technology and its benefits in business when implemented. The course will run for 13 weeks during Semester 3 and consists of 5 modules that cover essential topics in Emerging technologies and their benefits in business organizations. Each week includes 4 lectures, delivered by Ms. Ramya Bharadwaj B S, focusing on theoretical concepts, practical applications, and course-related activities. Spanning a total of 52 hours, this 4-credit course is assessed through Continuous Internal Evaluation (CIE) for 50 marks and a Semester-End Examination (SEE) for 50 marks, with 3-hour exam duration. This structure ensures a balanced and engaging learning experience for students.

2.2. Initiating Contact with Staff and Other Students

We encourage open communication and value your inquiries about the Course. However, given the large number of students in this course, we encourage that you use email and make use of office hours thoughtfully. Before reaching out with administrative questions, please check if your query has already been addressed in previous communications or in the materials provided in this handbook and on our website. Additionally, we encourage you to engage with your peers for discussions and

collaborative learning, as this will enhance your understanding of the course material and foster a supportive academic community.

2.3. Resources

Resources include digital libraries, e-learning platforms, and research databases, providing students with anytime, anywhere access to academic materials and interactive courses.

Students can access various resources on the college website, including the VTU Consortium, NPTEL, and NDLI, offering e-books, research papers, and video lectures for flexible learning.

To access digital library and e-learning tools, Visit https://mite.ac.in/ (Campus Life > Library > VTU Consortium/e-learning platforms/additional sources).

2.4. Staff

Course Convenor: Prof. Ramya Bharadwaj B S
Cabin: 3rd floor, PG Block
Email: ramya@mite.ac.in

2.5. Topics and Reading materials for each module

Module 1 *No. of Hours: 10*

- **Topic: Evolution of Technologies**
  - Includes Historical background of the industrial revolution, fourth industrial revolution (IR.4.0)
  - Role of data for emerging technologies
  - Human to Machine interaction
  - Future trends in emerging technologies.

- **Essential Readings:**
  - Dr Deepak G Kulkarni, Dr. Prayag Gokhale, "Emerging Exponential Technologies", 1stEdition, Himalaya Publishing House, 2020., Chapter 1 and 2.

- **Additional Reading:**
  - J, Song I, "Emerging Technologies for Emerging Markets", 14thEdition, Springer Singapore, 2014, Page 1 to 8.
  - "How emerging technologies shape the future of work", Le Blanc, P., Ulfert, A. S., Peeters, M., Rispens, S., & Scherer, S,Taylor & Francis Online (2024). https://www.tandfonline.com/doi/epdf/10.1080/1359432X.2024.2324937?needAccess=true

Module 2 *No. of Hours: 10*

- **Topic: Data Science**
  - Overview of Data Science, Data and information, Data types and representation
  - Data Value Chain
  - Data Acquisition, Analysis, Curating, Data storage and big data.
  - Data visualization.

- **Activities:**
  - Students will work in groups to brainstorm examples of data science applications in industries like healthcare and finance. They will present their findings, discussing the importance of data-driven decision-making. This activity deepens their understanding of data types, the data value chain, and visualization, highlighting technology's impact on business.

- **Essential Reading:**
  - Dr Deepak G Kulkarni, Dr. Prayag Gokhale, "Emerging Exponential Technologies", 1st Edition, Himalaya Publishing House, 2020. Chapter 3

- **Additional Reading:**
  - "An introduction to Data Science",Oxford Artificial Intelligence Society. https://www.careers.ox.ac.uk/files/datascienceinformation-oxfordaisocietypdf

Module 3 *No. of Hours: 10*

- **Topic: Artificial Intelligence (AI) and Internet of Things (IoT)**
  - AI, Levels of AI, Types of AI, Application of AI in Business and Education.
  - AI tools and platforms.
  - Overview of IoT, working process of IoT, IoT Architecture, Application of IOT at Smart grid, smart city and smart farming.

- **Activities:**
  - Students will form teams to design a "Smart City" that incorporates IoT for transportation, lighting, waste management, and public safety. Each team will present their design, detailing how IoT sensors and data address urban issues like traffic congestion and waste management. They will also discuss challenges related to privacy, security, and integration with existing infrastructure.

- **Essential Reading:**
  - Follet J. "Designing for Emerging Technologies" ,O'Reilly Media, 2014, Chapter 13.

- **Additional Reading:**
  - "Applications of internet of things (IoT) and sensors technology to increase food security and agricultural Sustainability: Benefits and challenges", Abdennabi Morchid [a], Rachid El Alami [a], Aeshah A. Raezah [b], Yassine Sabbar, Ain Shams Engineering Journal, 2024.
    - https://www.sciencedirect.com/science/article/pii/S2090447923003982

Module 4 *No. of Hours: 10*

- **Topic: Augmented Reality (AR) and Virtual Reality (VR)**
  - Introduction to AR, VR.
  - Augmented Reality Vs Mixed Reality (MR).
  - Architecture of AR systems.
  - Application of AR systems in Medical Assistance, Entertainment and Education.

- **Activities:**
  - In groups, students will create self-made case studies on the application of AR and VR. The case studies will be exchanged between teams, with each team presenting the case study along with their solutions and conclusions. The original team will then evaluate the presentation

- **Essential Reading**:
  - Rajendra Akerkar, "Introduction to Artificial Intelligence",2ndEdition, Eastern Economy Edition, 2014, Chapter 4 and 5.
  -
- **Additional Reading:**
  - "Introduction to Virtual and Augmented Reality", Ralf Doerner, Wolfgang Broll, Bernhard Jung, Paul Grimm, Martin Göbel & Rolf Kruse,Springer Nature Link,2022. https://link.springer.com/chapter/10.1007/978-3-030-79062-2_1

  - "Analying augmented reality (AR) and virtual reality (VR) recent development in education", Abdullah M. Al-Ansi a, Mohammed Jaboob b, Askar Garad c, Ahmed Al-Ansi,Social Sciences & Humanities Open,2023. https://www.sciencedirect.com/science/article/pii/S2590291123001377

Module 5 *No. of Hours: 12*

- **Topic: Ethics in Technology and Other Emerging Technologies**
  - Block Chain Technology,
  - Cloud computing and additive Manufacturing Technology.
  - Ethics and Digital Privacy, Generative AI.

- **Activities:**
  - Students will form teams to create a role play based on topics related to digital privacy. This activity will help them explore, understand, and develop solutions to common privacy issues.

- **Essential Reading:**
  - Dr Deepak G Kulkarni, Dr. Prayag Gokhale, "Emerging Exponential Technologies", 1stEdition, Himalaya Publishing House, 2020, Chapter 7.

- **Additional Reading:**
  - "Ethics, technology development and uncertainty: an outline for any future ethics of technology",Paul Sollie,Emarald Insight,2007.
    - https://www.emerald.com/insight/content/doi/10.1108/14779960710846155/full/html
  - "From the Ethics of Technology Towards an Ethics of Knowledge Policy & Knowledge Assessment", Rene Von Schomberg,SSRN,2007.
    - https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2436380

3. ASSESSMENT

The assessment for the Emergng Technologies and Applications in Business course is divided into two components: Continuous Internal Evaluation (CIE) and Semester End Examination (SEE), each accounting for 50% of the total marks.

Continuous Internal Evaluation (CIE) consists of two internal tests, scheduled for the 8th and 14th weeks, contributing a total of 30% to the overall marks. Students can earn the other 20% through assignments, which are allocated as follows:

- 10 marks for a presentation on data science applications in various industries
- 10 marks for the "Smart City" project.

Semester End Examination (SEE) constitutes the remaining 50% of the total marks. Key information regarding examination dates and related details can be accessed via the college website (Academics and Courses section > Calendar of Events > PG Odd Sem).

Rubrics for Assignment Evaluation (Total: 20 Marks / 40% of CIE)

1. Presentation on data science used in various industries (10 Marks)				
Creativity	**Presentation**	**Subject Knowledge**	**Research**	**Q&A**
2 Marks	**2 Marks**	**2 Marks**	**2 Marks**	**2 Marks**

2. "Smart City" project (10 Marks)				
Creativity	**Presentation**	**Clarity**	**Team Effort**	**Q&A**
2 Marks	**2 Marks**	**2 Marks**	**2 Marks**	**2 Marks**