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[MCA402A][2023- 24]

MICRO LECTURE PLAN

Name of the Instructor/Faculty: Dr.B.Vasumathi			
Designation of Faculty: Associate Professor			
Department of Faculty: Computational Sciences			
Course Name & Code: Internet of Things and Data Analytics & MCA402A			
Course Credit: 4	Weekly L-T-P: 3-1-0	Total Contact Hours in the semester: 45L+15T	Maximum Marks: 100
Programme(s) Name & Semester/Term: Master of Computer Applications/ Four			
Target students [Section(s)/Group(s)] & Total Students:			

Course Outcomes and Module(s) Mapping (M1, M2, M3, M4, M5, M6, M7 etc. whichever is/are applicable)

S I	Course Outcomes	Module(s)
1	Understand and analyze the importance and usage of Internet of Things in different contexts.	M1
2	Understand and evaluate different IoT protocols as well as the IoT architecture.	M2 and M3
3	Define and differentiate Web of Things and IoT .	M4
4	Evaluate and analyze different IoT applications and existing IoT platforms.	M5
5	Understand and analyze different statistical techniques.	M6

Components of Assessments:

1. Assignments [Weight -10 Marks]
 - a. Assignment 1(Marks)- As per the notice after 30% coverage of syllabus
 - b. Assignment 2(Marks)- As per the notice after 70% coverage of syllabus
 - c. Other Activities (*Please specify, if applicable*)
2. Presentation [Weight -10 Marks]- As per the notice
3. Two Class Tests [Weight -20 Marks]- As per the notice
4. End Semester Examination [60 Marks]- As per the notice



BRAINWARE UNIVERSITY

[MCA402A][2023- 24]

Module No.	Topics	Dates	Teaching Methodologies(Lecture / Tutorial/ Quiz/ Presentation / Experiential learning/ Problem-solving/ Specify, if any others)	Duration (in hours)	Text Book(s) with Chapters & Sections	Reference Book(s) with Chapters/Sections(if applicable)
M1 (Introduction)	L1: What is the IoT and why is it important?	15.02.2024	Lecture/Presentation	1 Hr.	Chapter1, The Internet of Things in the Cloud: A Middleware Perspective	
M1	L2: Elements of an IoT ecosystem	15.02.2024	Lecture/Presentation	1 Hr.	Chapter1, The Internet of Things in the Cloud: A Middleware Perspective	
M1	L3: Technology drivers, Business drivers	16.02.2024	Lecture/Presentation	1 Hr.	Chapter1, The Internet of Things in the Cloud: A Middleware Perspective	
M1	L4: Trends and implications	17.02.2024	Lecture/Presentation	1 Hr.	Chapter1, The Internet of Things in the Cloud: A Middleware Perspective	



BRAINWARE UNIVERSITY

[MCA402A][2023- 24]

M1	L5: Overview of Governance, Privacy and Security Issues.	22.02.2024	Lecture/Presentation	1 Hr.	Chapter-1, Architecting the Internet of Things the Cloud: A Middleware Perspective	
M1	T1:Trends and implications	22.02.2024	Participative Learning	1 Hr.		
M2 (IOT protocols)	L6: Protocol Standardization for IoT, Efforts.	23.02.2024	Lecture/Presentation	1 Hr.	Chapter-6, The Internet of Things in the Cloud: A Middleware Perspective	
M2	L7: M2M and WSN Protocols	24.02.2024	Lecture/Presentation	1 Hr.	Chapter-6, The Internet of Things in the Cloud: A Middleware Perspective	
M2	L8: SCADA and RFID Protocols	29.02.2024	Lecture/Presentation	1 Hr.	Chapter-6, The Internet of Things in the Cloud: A Middleware Perspective	
M2	L9: Issues with IoT Standardization	29.02.2024	Lecture/Presentation	1 Hr.	Chapter-6, The Internet of Things in the Cloud: A Middleware Perspective	
M2	L10: Unified Data Standards Protocols	01.03.2024	Lecture/Presentation	1 Hr.	Chapter-6, The Internet of Things in the Cloud: A Middleware Perspective	



BRAINWARE UNIVERSITY

[MCA402A][2023- 24]

	T2:Protocol Standardization for IoT, Efforts.	02.03.2024	Quiz	1 Hr.		
M2	L11: IEEE802.15.4	07.03.2024	Lecture/Presentation	1 Hr.	Chapter-1, The Internet of Things – Key applications and Protocols	
M2	L12: BACNet Protocol	07.03.2024	Lecture/Presentation	1 Hr.	Chapter-3, The Internet of Things – Key applications and Protocols	
M2	L13: Modbus, KNX, Zigbee	08.03.2024	Lecture/Presentation	1 Hr.	Chapter-5,6,7. The Internet of Things – Key applications and Protocols	
M2	L14: Network layer, APS layer	09.03.2024	Lecture/Presentation	1 Hr.	Chapter-7. The Internet of Things – Key applications and Protocols	
M2	L15: Security Module, z-wave	14.03.2024	Lecture/Presentation	1 Hr.	Chapter-8. The Internet of Things – Key applications and Protocols	
M2	T3:Network layer, APS layer	14.03.2024	Participative Learning	1 Hr.		
M3 (IOT architecture)	L16: IoT Open source architecture (OIC)	15.03.2024	Lecture/Presentation	1 Hr.		https://www.scribd.com/document/630658828/IOT-UNIT-3
M3	L17: OIC Architecture & Design principles	16.03.2024	Lecture/Presentation	1 Hr.		https://www.scribd.com/document/630658828/IOT-UNIT-3

Theory Assignment - 1: 18th March to 22nd March 2024



BRAINWARE UNIVERSITY

[MCA402A][2023- 24]

	L18: OIC Architecture & Design principles	21.03.2024	Lecture/Presentation	1 Hr.		https://www.scribd.com/document/630658828/IOT-UNIT-3
	L19: IoT Devices and deployment Models	21.03.2024	Demonstration	1 Hr.		https://www.scribd.com/document/630658828/IOT-UNIT-3
	L20: IoT Devices and deployment Models	22.03.2024	Lecture/Presentation	1 Hr.		https://www.scribd.com/document/630658828/IOT-UNIT-3
	T4:OIC Architecture & Design principles	23.03.2024	Participative Learning	1 Hr.		
	L21: IoTivity : An Open source IoT stack	28.03.2024	Lecture/Presentation	1 Hr.		OLR: https://openconnectivity.org/wp-content/uploads/2016/03/OCF_IoTivity_Flyer.pdf https://www.scribd.com/document/630658828/IOT-UNIT-3
	L22: IoTivity : An Open source IoT stack: Overview	28.03.2024	Lecture/Presentation	1 Hr.		https://www.scribd.com/document/630658828/IOT-UNIT-3
	L23: IoTivity stack architecture	30.03.2024	Lecture/Presentation	1 Hr.		https://www.scribd.com/document/630658828/IOT-UNIT-3
Class Test 1 from 01.04.2024 to 06.04.2024						
	L24: Resource model and Abstraction.	12.04.2024	Lecture/Presentation	1 Hr.		



BRAINWARE UNIVERSITY

[MCA402A][2023- 24]

	L25: Resource model and Abstraction.	13.04.2024	Lecture/Presentation	1 Hr.		
M3	T5:An Open source IoT stack: Overview	18.04.2024	Participative Learning	1 Hr.		
M4 (Web Of Things)	L26: Web of Things versus Internet of Things	18.04.2024	Lecture/Presentation	1 Hr.	Chapter-6, The Internet of Things in the Cloud: A Middleware Perspective	
	L27: Two Pillars of the Web, Architecture Standardization for WoT	19.04.2024	Lecture/Presentation	1 Hr.	Chapter-6, The Internet of Things in the Cloud: A Middleware Perspective	
	L28: Platform Middleware for WoT	20.04.2024	Lecture/Presentation	1 Hr.	Chapter-7, The Internet of Things in the Cloud: A Middleware Perspective	
	L29: Unified Multitier WoT Architecture	25.04.2024	Lecture/Presentation	1 Hr.	Chapter-7, The Internet of Things in the Cloud: A Middleware Perspective	
	L30: WoT Portals and Business Intelligence	25.04.2024	Lecture/Presentation	1 Hr.	Chapter-7, The Internet of Things in the Cloud: A Middleware Perspective	
	L31: WoT Portals and Business Intelligence.	26.04.2024	Lecture/Presentation	1 Hr.	Chapter-7, The Internet of Things in the Cloud: A	



BRAINWARE UNIVERSITY

[MCA402A][2023- 24]

					Middleware Perspective	
M4	T6:Unified Multitier WoT Architecture	27.04.2024	Participative Learning	1 Hr.		

Theory Assignment - II: 29th April to 2nd May 2024

M5 (IOT applications)	L32: IoT applications for industry: Future Factory Concepts	02.05.2024	Lecture/Presentation	1 Hr.	Chapter-2, The Internet of Things in the Cloud: A Middleware Perspective	
	L33: Brownfield IoT	02.05.2024	Lecture/Presentation	1 Hr.		OLR: https://www.fortiss.org/fileadmin/user_upload/06_Ergebnisse/Informationsmaterialien/fortiss_whitepaper_Brownfield_devices_in_IIoT_web.pdf https://www.slideshare.net/odunladeEmmanuel/brownfield-iot-development-140736617
	L34: Smart Objects, Smart Applications.	03.05.2024	Lecture/Presentation	1 Hr.	Chapter-2, The Internet of Things in the Cloud: A Middleware Perspective	
	L35: Study of existing IoT platforms /middleware, IoT- A, Hydra etc.	04.05.2024	Lecture/Presentation	1 Hr.		OLR: http://wireless.ictp.it/rwanda_2015/presentation



BRAINWARE UNIVERSITY

[MCA402A][2023- 24]

						ions/Middleware_IoT.pdf
M5	T7:IoT applications for industry:	09.05.2024	Participative Learning	1 Hr.		
M6 (IoT data analytics basics)	L36: Regression analysis, Regression	09.05.2024	Lecture/Presentation	1 Hr.		Chapter-4, Big-Data Analytics for Cloud, IoT and Cognitive Computing
	L37: linear regression.	10.05.2024	Lecture/Presentation	1 Hr.		Chapter-4, Big-Data Analytics for Cloud, IoT and Cognitive Computing
	L38: simple linear regression, multiple & Polynomial regression	11.05.2024	Lecture/Presentation	1 Hr.		Chapter-4, Big-Data Analytics for Cloud, IoT and Cognitive Computing
	L39: Sparse model.	16.05.2024	Lecture/Presentation	1 Hr.		Chapter-4, Big-Data Analytics for Cloud, IoT and Cognitive Computing
	T8: Remedial Class	16.05.2024	Participative Learning	1 Hr.		
	T9: Advanced Class	17.05.2024	Participative Learning	1 Hr.		
	L40: Unsupervised learning	18.05.2024	Lecture/Presentation	1 Hr.		Chapter-4, Big-Data Analytics for Cloud, IoT and Cognitive Computing
	L41: clustering, similarity and distances, quality measures of clustering,	23.05.2024	Lecture/Presentation	1 Hr.		Chapter-5, Big-Data Analytics for Cloud, IoT and Cognitive Computing



BRAINWARE UNIVERSITY

[MCA402A][2023- 24]

	L42: Supervised Learning: First step, learning curves	23.05.2024	Lecture/Presentation	1 Hr.		Chapter-4, Big-Data Analytics for Cloud, IoT and Cognitive Computing
	L43: training-validation, and test. Learning models generalities	24.05.2024	Lecture/Presentation	1 Hr.		Chapter-4, Big-Data Analytics for Cloud, IoT and Cognitive Computing
	L44: support vector machines	25.05.2024	Lecture/Presentation	1 Hr.		Chapter-4, Big-Data Analytics for Cloud, IoT and Cognitive Computing
	L45: random forest.	30.05.2024	Lecture/Board Presentation	1 Hr.		Chapter-4, Big-Data Analytics for Cloud, IoT and Cognitive Computing
M6	T10:Discuss about different types of sensors and actuators available in Market	30.05.2024	Presentation	1 Hr.		
	T11: Demonstrate anyone of commercial IoT available in any one domain	31.05.2024	Demonstrate	1 Hr.		
	T12:Discuss the recent developments in IoT Protocol	01.06.2024	Presentation	1 Hr.		
Class Test 2 from 03.06.2024 to 08.06.2024						
	T13:Implement simple Python programs for IoT	13.06.2024	Presentation	1 Hr.		



BRAINWARE UNIVERSITY

[MCA402A][2023- 24]

	T14:Discuss on the latest government policies on IoT security and Privacy	13.06.2024	Presentation	1 Hr.		
	T15:Create a model using IoT to solve some problems in day to day life	14.06.2024	Demonstration	1 Hr.		

Total Lecture Hours: 45

Total Tutorial Hours: 15

Total Activities Hours (Quiz/Presentation/Experiential learning etc):

Text Books

1. The Internet of Things in the Cloud: A Middleware Perspective, Honbo Zhou, CRC Press, 2012.
2. Architecting the Internet of Things, Dieter Uckelmann, Mark Harrison, Michahelles, Florian, Springer, 2011.

Reference Books

1. Networks, Crowds, and Markets: Reasoning About a Highly Connected World, David Easley and Jon Kleinberg, Cambridge University Press, 2010.
2. The Internet of Things – Key applications and Protocols, Olivier Hersent, David Boswarthick, Omar Elloumi, Wiley, 2012.

Other Learning Resources (Name and/or URL of Journals/MOOCs/Online Resources, if Applicable)

1. http://wireless.ictp.it/rwanda_2015/presentations/Middleware_IoT.pdf
2. https://www.fortiss.org/fileadmin/user_upload/06_Ergebnisse/Informationsmaterialien/fortiss_whitepaper_Brownfield_devices_in_IIoT_web.pdf
3. <https://www.slideshare.net/odunladeEmmanuel/brownfield-iot-development-140736617>
4. https://openconnectivity.org/wp-content/uploads/2016/03/OCF_IoTivity_Flyer.pdf
5. <https://www.scribd.com/document/630658828/IOT-UNIT-3>



BRAINWARE UNIVERSITY

[MCA402A][2023- 24]

Signature of the Faculty