COURSE HANDOUT

CLOUD COMPUTING (BCMMI-306(D))

B.COM-3rd SEMESTER

ACADEMIC YEAR (2024-25)

Ms. Mehak Mengi

Assistant Professor

Department of Computer Science & Engineering

Department of Computer Science & Engineering

Model Institute of Engineering & Technology (Autonomous)

Kot Bhalwal, Jammu - 181122

www.mietjmu.in

Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
BCMMI-306(D)	Cloud Computing	Elective	4	5	0	0	40	60	100

COURSE OUTCOMES

	At the end of the course the student will be able to:
CO1	Describe the main concepts of cloud computing.
CO2	Interpret architecture and infrastructure of cloud computing.
CO3	Compile the value of cloud computing from a business perspective.
CO4	Analyze the core issues of cloud computing such as security, privacy, and risk.
CO5	Evaluate the models of cloud computing and apply it in different settings.

Unit-I

Introduction to Cloud Computing: Introduction to Cloud Computing, History and Evolution of Cloud Computing, Grid Computing vs Cloud Computing, – Cloud components - Essential characteristics – On-demand self-service, Comparing cloud providers, pros and cons of cloud computing, Cloud applications, Cloud challenges.

(10 Hours)

Unit-II

Cloud Computing Architecture: Layers in cloud architecture, Cloud Delivery models, The SPI Framework, Cloud Software as a Service (SaaS), Cloud Platform as a Service (PaaS), Cloud Infrastructure as a Service (IaaS), Cloud deployment models-Public clouds – Private clouds – Community clouds - Hybrid clouds.

(10 Hours)

Unit-III

Cloud Business Value: Reducing Costs and Increasing Efficiency through Scalability, Reducing IT Administrative Overhead, Increasing Organizational Agility, Examining the Business Impact, Evaluating Cloud Computing Costs and Choosing the Appropriate Cloud Model. (10 Hours)

Unit- lV

Security in the Cloud: Cloud Computing Risk Issues: The CIA Triad, Privacy and Compliance Risks, Threats to Infrastructure, Data and Cloud Access Control Issues, Cloud Service Provider Risks, Cloud Computing Security challenges. (9 Hours)

Unit-V

Emerging trends in cloud computing: Multi and Hybrid Cloud Deployment, Edge Computing, Cloud-Native Applications, The AI and ML-Powered Cloud, Internet of Things. (9 Hours)

Textbooks

S.No	Name of the Books	Name of the Author	Publisher Name	Edition (Pub.Yr.)
1	Cloud Essentials	Kirk Hausman Susan L. Cook Telmo Sampaio	Wiley Publishing	1st (2013)
2.	Cloud Computing	Judith Hurwitz, Robin Bloor, Marcia Kaufman, and Dr. Fern Halper	Wiley Publishing	2nd (2020)

Reference Books

S.No	Name of the Books	Name of the Author	Publisher Name	Edition (Pub.Yr.)
1	Handbook of Cloud Computing	Borko Furht. Armando Escalante	Springer	1st (2010)

<table>
<tr><td colspan="3" align="center">COURSE PLAN</td></tr>
<tr><td colspan="3" align="center">Unit-I Introduction to Cloud Computing</td></tr>
<tr><td>S.No.</td><td>Topics</td><td>Recommended Books</td></tr>
<tr><td>1</td><td>Introduction to Cloud Computing and History</td><td>Book 1, Ch.1</td></tr>
<tr><td>2</td><td>Evolution of Cloud Computing</td><td>Book 1, Ch.1</td></tr>
<tr><td>3</td><td>Grid Computing vs Cloud Computing</td><td>Reference Book 1, Ch.15</td></tr>
<tr><td>4</td><td>Cloud components</td><td>Book 2, Ch.1</td></tr>
<tr><td>5</td><td>Cloud Essential Characteristics</td><td>Book 2, Ch.1</td></tr>
<tr><td>6</td><td>On-demand self-service in Cloud Computing</td><td>Book 2, Ch.1</td></tr>
<tr><td>7</td><td>Comparing cloud providers</td><td>Book 2, Ch.1</td></tr>
<tr><td>8</td><td>Pros and Cons of Cloud Computing</td><td>Book 2, Ch.2</td></tr>
<tr><td>9</td><td>Cloud Applications</td><td>Book 1, Ch.8</td></tr>
<tr><td>10</td><td>Cloud Challenges</td><td>Reference Book1, Ch.1</td></tr>
<tr><td colspan="3" align="center">Unit-II Cloud Computing Architecture</td></tr>
<tr><td>11</td><td>Layers in cloud architecture</td><td>Reference Book1, Ch.1</td></tr>
<tr><td>12</td><td>Cloud Delivery Models</td><td>Book 1, Ch.3</td></tr>
<tr><td>13</td><td>The SPI Framework</td><td>Book 1, Ch.3</td></tr>
<tr><td>14</td><td>Cloud Software as a Service (SaaS)</td><td>Book 1, Ch.3</td></tr>
<tr><td>15</td><td>Cloud Platform as a Service (PaaS)</td><td>Book 1, Ch.3</td></tr>
<tr><td>16</td><td>Cloud Infrastructure as a Service (IaaS)</td><td>Book 1, Ch.3</td></tr>
<tr><td>17</td><td>Cloud Deployment Models: Public clouds</td><td>Reference Book 1, Ch.4</td></tr>
<tr><td>18</td><td>Private clouds</td><td>Reference Book 1, Ch.4</td></tr>
<tr><td>19</td><td>Community clouds</td><td>Reference Book 1, Ch.4</td></tr>
<tr><td>20</td><td>Hybrid clouds.</td><td>Reference Book 1, Ch.4</td></tr>
<tr><td colspan="3" align="center">Unit-III Cloud Business Value</td></tr>
<tr><td>21</td><td>Reducing Costs</td><td>Book 1, Ch.5</td></tr>
<tr><td>22</td><td>Case Study : Netflix's Cloud Transition and Airbnb's use of AWS</td><td>https://www.bacancytechnology.com/blog/netflix-aws-migration
https://www.bacancytechnology.com/blog/airbnbs-aws-migration</td></tr>
<tr><td>23</td><td>Increasing Efficiency through Scalability</td><td>Book 1, Ch.5</td></tr>
<tr><td>24</td><td>Reducing IT Administrative Overhead</td><td>Book 1, Ch.5</td></tr>
<tr><td>25</td><td>Case Study: Capital One's Cloud Adoption</td><td>https://thinklogic.com/post/cloud-migration-case-study-how-capital-one-successfully-transitioned-to-the-cloud</td></tr>
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26	Increasing Organizational Agility	Book 1, Ch.5
27	Examining the Business Impact	Book 1, Ch.5
28	Evaluating Cloud Computing Costs	Book 1, Ch.5
29	Choosing the Appropriate Cloud Model	Book 1, Ch.5
30	Case Study: Retail Corp	https://www.datamine.com/industryexpertise/case-studies/retail

Unit-IV Security in the Cloud

31	Cloud Computing Risk Issues: The CIA Triad	Book 1, Ch.11
32	Cloud Computing Risk: Privacy	Book 1, Ch.11
33	Cloud Computing Risk: Compliance Risks	Book 1, Ch.11
34	Real time examples on Cloud Computing Risk Issues	Book 1, Ch.11
35	Threats to Infrastructure	Book 1, Ch.11
36	Practical Implications of Threats to Infrastructure	https://cybersrcc.com/infrastructure-threat/
37	Data and Cloud Access Control Issues	Book 1, Ch.11
38	Cloud Service Provider Risks	Book 1, Ch.11
39	Cloud Computing Security challenges.	Book 1, Ch.11

Unit-V Emerging trends in cloud computing

40	Multi Cloud and Hybrid Cloud Deployment	Reference Book1, Ch.4
41	Case Studies on Multi and Hybrid Cloud Deployment	Reference Book1, Ch.4
42	Edge Computing	Reference Book 1, Ch.25
43	Cloud-Native Applications	Book 1, Ch.8
44	Examples of Cloud Native Applications	https://www.mendix.com/blog/why-cloud-native-applications-are-the-future-of-software/
45	Introduction to AI and ML-Powered Cloud	https://cyfuture.cloud/blog/the-ai-ml-powered-cloud/
46	Use cases of AI and ML powered cloud	https://cyfuture.cloud/blog/the-ai-ml-powered-cloud/#Use_Cases_of_AI_and_ML-Powered_Cloud
47	Internet of Things	Book 1, Appendix
48	Case studies on how different organizations have leveraged IOTs	https://iot.telenor.com/iot-case-studies/

ADDITIONAL WEB RESOURCES

1.	https://www.youtube.com/watch?v=RWgW-CgdIk0 (Cloud Computing Tutorial for Beginners)
2.	https://www.youtube.com/watch?v=EN4fEbcFZ_E (Cloud Computing Full Course)
3.	**NPTEL** – Cloud Computing Course by Prof. Somya Kanti Ghosh (IIT Kharagpur) https://nptel.ac.in/courses/106105167

GRADING AND ASSESSMENT

- **Sessional Test**: 15 marks

- **Assignment**: 10 marks

- **Attendance**: 5 marks

- **Final Examination**: 70 marks

COURSE POLICIES

- **Attendance**: Minimum 75% attendance is mandatory to appear in the final examination of the course.

- **Academic Integrity**: MIET's academic integrity policies apply. Plagiarism will not be tolerated.

- **Late Submissions**: Assignments and projects must be submitted by the specified timelines.

FACULTY INFORMATION

- **Office Hours**

  Monday (12:05 PM - 12:55 PM)
  Friday (12:05 PM - 12:55 PM)

- **Contact Information**
  mehak.cse@mietjammu.in

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