

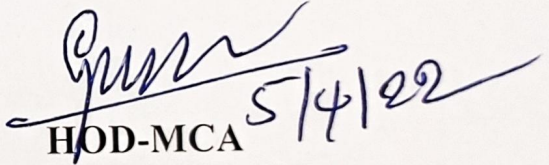


**Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY, BENGALURU-56**

(An Autonomous Institution, Affiliated to VTU, Belagavi, Approved by AICTE, New Delhi)

**DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS(MCA)**

**The following documents enclosed are verified and approved.**

  
HOD-MCA 5/4/22

**Dr. Chandrakanth G Pujari**

**Dr. Chandrakanth G. Pujari, MCA, MTech, Ph.D  
Professor and Head, MCA Program  
Dr. Ambedkar Institute of Technology  
Bengaluru-560 056**



**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
(An Autonomous Institute, Affiliated to V T U, Belagavi)  
**Master of Computer Applications (MCA)**

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**MINUTES OF BOARD OF STUDIES MEETING – MCA BOARD**  
**VENUE : MCA Department**

22<sup>th</sup> September 2016.

The Board of Studies meeting in MCA Course of Dr. Ambedkar Institute of Technology was held on 22nd September of 2016.in the Department of M.C.A., Dr. AIT Campus, Bengaluru.  
The following are the members of BoS meeting

Sl. No	Category	Nomination of the Committee	Name of the Person
1	Head of the Department	Chairperson	Dr. L.Manjunatha . Rao Prof. & Head, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: manjuarjun2004@yahoo.com Mob: 9341214327
2	Internal Faculty members with various specializations	Member-1	Dr. Chandrakanth. G. Pujari Associate Professor Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: varuncp@rediffmail.com Mob: 9845380013
		Member-2	Dr. Bharathi.S Associate Professor Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: bharathishivu_s@yahoo.co.in Mob: 9902084476
		Member-3	Dr. Indumathi. S. K Associate Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: indukarthik2009@yahoo.in Mob: 9739910995
3	Subject Experts from outside the college nominated by academic council	Member-1	Dr. Kavya. N. P Prof & Head Dept. of M.C.A RNSIT, Bangalore e-mail: npkavya@yahoo.com mob: 9945275345
		Member-2	Dr. Poornima Nataraj Prof & Head Dept. of M.C.A DSCE, Bangalore e-mail: hod-mcavtu@dayanandasagar.edu mob: 9901644101
4	Experts from outside college nominated by VTU	Member	
5	Representative from industry/Corporate sector/allied area relating to placement nominated by academic council	Member-1	Mr. Ravinandan Temminova Technologies Private Ltd. Mahalakshmi Layout Bengaluru-86 Email:ravinandan.mc@gmail.com

6	Representative from industry/Corporate sector/allied area relating to placement nominated by academic council	Member-2	Mob:9902000779 Mr. Babu Rao Senior Engineering Project Manager Aricent Technologies Bengaluru E mail:babu.damera@aricent.com Mob:
7	Post graduate meritorious alumnus nominated by Principal	Member	Mr. Jaideep M.S Engagement Manager Avaali Solutions Pvt. Ltd. Bengaluru Email: jaideepms@avaali.com Mob: 9901925535
8	Special Invitees	Member-1	Ms. Shobha Rani. B.R Associate Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: shobhakrishna8@gmail.com Mob: 9740098198
		Member-2	Ms. Malathi. P Assistant Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: bfgcpm@rediffmail.com Mob: 7760880325

**The Board of Studies recommends the syllabus for MCA Programme for the academic year 2016-17 with the following suggestions through deliberations:**

1. Proposed the detailed syllabus for all 6 semesters of MCA program as per CBCS from the academic year 2016 - 2017 by finalizing the core and elective subjects with respect to current industry and all stake holders' requirements (as per the guide lines of ACM, IEEE - Computer Society and NBA).
2. Electives are offered in the light of new advancements in the field of information technology.
3. Proposed credit weightage for various components like lectures, tutorials, practicals, seminars, mini project and Major project for each course.
4. Credits for curriculum components in Master of Computer Applications programme are allotted (mathematics, management, humanities, professional core, electives, project work, and seminar) as per VTU guidelines.
5. Proposed the Scheme of Teaching and Examination for all six semesters of MCA programme.
6. Proposed the Course Outcomes (COs) as per the Outcome Based Education of NBA.
7. The BoS has recommended the detailed syllabus, rules and regulations, scheme of teaching and examination for all the six semesters.
8. The BoS has recommended the I and II semester MCA syllabus
9. The Syllabus was finalized by incorporating the suggestions made by the honorable members.

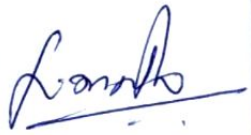
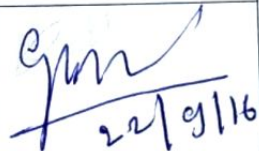
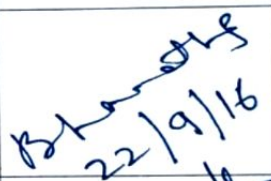
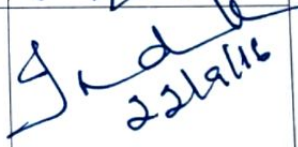
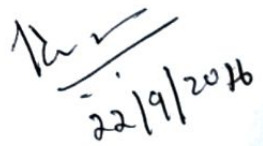

**The BoS meeting was concluded with vote of thanks address by the chairman.**

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**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
(An Autonomous Institute, Affiliated to V T U, Belagavi)  
**Master of Computer Applications (MCA)**

**BOS MEETING 22<sup>ND</sup> SEPTEMBER 2016**

**Signature of Participants**





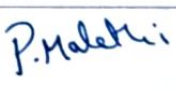
Sl. No	Category	Nomination of the Committee	Name of the Person	Signature
1	Professor and Head of the Department	Chairperson	Dr. L.Manjunatha . Rao Prof. & Head, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: manjuarjun2004@yahoo.com Mob: 9341214327	
2	Internal Faculty members with various specializations	Member-1	Dr. Chandrakanth. G. Pujari Associate Professor Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: varuncp@rediffmail.com Mob: 9845380013	
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		Member-2	Dr. Poornima Nataraja Prof & Head Dept. of M.C.A DSCE, Bangalore e-mail: hod-mcavtu@dayanandasagar.edu mob: 9901644101	
4	Experts from outside college nominated by VTU	Member	<i>Communicated to VTU</i>	

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**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
 (An Autonomous Institute, Affiliated to V T U, Belagavi)  
**Master of Computer Applications (MCA)**

**BOS MEETING 22<sup>ND</sup> SEPTEMBER 2016**

**Signature of Participants**

Sl. No.	Category	Nomination of the Committee	Name of the Person	Signature
5	Representative from industry/Corporate sector/allied area relating to placement nominated by academic council	Member-1	Mr. Ravinandan Temminova Technologies Private Ltd. Mahalakshmi Layout Bengaluru-86 Email:ravinandan.me@gmail.com Mob:9902000779	
6	Representative from industry/Corporate sector/allied area relating to placement nominated by academic council	Member-2	Mr. Babu Rao Senior Engineering Project Manager Aricent Technologies Bengaluru E mail:babu.damera@aricent.com Mob:	
7	Post graduate meritorious alumnus nominated by Principal	Member	Mr. Jaideep M.S Engagement Manager Avaali Solutions Pvt. Ltd. Bengaluru Email: jaideepms@avaali.com Mob: 9901925535	
8	Special Invitees	Member-1	Ms. Shobha Rani. B.R Associate Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: shobhakrishna8@gmail.com Mob: 9740098198	
		Member-2	Ms. Malathi. P Assistant Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: bfgcpm@rediffmail.com Mob: 7760880325	

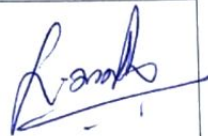
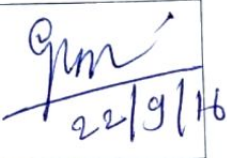

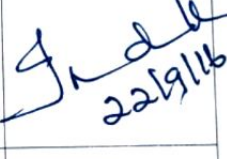
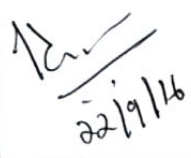


  
HOD

MASTER OF COMPUTER APPLICATIONS  
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 BANGALORE-560 056

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 (An Autonomous Institute, Affiliated to V T U, Belagavi)  
**Master of Computer Applications (MCA)**





Board of Studies meeting in MCA Course of Dr. Ambedkar Institute of Technology was held on 22<sup>th</sup> September 2016. at MCA Department, Dr. AIT campus, Bengaluru.

The following members were present in the meeting:

Category	Nomination of the Committee	Name of the Person	Signature
Head of the Department	Chairperson	Dr. L.Manjunatha . Rao Prof. & Head, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: manjuarjun2004@yahoo.com Mob: 9341214327	
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	Member-2	Dr. Poornima Nataraja Prof & Head Dept. of M.C.A DSCE, Bangalore e-mail: hod-mcavtu@dayanandasagar.edu mob: 9901644101	
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**Master of Computer Applications (MCA)**

Category	Nomination of the Committee	Name of the Person	Signature
Representative from industry/Corporate sector/allied area relating to placement nominated by academic council	Member-2	Mr. Babu Rao Senior Engineering Project Manager Aricent Technologies Bengaluru E mail:babu.damera@aricent.com Mob:	
Post graduate meritorious alumnus nominated by Principal	Member	Mr. Jaideep M.S Engagement Manager Avaali Solutions Pvt. Ltd. Bengaluru Email: jaideepms@avaali.com Mob: 9901925535	
8 Special Invitees	Member-1	Ms. Shobha Rani. B.R Associate Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: shobhakrishna8@gmail.com Mob: 9740098198	
	Member-2	Ms. Malathi. P Assistant Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: bfgcpm@rediffmail.com Mob: 7760880325	

  
 Chairman

HOD  
 MASTER OF COMPUTER APPLICATIONS  
 DR. AMBEDKAR INSTITUTE OF TECHNOLOGY  
 BANGALORE-560 056



**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
(An Autonomous Institute, Affiliated to V T U, Belagavi)  
Nationally Accredited by NAAC with 'A' Grade

**Master of Computer Applications Program**  
**Accredited by National Board of Accreditation**



**MCA I to VI semester Scheme**  
**(2016 – 2019)**



# **Dr. Ambedkar Institute of Technology, Bengaluru – 560056**

## **Master of Computer Applications**

### **Institute - Vision and Mission**

#### **VISION**

To create Dynamic, Resourceful, Adept and Innovative Technical professionals to meet global challenges.

#### **MISSION**

- To offer state-of-the-art undergraduate, postgraduate and doctoral programmes in the fields of Engineering, Technology and Management.
- To generate new knowledge by engaging faculty and students in research, development and innovation leading to newer knowledge.
- To provide strong theoretical foundation to the students, supported by extensive practical training to meet industry requirements.
- To install moral and ethical values with social and professional commitment

### **DEPARTMENT - VISION AND MISSION**

#### **VISION**

To create a quality human resource with good technical competence to face the global challenges.

#### **MISSION**

- To create a Center of Excellence through industry institute interaction.
- To prepare students for utilizing more creativity, innovativeness and leadership Qualities.
- To inculcate a sense of commitment to the students towards socio-economic development of the nation

## **Program Educational Objectives**

- **PEO 1:** Graduates are prepared to be employed in IT industries and be engaged in learning, understanding, and applying new ideas.
- **PEO 2:** Graduates are prepared to be employed in academics and research environment.
- **PEO 3:** To provide an opportunity to students to learn the latest trends in computer technology and make them ready for life-long learning process with leadership skills and corporate social responsibilities.

## **Program Outcomes:**

**PO 1:** Ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer based systems.

**PO 2:** Graduates will be able to demonstrate with excellent programming, analytical, logical and problem solving skills.

**PO 3:** Graduates will be able to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability.

**PO 4:** An ability to devise and conduct experiments, interpret data and provide well informed conclusions.

**PO 5:** An ability to select modern computing tools and techniques and use them with dexterity.

**PO 6:** An ability to function professionally with ethical responsibility as an individual as well as in multidisciplinary teams with positive attitude.

**PO 7:** An ability to appreciate the importance of goal setting and to recognize the need for life-long learning.

**PO 8:** Develop and maintain medium to large scale application software using theoretical and applied knowledge of software engineering and project management.

**PO 9:** An ability to communicate effectively.

**PO 10:** An ability to understand the impact of system solutions in a contemporary, global, economical, environmental, and societal context for sustainable development.

**PO 11:** An ability to execute the project either individually or in a group.

**PO 12:** An ability to become an Entrepreneur in the field of information technology to create a value and wealth for the betterment of the individual and society at large.

		<b>I Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorials</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
<b>MCA11</b>	<b>Data structures using C</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA12</b>	<b>Unix Programming</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA13</b>	<b>Web Technologies</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA14</b>	<b>Computer Organization</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA15</b>	<b>Discrete Mathematical Structures</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCAL16</b>	<b>Data structures using C Lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL17</b>	<b>Unix Programming Lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL18</b>	<b>Web Programming Lab</b>	<b>--</b>		<b>2</b>	<b>2</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

		<b>II Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
<b>MCA21</b>	<b>Python Programming</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA22</b>	<b>Object oriented programming using C++</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA23</b>	<b>Database Management Systems</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA24</b>	<b>Operating Systems</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA25</b>	<b>Professional Communication &amp; Ethics</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCAL26</b>	<b>Python Programming Lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL27</b>	<b>Object oriented programming using C++ lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL28</b>	<b>DBMS Lab</b>	<b>--</b>		<b>2</b>	<b>2</b>	<b>4</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

		<b>III Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Seminar</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
<b>MCA31</b>	<b>Computer Networks</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA32</b>	<b>Java Programming</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA33</b>	<b>Analysis and Design of Algorithms</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA34</b>	<b>Software Engineering</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA35</b>	<b>Elective -1</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCAL36</b>	<b>Computer Networks Lab</b>	<b>--</b>		<b>2</b>	<b>2</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL37</b>	<b>Java Programming Lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL38</b>	<b>Analysis and Design of Algorithms Lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

<b>ELECTIVE-1</b>	
<b>MCA351</b>	<b>Intellectual Property Rights</b>
<b>MCA352</b>	<b>Data Analysis using Spread Sheets</b>
<b>MCA353</b>	<b>Operations Researc</b>
<b>MCA354</b>	<b>Principles of User Interface Design</b>

		<b>IV Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
<b>MCA41</b>	<b>Advanced Java Programming</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA42</b>	<b>Software Testing and Practices</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA43</b>	<b>Advanced Web Programming</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA44</b>	<b>Elective-2</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA45</b>	<b>Management Elective-3</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCAL46</b>	<b>Advanced Java Programming Lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL47</b>	<b>Software Testing Lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL48</b>	<b>Advanced Web Programming Lab</b>	<b>--</b>		<b>2</b>	<b>2</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

<b>ELECTIVE—2</b>		<b>MANAGEMENT ELECTIVE-3</b>	
<b>MCA441</b>	<b>Data Warehousing &amp; Mining</b>	<b>MCA451</b>	<b>Software Project Management</b>
<b>MCA442</b>	<b>Artificial Intelligence</b>	<b>MCA452</b>	<b>Supply Chain Management</b>
<b>MCA443</b>	<b>Software Architecture</b>	<b>MCA453</b>	<b>Enterprise Resource Planning</b>
<b>MCA444</b>	<b>Machine Learning</b>	<b>MCA454</b>	<b>E-commerce and Management Information System</b>

		<b>V Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
<b>MCA51</b>	<b>Object-Oriented Modeling and Design Patterns</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA52</b>	<b>Programming Using C# &amp; .NET</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA53</b>	<b>Mobile Applications</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA54</b>	<b>Elective-4</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA55</b>	<b>Elective-5</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCAL56</b>	<b>Software Design Laboratory</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL57</b>	<b>.Net Laboratory</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL58</b>	<b>Mini Project : (Mobile Applications Development using Android/iOS/Windows etc.,)</b>	<b>--</b>		<b>2</b>	<b>2</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

ELECTIVE-4		ELECTIVE-5	
MCA541	Cloud Computing	MCA551	Storage Area Networks
MCA542	Web Engineering	MCA552	Mobile and Adhoc Networks
MCA543	Service Oriented Architecture	MCA553	Cyber Security
MCA544	Internet of things	MCA554	Big Data Analytics
MCA545	System Simulation & Modelling	MCA555	Software Defined Networks

VI Semester							
Subject Code	Name of the Subject	Internal	External	Dissertation Evaluation	Viva	Total Marks	Credits
MCA61	Research Methodology	30	70	-		100	2
MCAI62	Internship & Seminar	25(I)	-	50 (I)	25(I)	100	3
MCAP63	Project Work	50(I)	-	75(I) +75 (E)	100(I+E)	300	20
<b>Total</b>		<b>105</b>	<b>70</b>	<b>150</b>	<b>125</b>	<b>500</b>	<b>25</b>
<b>Grand Total (I to VI Semesters): 4500 Marks : 150 Credits</b>							
I : Internal Examiner							
E : External Examiner							



## **Guidelines:**

### **MCA61: Research Methodology**

- Students have to attend two hours of theory class on every Saturday for 26 hours.
- Students should pass both CIE and SEE theory examinations
- Students should submit an assignment as a part of CIE evaluation.
- Students should give a seminar presentation which will be a part of CIE evaluation

### **MCAI62: Internship**

- The students shall undergo an internship for 6 weeks during the vacation soon after the 5<sup>th</sup> semester SEE.
- The internship shall be carried out in industry/R&D labs or institution.
- The student should submit the internship report to the department
- The internship viva voce examination will be conducted by the internal examination panel for 25 marks.

### **MCAP63: Project Work**

#### **Synopsis**

- Synopsis of the project must be submitted before the end of the first month of 6<sup>th</sup> semester
- The synopsis of the project must include:
  - a) Problem formulation and literature survey.
  - b) Details of the required tools and technologies for the development of project.
  - c) Write up shall not exceed 15 pages.
- Internal assessment for synopsis presentation and evaluation of the synopsis by the internal examiner/guide is for 50 marks.

#### **Dissertation:**

- The project shall be carried out in the same institution or in industry/R&D labs based on

software tools and technologies learnt in MCA course/internship for minimum period of 16 weeks.

- Internal assessment shall be evaluated by the internal panel/guide for 50 marks.
- For continuous evaluation of project work by the internal examiner/guide with progress reports is for 50 marks and is evaluated at different phased of project work
- The internal examiners (Project Guide with at least 2 years of experience) and the external examiners shall be appointed by the authorities of the college for the final evaluation of the project.
- Internal and external examiners shall carry out the evaluation of Dissertation report for 75 marks individually.
- The project presentation and Viva-voce shall be evaluated jointly by both the internal and external examiners for 100 marks.
- The student should be encouraged to present/publish the part/outcome of the project as an article in the conferences/reputed journals.

**Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY, BENGALURU**  
**MASTER OF COMPUTER APPLICATIONS**

**BOARD OF STUDIES**

**Meeting Notice**

25-03-2017

The MCA department is conducting the Board of Studies meeting on 30th of March 2017 at 10.30 a.m. in the Department of MCA at Dr. AIT.

Agenda:

- Review of Curriculum

The board members are requested to make it convenient to attend the meeting and contribute your academic inputs.

  
HOD  
Dept: of Master of Computer Applications  
Dr. Ambedkar Institute of Technology  
Bangalore - 560 056.



**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
(An Autonomous Institute, Affiliated to V T U, Belagavi)  
**Master of Computer Applications (MCA)**

**MINUTES OF BOARD OF STUDIES MEETING – MCA BOARD**  
**VENUE : MCA Department**

30th March 2017.

The Board of Studies meeting in MCA Course of Dr. Ambedkar Institute of Technology was held on 30<sup>th</sup> of March 2017 in the Department of M.C.A., Dr. AIT Campus, Bengaluru.

The following are the members of BoS meeting

Sl. No	Category	Nomination of the Committee	Name of the Person
1	Head of the Department	Chairperson	Dr. L.Manjunatha . Rao Prof. & Head, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: manjuarjun2004@yahoo.com Mob: 9341214327
2.	Experts from outside college nominated by VTU	Member	Dr. K.S. Shreedhara. Professor Dept of Computer Science and Engineering UBDT College, Davanagere. Mob: 9448009306 Mailid: ks_shreedhara@yahoo.com
2	Internal Faculty members with various specializations	Member-1	Dr. Chandrakanth. G. Pujari Associate Professor Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: varuncp@rediffmail.com Mob: 9845380013
		Member-2	Dr. Bharathi.S Associate Professor Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: bharathishivu_s@yahoo.co.in Mob: 9902084476
		Member-3	Dr. Indumathi. S. K Associate Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: indukarthik2009@yahoo.in Mob: 9739910995
3	Subject Experts from outside the college nominated by academic council	Member-1	Dr. Kavya. N. P Prof & Head Dept. of M.C.A RNSIT, Bangalore e-mail: npkavya@yahoo.com mob: 9945275345
		Member-2	Dr. Poornima Nataraj Prof & Head Dept. of M.C.A DSCE, Bangalore e-mail: hod-mcavtu@dayanandasagar.edu mob: 9901644101

Sl. No	Category	Nomination of the Committee	Name of the Person
4	Representative from industry/Corporate sector/allied area relating to placement nominated by academic council	Member-1	Mr. Ravinandan Temminova Technologies Private Ltd. Mahalakshmi Layout Bengaluru-86 Email:ravinandan.me@gmail.com Mob:9902000779
5	Representative from industry/Corporate sector/allied area relating to placement nominated by academic council	Member-2	Mr. Babu Rao Senior Engineering Project Manager Aricent Technologies Bengaluru E mail:babu.damera@aricent.com Mob:
6	Post graduate meritorious alumnus nominated by Principal	Member	Mr. Bhaskar Assistant Professor Maharanis Science College Palace Road, Bengaluru-1. Mob:9845382114
7	Special Invitees	Member-1	Ms. Shobha Rani. B.R Associate Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: shobhakrishna8@gmail.com Mob: 9740098198
		Member-2	Ms. Malathi. P Assistant Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: bfgcpm@rediffmail.com Mob: 7760880325

The Board of Studies recommends the syllabus for MCA Programme for the academic year 2017-18 with the following suggestions through deliberations:

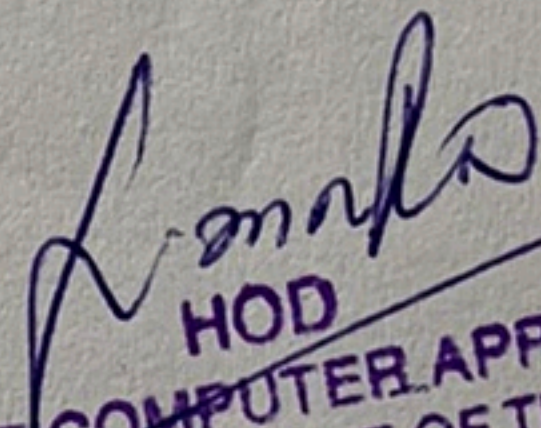
1. Proposed the detailed syllabus for all 6 semesters of MCA program as per CBCS from the academic year 2016 - 2017 by finalizing the core and elective subjects with respect to current industry and all stake holders' requirements (as per the guide lines of ACM, IEEE - Computer Society of India and NBA).
2. the syllabus has been framed with equal weightage of credits to the three components: core academics, industry requirement, and research orientation
3. Electives are offered in the light of new advancements in the field of information technology.
4. Proposed credit weightage for various components like lectures, tutorials, practicals, seminars, mini project and Major project for each course.
5. Credits for curriculum components in Master of Computer Applications programme are allotted (mathematics, management, humanities, professional core, electives, project work, and seminar) as per VTU guidelines.
6. Proposed the Scheme of Teaching and Examination for all six semesters of MCA programme.
7. Proposed the Course Outcomes (COs) as per the Outcome Based Education of NBA.
8. The BoS has recommended the detailed syllabus, rules and regulations, scheme of teaching and examination for all the six semesters.
9. The BoS suggested to have a discussion with faculty members who had handled I semester to understand the difficulties if any in the syllabus or lab conduction.
10. The BoS made the following recommendations

- 2 hours of lab session and 1 hour of tutorial for a computer networks (MCA31) totaling to 2 credits in semester 3.
- ADA(MCA33) will have a credit of 1.5
- Exclusive seminar component to be removed in the III semester
- Elective Fuzzy Logic to be replaced with Artificial Intelligence (MCA442)
- Machine Learning (MCA444) can be introduced as an elective
- Fuzzy Logic can be merged within Machine Learning (MCA444) and can be introduced as a pre-requisite for Internet of Things (MCA544).
- Software Design Lab (MCAL56) can have 1.5 credits and 2 credits for Mobile Applications
- Internship and seminar (MCA62) marks to be increased to 100
- Project Work Dissertation (MCA63) will be evaluated for 150 marks in the external
- Project Work (MCA63) viva will be evaluated for 100 marks

11. The BoS has recommended the I to VI semester MCA syllabus

12. The Syllabus was finalized by incorporating all the suggestions made by the honorable members.

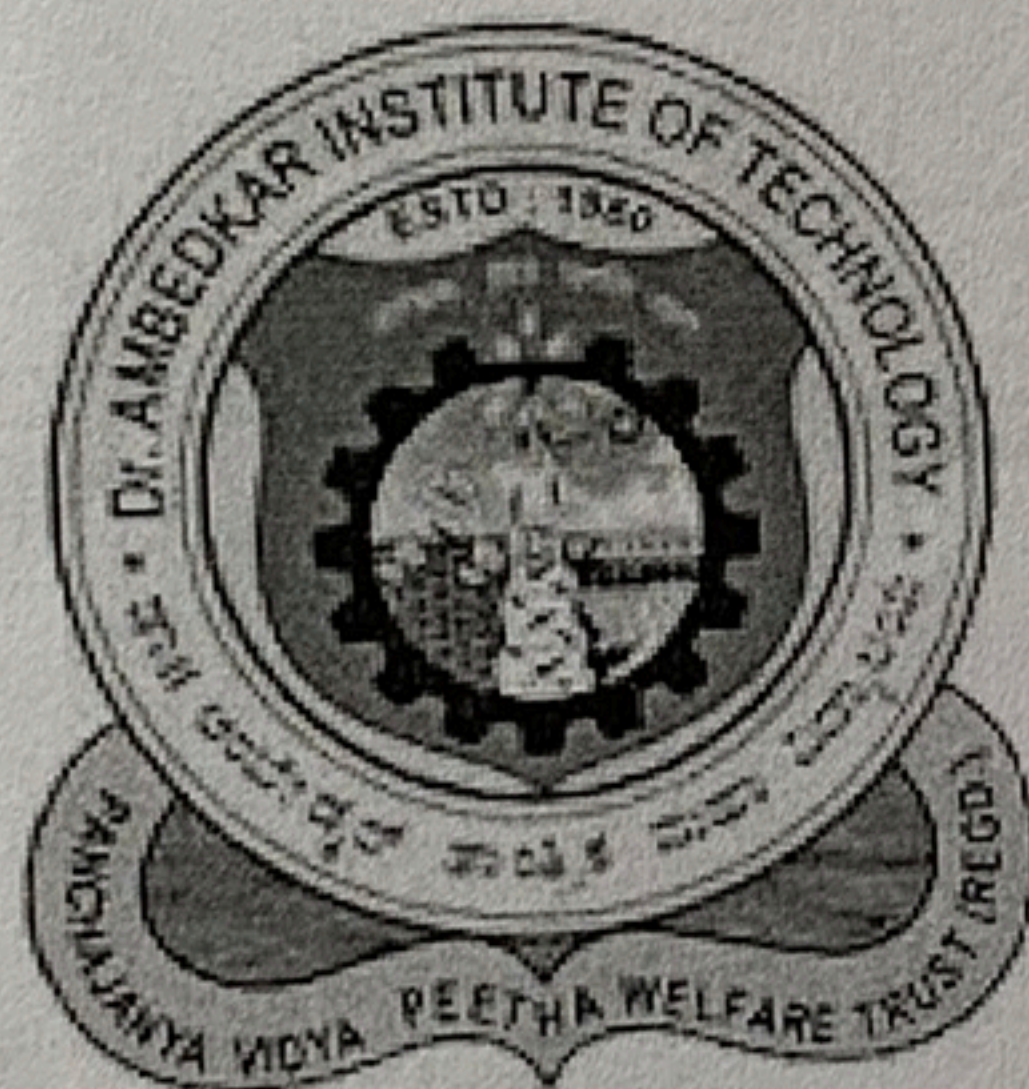
The BoS meeting was concluded with vote of thanks address by the chairman.

  
 HOD  
 MASTER OF COMPUTER APPLICATIONS  
 Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY  
 BANGALORE-560 056

**Dr. Ambedkar Institute of Technology,  
Bengaluru-56**

**(An Autonomous Institute, Affiliated to VTU, Belagavi)**

**Master of Computer Applications (Autonomous)**



Aided By Govt. of Karnataka

**MCA Syllabus (2016 – 2019)**

Subject Code	Name of the Subject	I Semester							
		Credits			Total Credits	Exam Duration in Hours	Marks		Total Marks
		Lecture	Tutorial	Practicals			CIE	SEE	
MCA11	Data structures using C	4	--	-	4	3	30	70	100
MCA12	Unix Programming	4	--	-	4	3	30	70	100
MCA13	Web Technologies	4	--	-	4	3	30	70	100
MCA14	Computer Organization	4	--	-	4	3	30	70	100
MCA15	Discrete Mathematical Structures	4	--	-	4	3	30	70	100
MCAL16	Data structures using C Lab	--		1.5	1.5	3	50	50	100
MCAL17	Unix Programming Lab	--		1.5	1.5	3	50	50	100
MCAL18	Web Programming Lab	--		2	2	3	50	50	100
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

Nonth

Pruthimala  
30/3/17

Heer  
30/3/17  
(Dr. Shreeharan K.S.)

Har  
30/3/17

in  
30/3/17

Asphast  
30/3

Bharathi  
30/3/17

Shubh@amio

P. Malini  
30/3/17



Subject Code	Name of the Subject	II Semester							
		Credits				Exam Duration in Hours	Marks		Total Marks
		Lecture	Tutorial	Practicals	Total Credits		CIE	SEE	
MCA21	Python Programming	4	--	-	4	3	30	70	100
MCA22	Object oriented programming using C++	4	--	-	4	3	30	70	100
MCA23	Database Management Systems	4	--	-	4	3	30	70	100
MCA24	Operating Systems	4	--	-	4	3	30	70	100
MCA25	Professional Communication & Ethics	4	--	-	4	3	30	70	100
MCAL26	Python Programming Lab	--		2	2	3	50	50	100
MCAL27	Object oriented programming using C++ lab	--		1.5	1.5	3	50	50	100
MCAL28	DBMS Lab	--		1.5	1.5	3	50	50	100
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

*Ranish*  
*Prasanna* 30/3/17  
*Pranav* 30/3/17  
*Prashant* 30/3  
*Prashant* 30/3/17  
*P. Mohan* 30/3/17  
*Dr. K. S.*  
*Shubham*

Subject Code	Name of the Subject	III Semester							
		Credits			Total Credits	Exam Duration in Hours	Marks		Total Marks
		Lecture	Seminar	Practicals			CIE	SEE	
MCA31	Computer Networks	4	--	-	4	3	30	70	100
MCA32	Java Programming	4	--	-	4	3	30	70	100
MCA33	Analysis and Design of Algorithms	4	--	-	4	3	30	70	100
MCA34	Software Engineering	4	--	-	4	3	30	70	100
MCA35	Elective -1	4	--	-	4	3	30	70	100
MCAL36	Computer Networks Lab	--		2	2	3	50	50	100
MCAL37	Java Programming Lab	--		1.5	1.5	3	50	50	100
MCAL38	Analysis and Design of Algorithms Lab	--		1.5	1.5	3	50	50	100
MCAS39	Seminar on ICT		1		1	-	50	-	50
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

*Kondra*  
*Prasanna* 30/3/17  
*Imi* 30/3/17  
*Shruthi* 30/3/17  
*Ushasha* 30/3  
*Subhanshu*  
*P. Melebrini* 30/3/17.

ELECTIVE-1	
MCA351	Intellectual Property Rights
MCA352	Cyber Security
MCA353	Operations Research
MCA354	Data Analysis using Spread Sheets

Anand

Poojima  
30/3/17

Thiruv  
30/3/17

Shank  
30/3

Jeeva  
30/3/17

BT  
30/3/17

gmi  
30/3/17

Indu

Shubh@anu

P. Malini  
30/3/17

IV Semester

Subject Code	Name of the Subject	Credits				Exam Duration in Hours	Marks		Total Marks
		Lecture	Tutorial	Practicals	Total Credits		CIE	SEE	
MCA42	Software Testing and Practices	4	--	-	4	3	30	70	100
MCA43	Advanced Web Programming	4	--	-	4	3	30	70	100
MCA44	Elective-2	4	--	-	4	3	30	70	100
MCA45	Management Elective-3	4	--	-	4	3	30	70	100
MCAL46	Advanced Java Programming Lab	--		2	2	3	50	50	100
MCAL47	Software Testing Lab	--		1.5	1.5	3	50	50	100
MCAL48	Web based Mini Project-1	--		1.5	1.5	3	50	50	100
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

ELECTIVE-2		MANAGEMENT ELECTIVE-3	
MCA441	Data Warehousing & Mining	MCA451	Software Project Management
MCA442	Artificial Intelligence	MCA452	Supply Chain Management
MCA443	Software Architecture	MCA453	Enterprise Resource Planning
MCA444	Machine Learning	MCA454	E-commerce and Management Information System

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Subject Code	Name of the Subject	VI Semester					Credits
		Internal	External	Dissertation Evaluation	Viva	Total Marks	
MCA61	Research Methodology	30	70	-		100	2
MCA62	Internship & Seminar	100	-			100	3
MCA63	Project Work	50	-				
Total		180	70	150	100	300	20
Grand Total (I to VI Semesters):		4500 Marks : 150 Credits		150	100	500	25

## Guidelines:

### MCA61: Research Methodology

- Every week students have to attend two hrs class on research methodology.
- Student should pass the subject at the end of the semester.

### MCA62: Internship

- The students shall undergo internship for 6 weeks during the vacation immediately after the 5<sup>th</sup> semester examination.
- The internship shall be carried out in industry/R&D labs or institutions.
- Internship should be presented along with the report by the end of 6 weeks and shall be evaluated by the internal panel for 100 marks.
- Student should give a seminar on the internship topic.

### MCA63: Project Work

#### Synopsis

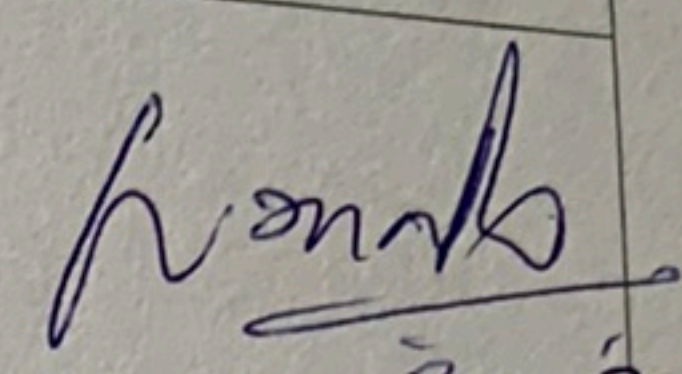
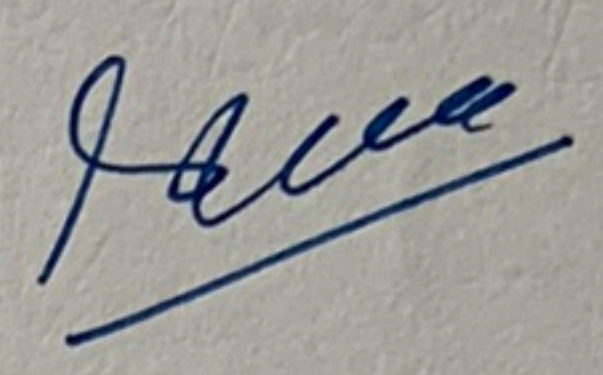
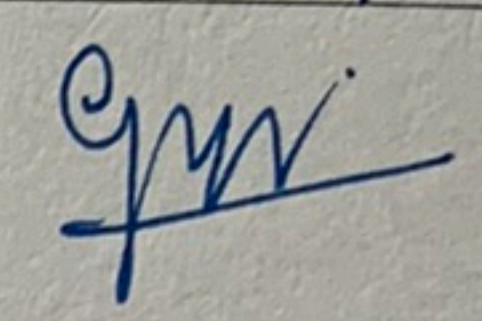
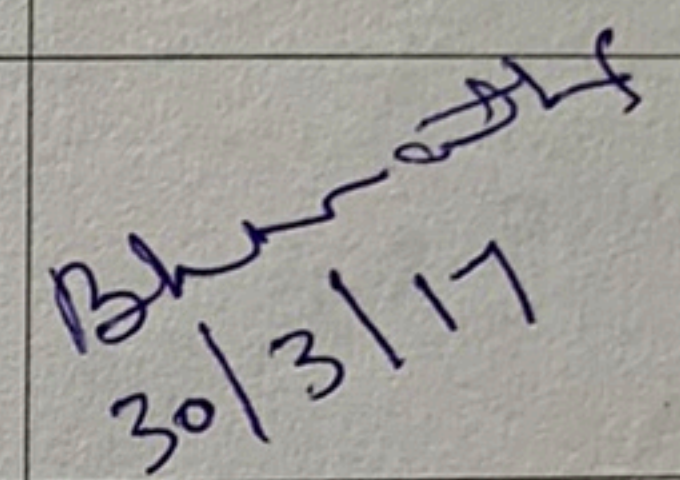
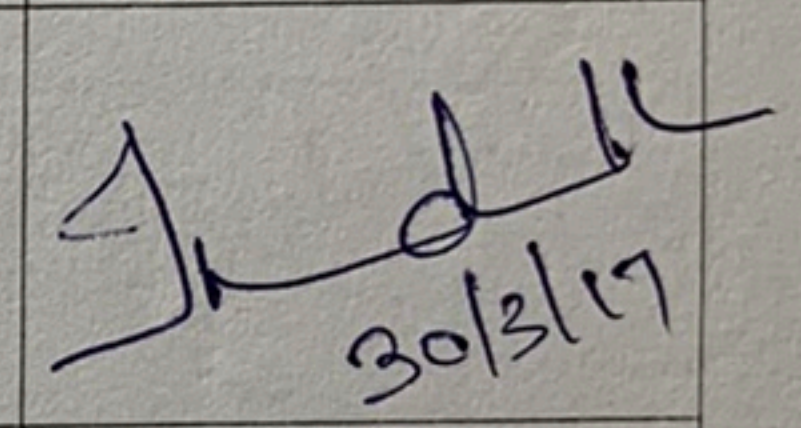
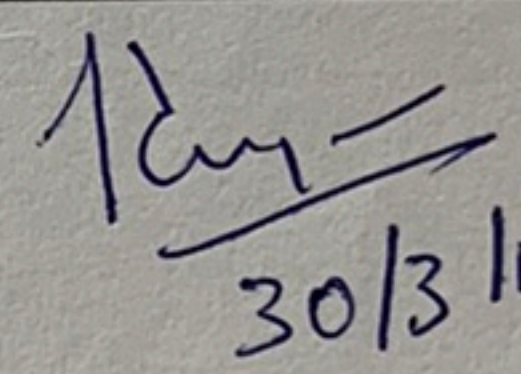
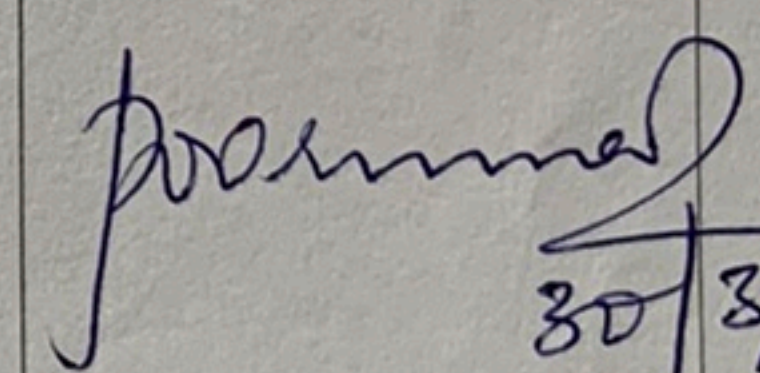
- Synopsis of the project must be submitted before the end of the first month of 6<sup>th</sup> semester
- The synopsis of the project must include:
  - a) Problem formulation and literature survey.
  - b) Details of the required tools and technologies for the development of project.
  - c) Write up shall not exceed 15 pages.
- Internal assessment for synopsis presentation and evaluation of the synopsis by the internal examiner/guide is for 50 marks.

Dr. AIT, MCA Syllabus (2016-19)

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 30/3/17



**Signature of Participants**

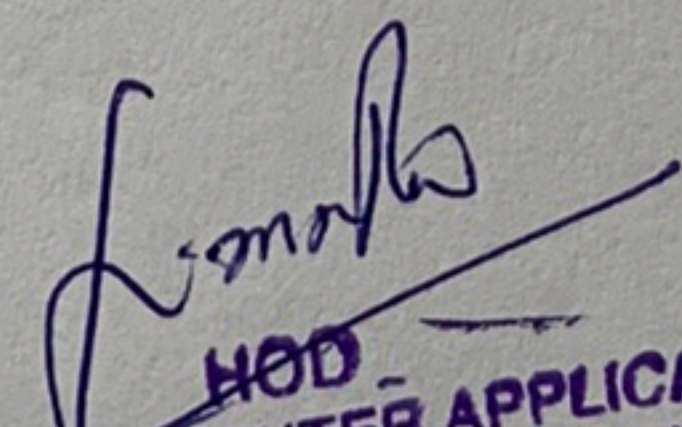
Sl. No	Category	Nomination of the Committee	Name of the Person	Signature
1	Professor and Head of the Department	Chairperson	Dr. L.Manjunatha . Rao Prof. & Head, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: manjuarjun2004@yahoo.com Mob: 9341214327	 30.3.17
2	Experts from outside college nominated by VTU	Member	Dr. K.S. Shreedhara Professor Dept of Computer Science and Engineering UBDT College, Davanagere Mob: 9448009306 Mailid: ks_shreedhara@yahoo.com	
3	Internal Faculty members with various specializations	Member-1	Dr. Chandrakanth. G. Pujari Associate Professor Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: varuncp@rediffmail.com Mob: 9845380013	
		Member-2	Dr. Bharathi.S Associate Professor Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: bharathishivu_s@yahoo.co.in Mob: 9902084476	 30/3/17
		Member-3	Dr. Indumathi. S. K Associate Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: indukarthik2009@yahoo.in Mob: 9739910995	 30/3/17
4	Subject Experts from outside the college nominated by academic council	Member-1	Dr. Kavya. N. P Prof & Head Dept. of M.C.A RNSIT, Bangalore e-mail: npkavya@yahoo.com mob: 9945275345	 30/3/17
		Member-2	Dr. Poornima Nataraja Prof & Head Dept. of M.C.A DSCE, Bangalore e-mail: hod-mcavtu@dayanandasagar.edu mob: 9901644101	 30/3/17



**BOARD OF STUDIES MEETING – MCA BOARD**

**Signature of Participants**

Sl. No	Category	Nomination of the Committee	Name of the Person	Signature
5	Representative from industry/Corporate sector/allied area relating to placement nominated by academic council	Member-1	Mr. Ravinandan Temminova Technologies Private Ltd. Mahalakshmi Layout Bengaluru-86 Email:ravinandan.me@gmail.com Mob:9902000779	<i>Absent</i>
6	Representative from industry/Corporate sector/allied area relating to placement nominated by academic council	Member-2	Mr. Babu Rao Senior Engineering Project Manager Aricent Technologies Bengaluru E mail:babu.damera@aricent.com Mob:	<i>Absent</i>
7	Post graduate meritorious alumnus nominated by Principal	Member	Mr. Bhaskar . H.S Assistant Professor Maharanis Science College Palace Road, Bengaluru-1 Mob:9845382114	<i>Bhaskar</i>
8	Special Invitees	Member-1	Ms. Shobha Rani. B.R Associate Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: shobhakrishna8@gmail.com Mob: 9740098198	<i>Shobha Rani</i>
		Member-2	Ms. Malathi. P Assistant Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: bfgcpm@rediffmail.com Mob: 7760880325	<i>P. Malathi</i>

  
**HOD**  
**MASTER OF COMPUTER APPLICATIONS**  
**Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY**  
**BANGALORE-560 056**



**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
(An Autonomous Institute, Affiliated to V T U, Belagavi)  
Nationally Accredited by NAAC with 'A' Grade

**Master of Computer Applications Program**  
**Accredited by National Board of Accreditation**



**MCA I to VI semester Scheme**  
**(2016 – 2019)**

# **Dr. Ambedkar Institute of Technology, Bengaluru – 560056**

## **Master of Computer Applications**

### **Institute - Vision and Mission**

#### **VISION**

To create Dynamic, Resourceful, Adept and Innovative Technical professionals to meet global challenges.

#### **MISSION**

- To offer state-of-the-art undergraduate, postgraduate and doctoral programmes in the fields of Engineering, Technology and Management.
- To generate new knowledge by engaging faculty and students in research, development and innovation leading to newer knowledge.
- To provide strong theoretical foundation to the students, supported by extensive practical training to meet industry requirements.
- To install moral and ethical values with social and professional commitment

### **DEPARTMENT - VISION AND MISSION**

#### **VISION**

To create a quality human resource with good technical competence to face the global challenges.

#### **MISSION**

- To create a Center of Excellence through industry institute interaction.
- To prepare students for utilizing more creativity, innovativeness and leadership Qualities.
- To inculcate a sense of commitment to the students towards socio-economic development of the nation

## **Program Educational Objectives**

- **PEO 1:** Graduates are prepared to be employed in IT industries and be engaged in learning, understanding, and applying new ideas.
- **PEO 2:** Graduates are prepared to be employed in academics and research environment.
- **PEO 3:** To provide an opportunity to students to learn the latest trends in computer technology and make them ready for life-long learning process with leadership skills and corporate social responsibilities.

## **Program Outcomes:**

**PO 1:** Ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer based systems.

**PO 2:** Graduates will be able to demonstrate with excellent programming, analytical, logical and problem solving skills.

**PO 3:** Graduates will be able to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability.

**PO 4:** An ability to devise and conduct experiments, interpret data and provide well informed conclusions.

**PO 5:** An ability to select modern computing tools and techniques and use them with dexterity.

**PO 6:** An ability to function professionally with ethical responsibility as an individual as well as in multidisciplinary teams with positive attitude.

**PO 7:** An ability to appreciate the importance of goal setting and to recognize the need for life-long learning.

**PO 8:** Develop and maintain medium to large scale application software using theoretical and applied knowledge of software engineering and project management.

**PO 9:** An ability to communicate effectively.

**PO 10:** An ability to understand the impact of system solutions in a contemporary, global, economical, environmental, and societal context for sustainable development.

**PO 11:** An ability to execute the project either individually or in a group.

**PO 12:** An ability to become an Entrepreneur in the field of information technology to create a value and wealth for the betterment of the individual and society at large.

		<b>I Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
<b>MCA11</b>	<b>Data structures using C</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA12</b>	<b>Unix Programming</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA13</b>	<b>Web Technologies</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA14</b>	<b>Computer Organization</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA15</b>	<b>Discrete Mathematical Structures</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCAL16</b>	<b>Data structures using C Lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL17</b>	<b>Unix Programming Lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL18</b>	<b>Web Programming Lab</b>	<b>--</b>		<b>2</b>	<b>2</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

		<b>II Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
<b>MCA21</b>	<b>Python Programming</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA22</b>	<b>Object oriented programming using C++</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA23</b>	<b>Database Management Systems</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA24</b>	<b>Operating Systems</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA25</b>	<b>Professional Communication &amp; Ethics</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCAL26</b>	<b>Python Programming Lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL27</b>	<b>Object oriented programming using C++ lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL28</b>	<b>DBMS Lab</b>	<b>--</b>		<b>2</b>	<b>2</b>	<b>4</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

		<b>III Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Seminar</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
<b>MCA31</b>	<b>Computer Networks</b>	4	--	-	4	3	30	70	100
<b>MCA32</b>	<b>Java Programming</b>	4	--	-	4	3	30	70	100
<b>MCA33</b>	<b>Analysis and Design of Algorithms</b>	4	--	-	4	3	30	70	100
<b>MCA34</b>	<b>Software Engineering</b>	4	--	-	4	3	30	70	100
<b>MCA35</b>	<b>Elective -1</b>	4	--	-	4	3	30	70	100
<b>MCAL36</b>	<b>Computer Networks Lab</b>	--		2	2	3	50	50	100
<b>MCAL37</b>	<b>Java Programming Lab</b>	--		1.5	1.5	3	50	50	100
<b>MCAL38</b>	<b>Analysis and Design of Algorithms Lab</b>	--		1.5	1.5	3	50	50	100
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

<b>ELECTIVE-1</b>	
<b>MCA351</b>	<b>Intellectual Property Rights</b>
<b>MCA352</b>	<b>Data Analysis using Spread Sheets</b>
<b>MCA353</b>	<b>Operations Research</b>
<b>MCA354</b>	<b>Principles of User Interface Design</b>

		<b>IV Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
<b>MCA41</b>	<b>Advanced Java Programming</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA42</b>	<b>Software Testing and Practices</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA43</b>	<b>Advanced Web Programming</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA44</b>	<b>Elective-2</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA45</b>	<b>Management Elective-3</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCAL46</b>	<b>Advanced Java Programming Lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL47</b>	<b>Software Testing Lab</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL48</b>	<b>Advanced Web Programming Lab</b>	<b>--</b>		<b>2</b>	<b>2</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>



<b>ELECTIVE—2</b>		<b>MANAGEMENT ELECTIVE-3</b>	
<b>MCA441</b>	<b>Data Warehousing &amp; Mining</b>	<b>MCA451</b>	<b>Software Project Management</b>
<b>MCA442</b>	<b>Artificial Intelligence</b>	<b>MCA452</b>	<b>Supply Chain Management</b>
<b>MCA443</b>	<b>Software Architecture</b>	<b>MCA453</b>	<b>Enterprise Resource Planning</b>
<b>MCA444</b>	<b>Machine Learning</b>	<b>MCA454</b>	<b>E-commerce and Management Information System</b>

		<b>V Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorials</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
<b>MCA51</b>	<b>Object-Oriented Modeling and Design Patterns</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA52</b>	<b>Programming Using C# &amp; .NET</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA53</b>	<b>Mobile Applications</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA54</b>	<b>Elective-4</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCA55</b>	<b>Elective-5</b>	<b>4</b>	<b>--</b>	<b>-</b>	<b>4</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>
<b>MCAL56</b>	<b>Software Design Laboratory</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL57</b>	<b>.Net Laboratory</b>	<b>--</b>		<b>1.5</b>	<b>1.5</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>MCAL58</b>	<b>Mini Project : (Mobile Applications Development using Android/iOS/Windows etc.)</b>	<b>--</b>		<b>2</b>	<b>2</b>	<b>3</b>	<b>50</b>	<b>50</b>	<b>100</b>
<b>Total</b>		<b>20</b>	<b>-</b>	<b>5</b>	<b>25</b>	<b>24</b>	<b>300</b>	<b>500</b>	<b>800</b>

<b>ELECTIVE-4</b>		<b>ELECTIVE-5</b>	
<b>MCA541</b>	<b>Cloud Computing</b>	<b>MCA551</b>	<b>Storage Area Networks</b>
<b>MCA542</b>	<b>Web Engineering</b>	<b>MCA552</b>	<b>Mobile and Adhoc Networks</b>
<b>MCA543</b>	<b>Service Oriented Architecture</b>	<b>MCA553</b>	<b>Cyber Security</b>
<b>MCA544</b>	<b>Internet of things</b>	<b>MCA554</b>	<b>Big Data Analytics</b>
<b>MCA545</b>	<b>System Simulation &amp; Modelling</b>	<b>MCA555</b>	<b>Software Defined Networks</b>

## VI Semester

Subject Code	Name of the Subject	Internal	External	Dissertation Evaluation	Viva	Total Marks	Credits
MCA61	Research Methodology	30	70	-		100	2
MCAI62	Internship & Seminar	25(I)	-	50 (I)	25(I)	100	3
MCAP63	Project Work	50(I)	-	75(I) +75 (E)	100(I+E)	300	20
<b>Total</b>		<b>105</b>	<b>70</b>	<b>150</b>	<b>125</b>	<b>500</b>	<b>25</b>
<b>Grand Total (I to VI Semesters): 4500 Marks : 150 Credits</b>							
<b>I : Internal Examiner</b>							
<b>E : External Examiner</b>							

### Guidelines:

#### **MCA61: Research Methodology**

- Students have to attend two hours of theory class on every Saturday for 26 hours.
- Students should pass both CIE and SEE theory examinations
- Students should submit an assignment as a part of CIE evaluation.
- Students should give a seminar presentation which will be a part of CIE evaluation

#### **MCAI62: Internship**

- The students shall undergo an internship for 6 weeks during the vacation soon after the 5<sup>th</sup> semester SEE.
- The internship shall be carried out in industry/R&D labs or institution.
- The student should submit the internship report to the department

- The internship viva voce examination will be conducted by the internal examination panel for 25 marks.

## **MCAP63: Project Work**

### **Synopsis**

- Synopsis of the project must be submitted before the end of the first month of 6<sup>th</sup> semester
- The synopsis of the project must include:
  - a) Problem formulation and literature survey.
  - b) Details of the required tools and technologies for the development of project.
  - c) Write up shall not exceed 15 pages.
- Internal assessment for synopsis presentation and evaluation of the synopsis by the internal examiner/guide is for 50 marks.

### **Dissertation:**

- The project shall be carried out in the same institution or in industry/R&D labs based on software tools and technologies learnt in MCA course/internship for minimum period of 16 weeks.
- Internal assessment shall be evaluated by the internal panel/guide for 50 marks.
- For continuous evaluation of project work by the internal examiner/guide with progress reports is for 50 marks and is evaluated at different phased of project work
- The internal examiners (Project Guide with at least 2 years of experience) and the external examiners shall be appointed by the authorities of the college for the final evaluation of the project.
- Internal and external examiners shall carry out the evaluation of Dissertation report for 75 marks individually.
- The project presentation and Viva-voce shall be evaluated jointly by both the internal and external examiners for 100 marks.
- The student should be encouraged to present/publish the part/outcome of the project as an article in the conferences/reputed journals.



**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
(An Autonomous Institute, Affiliated to VTU, Belagavi)

**Master of Computer Applications Program**  
(Accredited by National Board of Accreditation)



Aided By Govt. of Karnataka

2018-19 (BOS)

**MCA Syllabus**



**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
(An Autonomous Institute, Affiliated to V T U, Belagavi)

**Master of Computer Applications (MCA) Program**  
(Accredited by National Board of Accreditation)

**MINUTES OF BOARD OF STUDIES MEETING – MCA BOARD**

**VENUE : MCA Department**

19<sup>th</sup> June 2018

The Board of Studies meeting of MCA Program at Dr. Ambedkar Institute of Technology was held on 19<sup>th</sup> of June 2018 in the Department of M.C.A., Dr. AIT Campus, Bengaluru - 560056.

The following are the members of BoS meeting:

Sl. No	Category	Nomination of the Committee	Name of the Person
1	Head of the Department	Chairperson	<b>Dr. L.Manjunatha Rao</b> Prof. & Head, Dept. of M.C.A Dr. A.I.T,Bangalore-56 9341214327 manjuarjun2004@yahoo.com
2.	Experts from outside college nominated by VTU	Member	<b>Dr. K.S. Shreedhara</b> Professor Dept of Computer Science and Engineering UBDT College, Davanagere. 9448009306 ks_shreedhara@yahoo.com
3.	Internal Faculty members with various specializations	Member-1	<b>Dr. Bharathi.S</b> Professor (CAS) Dept. of M.C.A Dr. A.I.T,Bangalore-56 Mob: 9902084476 bharathishivus@yahoo.co.in

Sl. No	Category	Nomination of the Committee	Name of the Person
	Internal Faculty members with various specializations	Member-2	<b>Dr. Chandrakanth. G. Pujari</b> Associate Professor Dept. of M.C.A Dr. A.I.T,Bangalore-56 9845380013 varuncp@rediffmail.com
		Member-3	<b>Dr. Indumathi. S. K</b> Associate Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 9739910995 indukarthik2009@yahoo.in
		Member-4	<b>Dr. Dharani N V</b> Assistant Professor, Dept. of M.C.A Dr. A.I.T,Bangalore-56 9739910995 dharanimanoj@gmail.com
4.	Subject Experts from outside the college nominated by academic council	Member-1	<b>Dr. Hanumanthappa . M</b> Professor & Chairman, Department of Computer Science & Applications, Bangalore University, Bangalore 56. Ph:9448819017, 080-22961451
		Member-2	<b>Dr. Daya Sagar</b> Professor Systems Science and Informatics Unit, Indian Statistical Institute- Bangalore Centre, Bengaluru 9880893291 bsdsagar@isibang.ac.in



Sl. No	Category	Nomination of the Committee	Name of the Person
5.	Representative from industry/Corporate sector/allied area relating to placement nominated by academic council	Member-1	<b>Mr. Purushotham B</b> Technical Training Head Mahindra Comviva Bangalore 9980643711 utham74@gmail.com
6.	Representative from industry/Corporate sector/allied area relating to placement nominated by academic council	Member-2	<b>Mr. Chandrashekar Aithal</b> Technical Lead, J.P. Morgan Chase Bangalore 9008059555 aithalchandra@gmail.com
7.	Post graduate meritorious alumnus nominated by Principal	Member	<b>Mr. Pradeep</b> MDM Developer Groove Software Pvt. Ltd Bangalore 7204265665 Prad.trilok@gmail.com
8.	Special Invitees	Member-1	<b>Ms. Malathi. P</b> Assistant Professor, Dept. of M.C.A Dr. A.I.T, Bangalore-56 Mob: 7760880325 bfgcpm@rediffmail.com
		Member-2	<b>Ms. Shailaja L K</b> Assistant Professor Dept. of MCA, Dr. AIT, Bengaluru- 56 Mob: 9739006255 shailaja_lk@yahoo.co.in

### Minutes of BoS Meeting

The chairman welcomed all the member of BoS and introduced each one of them to the panel.

- The chairman shared that the MCA Department has been accredited by NBA. The members of BoS congratulated the department for obtaining NBA accreditation. The chairman explained the significance of NBA accreditation to the members.
- The members reviewed the vision and mission of the department. They have recommended the vision and mission as it is, which is mapping with the institution mission and vision.

**The Board of Studies recommended the syllabus for MCA Programme for the academic year 2018-19 with the following suggestions through deliberations:**

1. Proposed the detailed syllabus for all 6 semesters of MCA program as per CBCS from the academic year 2018 - 2019 by finalizing the core and elective subjects with respect to current industry and all stake holders' requirements (as per the guide lines of ACM, IEEE - Computer Society of India and NBA).
2. Proposed the detailed syllabus for V and VI semesters of MCA program of 2016-19 scheme as per CBCS for the academic year 2018 - 2019 and proposed few suggestions.
3. Proposed the detailed syllabus for all 4 semesters of MCA Direct Program (Two-year program) as per CBCS from the academic year 2018 - 2019 by finalizing the core and elective subjects with respect to current industry and all stake holders' requirements (as per the guide lines of ACM, IEEE - Computer Society of India and NBA).
4. The BoS suggested to introduce the elective Cyber Security (MCA553) instead of Distributed Computing (MCA553).
5. The syllabus has been framed with equal weightage of credits to the three components: core academics, industry requirements, and research orientation.
6. Electives are offered in the light of new advancements in the field of information technology.
7. Proposed credit weightage for various components like lectures, tutorials, practicals, seminars, mini projects and Major project for each course.
8. Credits for curriculum components in Master of Computer Applications programme are allotted (mathematics, management, humanities, professional core, electives, project work, and seminar) as per VTU guidelines.
9. Proposed the Scheme of Teaching and Examination for all six/four semesters of MCA programme.
10. Proposed the Course Outcomes (COs) as per the Outcome Based Education of NBA.
11. The BoS has recommended the detailed syllabus, rules and regulations, scheme of teaching and examination for the fifth and sixth semesters of 2016-19 scheme.
  - I. Suggested the board to advise the students to deploy the projects in cloud with Azure or Microsoft cloud tools

- II. Professional Development and leadership skills should be imbibed by students through seminars for achieving lifelong learning skills.
- III. The members advised to include more lab sessions while handling mobile applications
- IV. Mini project can be a mobile application deployed in cloud
- V. The members advised to make the students to publish the sixth semester projects in selected and reputed journals

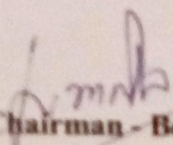
12. The BoS has recommended the detailed syllabus, rules and regulations, scheme of teaching and examination for V and VI semesters of 2018-21 scheme

- I. Suggested that mobile applications to be lab-based subject
- II. Introduce Devops as an elective. And also it was suggested to invite a resource person from industry to provide a talk on the industry expectations of Devops
- III. The I semester subjects to be renamed as Linux Programming, OOPs using C++, Web Technologies, Discrete Mathematical Structures.
- IV. Members suggested to include the concepts of Tuples, Strings, Databases in Python Programming
- V. NOSQL Database to replace with Advanced DBMS and include MongoDB
- VI. To replace Software Engineering with Advanced Software Engineering and include two modules of agile technology, SCRUM, RAD
- VII. Web Engineering to include REST, SOAP, JSON
- VIII. Networks lab to be based on virtualization or packet analyzer tools
- IX. To include an elective for practicing aptitude and soft skills and to mentor students to handle aptitude and soft skill techniques as seminars to improve recruitment process
- X. Advanced Web Programming to include PHP, JQuery and Angular
- XI. Software Testing and Practice to have selenium with webdrivers, Cucumbers, Citrus for BDD, TDD
- XII. Service Oriented Architecture to be replaced by Devops
- XIII. Introduce Machine Learning as an elective instead of Cloud Computing
- XIV. An elective on Cyberlaws and CyberSecurity to be included as per the advice of the GOI
- XV. The BoS committee recommended for final approval of MCA syllabus

- A) MCA V and VI Semesters of 2016-2019 scheme.
- B) MCA I - IV semesters of 2018-2020 scheme of MCA Two-years Direct Program
- C) MCA I - VI semesters of 2018-2021 scheme of MCA program

13. The Syllabus was finalized by incorporating all the suggestions

**The BoS meeting was concluded with vote of thanks address by the chairman.**

  
**Chairman - BoS**

# **Dr. Ambedkar Institute of Technology, Bengaluru-56**

(An Autonomous Institute, Approved by AICTE, Affiliated to V T U, Belagavi)

Nationally Accredited by NAAC with 'A' Grade

## **Master of Computer Applications**

(Accredited by National Board of Accreditation)



**MCA I to VI Semester**

**(2018-21) Scheme & Syllabus**

**As per BoS recommendations the scheme was finalized**

# **Dr. Ambedkar Institute of Technology, Bengaluru – 560056**

## **Master of Computer Applications**

### **Institute - Vision and Mission**

#### **Vision**

To create Dynamic, Resourceful, Adept and Innovative Technical professionals to meet global challenges.

#### **Mission**

- To offer state-of-the-art under graduate, post graduate and doctoral programs in the fields of Engineering, Technology and Management
- To generate new knowledge by engaging faculty and students in research, development and innovation.
- To provide strong theoretical foundation to the students, supported by extensive practical training to meet the industrial requirements.
- To instill moral and ethical values with social and professional commitment.

### **DEPARTMENT - VISION AND MISSION**

#### **VISION**

To create a quality human resource with good technical competence to face the global challenges.

#### **MISSION**

- To create a Center of Excellence through industry institute interaction.
- To prepare students for utilizing more creativity, innovativeness and leadership Qualities.
- To inculcate a sense of commitment to the students towards socio-economic development of the nation

### **Program Educational Objectives**

**PEO 1:** Graduates are prepared to be employed in IT industries and be engaged in learning, understanding, and applying new ideas.

**PEO 2:** To prepare students for utilizing more creativity, innovativeness and leadership Qualities.

**PEO 3:** To provide an opportunity to students to learn the latest trends in computer technology and make them ready for life-long learning process with leadership skills and corporate social responsibilities.

### **Program Outcomes:**

**PO 1:** Ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modelling and design of computer based systems.

**PO 2:** Graduates will be able to demonstrate with excellent programming, analytical, logical and problem solving skills.

**PO 3:** Graduates will be able to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability.

**PO 4:** An ability to devise and conduct experiments, interpret data and provide well informed conclusions.

**PO 5:** An ability to select modern computing tools and techniques and use them with dexterity.

**PO 6:** An ability to function professionally with ethical responsibility as an individual as well as in multidisciplinary teams with positive attitude.

**PO 7:** An ability to appreciate the importance of goal setting and to recognize the need for life-long learning.

**PO 8:** Develop and maintain medium to large scale application software using theoretical and applied knowledge of software engineering and project management.

**PO 9:** An ability to communicate effectively.

**PO 10:** An ability to understand the impact of system solutions in a contemporary, global, economic, environmental, and societal context for sustainable development.

**PO 11:** An ability to execute the project either individually or in a group.

**PO 12:** An ability to become an Entrepreneur in the field of information technology to create a value and wealth for the betterment of the individual and society at large.

		<b>I Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
18MCA11	OOPS using C++	4	-	-	4	3	50	50	100
18MCA12	Linux Programming	4	-	-	4	3	50	50	100
18MCA13	Web Technologies	4	-	-	4	3	50	50	100
18MCA14	Discrete Mathematical Structures	4	-	-	4	3	50	50	100
18MCA15	Computer Organization and Architecture	3	-	-	3	3	50	50	100
18MCAL16	OOPS Lab	--	-	1	1	3	50	50	100
18MCAL17	Linux Lab	--	-	1	1	3	50	50	100
18MCAL18	Web Technology Lab	--	-	1	1	3	50	50	100
<b>Total</b>		<b>19</b>	<b>-</b>	<b>3</b>	<b>22</b>	<b>24</b>	<b>400</b>	<b>400</b>	<b>800</b>



		<b>II Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
18MCA21	Java Programming	4	-	-	4	3	50	50	100
18MCA22	Data Structures using C++	4	-	-	4	3	50	50	100
18MCA23	Analysis and Design of Algorithms	4	-	-	4	3	50	50	100
18MCA24	Database Management System	4	-	-	4	3	50	50	100
18MCA25	Operating System	3	-	-	3	3	50	50	100
18MCAL26	Java Programming Lab	--	-	1	1	3	50	50	100
18MCAL27	Data Structures Lab	--	-	1	1	3	50	50	100
18MCAL28	DBMS lab	--	-	1	1	3	50	50	100
<b>Total</b>		<b>19</b>	<b>-</b>	<b>3</b>	<b>22</b>	<b>24</b>	<b>400</b>	<b>400</b>	<b>800</b>

		<b>III Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
18MCA31	Network Architecture & Management	4	-	-	4	3	50	50	100
18MCA32	Python Programming	4	-	-	4	3	50	50	100
18MCA33	Advanced Software Engineering	4	-	-	4	3	50	50	100
18MCA34	Data Science using R	3	-	-	3	3	50	50	100
18MCA35	Elective-1	3	-	-	3	3	50	50	100
18MCAL36	Network Architecture Lab	--	-	1	1	3	50	50	100
18MCAL37	Python programming Lab	--	-	1	1	3	50	50	100
18MCAL38	Data Science using R Lab	--	-	1	1	3	50	50	100
<b>Total</b>		<b>18</b>	<b>-</b>	<b>3</b>	<b>21</b>	<b>24</b>	<b>400</b>	<b>400</b>	<b>800</b>

**ELECTIVE-1**

<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>				<b>Exam Duration</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>		<b>CIE</b>	<b>SEE</b>	
18MCA351	Software Testing and Practices	3	-	-	3	3	50	50	100
18MCA352	Advanced DBMS	3	-	-	3	3	50	50	100
18MCA353	Artificial Intelligence	3	-	-	3	3	50	50	100

		<b>IV Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>practicals</b>			<b>CIE</b>	<b>SEE</b>	
18MCA41	Enterprise Applications-1	3	-	-	3	3	50	50	100
18MCA42	Advanced Web Technologies	3	-	-	3	3	50	50	100
18MCA43	Analytical Skills And Building Professional Development	2	1	-	3	3	50	50	100
18MCA44	Elective-2	3	-	-	3	3	50	50	100
18MCA45	Elective-3	3	-	-	3	3	50	50	100
18MCA46	Research Methodology	2	-	--	2	3	50	50	100
18MCAL47	Enterprise Applications Lab	--	-	1	1	3	50	50	100
18MCAL48	Advanced Web Technologies Lab	--	-	1	1	3	50	50	100
18MCAM49	Mini Project using Android	--	1	1	2	3	50	50	100
<b>Total</b>		<b>16</b>	<b>2</b>	<b>3</b>	<b>21</b>	<b>27</b>	<b>450</b>	<b>450</b>	<b>900</b>

**ELECTIVE-2**

<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>				<b>Exam Duration</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>		<b>CIE</b>	<b>SEE</b>	
18MCA441	Information Security	3	-	--	3	3	50	50	100
18MCA442	Data Mining & Business Intelligence	3	-	--	3	3	50	50	100
18MCA443	Object oriented Modelling & Design	3	-	--	3	3	50	50	100

**ELECTIVE-3**

<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>				<b>Exam Duration</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>		<b>CIE</b>	<b>SEE</b>	
18MCA451	Software Quality & Performance Evaluation	3	-	--	3	3	50	50	100
18MCA452	Software Architecture	3	-	--	3	3	50	50	100
18MCA453	Enterprise Resource Planning	3	-	--	3	3	50	50	100

		<b>V Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>practicals</b>			<b>CIE</b>	<b>SEE</b>	
18MCA51	Machine Learning	4	-	-	4	3	50	50	100
18MCA52	Big Data Analytics	3	-	-	3	3	50	50	100
18MCA53	Cloud Computing	3	-	-	3	3	50	50	100
18MCA54	Elective -4	3	-	-	3	3	50	50	100
18MCA55	Elective -5	3	-	-	3	3	50	50	100
18MCAL56	Machine Learning Lab	--	-	1	1	3	50	50	100
18MCAL57	Big Data Analytics Lab	--	-	1	1	3	50	50	100
18MCAL58	Cloud Computing Lab	--	-	1	1	3	50	50	100
18MCAI59	Industry Internship (6 weeks)	--	--	--	5	3	50	50	100
<b>Total</b>		<b>16</b>	<b>-</b>	<b>3</b>	<b>24</b>	<b>27</b>	<b>450</b>	<b>450</b>	<b>900</b>

**ELECTIVE-4****V SEMESTER**

<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>				<b>Exam Duration</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>		<b>CIE</b>	<b>SEE</b>	
18MCA541	Enterprise Application-2	3	-	--	3	3	50	50	100
18MCA542	Full Stack Development with MERN	3	-	--	3	3	50	50	100
18MCA543	DevOps	3	-	--	3	3	50	50	100

**ELECTIVE-5****V SEMESTER**

<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>				<b>Exam Duration</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>		<b>CIE</b>	<b>SEE</b>	
18MCA551	Web Services	3	-	--	3	3	50	50	100
18MCA552	Internet of Things	3	-	--	3	3	50	50	100
18MCA553	Block Chain Technology	3	-	--	3	3	50	50	100

**VI SEMESTER**

<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Internal</b>	<b>External</b>	<b>Dissertation Evaluation</b>	<b>Viva voce</b>	<b>Total Marks</b>	<b>Credits</b>
18MCAS61	Technical Seminar	50	--	--	--	50	2
18MCAP62	Project Work	50	-	100	100	250	20
Total		100	--	100	100	300	22

**Grand Total (I to VI Semesters): 4500 Marks : 132 Credits**



# Dr. Ambedkar Institute of Technology, Bengaluru-56

(An Autonomous Institute, Affiliated to V T U, Belagavi)

Nationally Accredited by NAAC with 'A' Grade

## Master of Computer Applications

(Accredited by National Board of Accreditation)



Aided By Govt. of Karnataka

2019 (BOS)

1. BOS Proceedings
2. 2018-21 Scheme
3. Syllabus of III and IV semesters(2018-21) scheme
4. Modified syllabus of V semester (2016-19) scheme

Dr. L. MANJUNATHA RAO  
Professor & Head  
MCA Programme  
Dr. Ambedkar Institute of Technology  
Bangalore - 560 056.



**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
(An Autonomous Institute, Affiliated to V T U, Belagavi)  
**Master of Computer Applications (MCA)**

**MINUTES OF BOARD OF STUDIES MEETING – MCA BOARD**  
**VENUE : MCA Department**

31<sup>st</sup> May 2019.

The Board of Studies meeting of MCA Program at Dr. Ambedkar Institute of Technology was held on 31<sup>st</sup> of May 2019 at 10.30 a.m.in the Department of M.C.A., Dr. AIT Campus, Bengaluru – 560 056.

**AGENDA:**

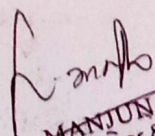
1. Finalization of Syllabus Scheme 2018 – 21 of MCA Programme  
(Review of Vision, Mission, and Program Educational Objectives)
2. Review of MCA III and IV semester syllabus for the academic year 2019-20
3. Review of MCA V and VI semester scheme
4. Any other curriculum related matter

The following are the members of Board of Studies

Sl. No	Nomination of the Committee	Name of the Person
1	Chairman HOD	Dr. L. Manjunatha . Rao Prof. & Head, Dept. of M.C.A Dr. A.I.T, Bangalore-56 e-mail: manjuarjun2004@yahoo.com Mob: 9341214327
2.	VTU Nominee	Dr. N P Kavya. Professor, MCA Program RNSIT, Bengaluru Mailid: <a href="mailto:npkavya@gmail.com">npkavya@gmail.com</a> Mob: 9945275345
3.	Industry / R & D representatives	Prof. .M R Muraljdharan Principal Research Scientist IISc, Bengaluru <a href="mailto:murali@iisc.ac.in">murali@iisc.ac.in</a> Ph: 22932895
4		Dr. Hanumanthappa . M Professor & Chairman, Department of Computer Science & Applications, Bangalore University, Bangalore 56.

*L. Manjunatha Rao*  
Dr. L. MANJUNATHA RAO  
Professor & Head  
MCA Programme  
Dr. Ambedkar Institute of Technology  
Bengaluru - 560 056

	External Subject Experts	Ph:9448819017, 080-22961451 Dr Daya Sagar Professor Systems Science and Informatics Unit Indian Statistical Institute-Bangalore Centre, Bengaluru <a href="mailto:bsdsagar@isibang.ac.in">bsdsagar@isibang.ac.in</a> +91-9880893291
5	Industry Representative	Mr. Mekala V Reddy Business Operations Leader IBM, Bengaluru <a href="mailto:Mekala.reddy@in.ibm.com">Mekala.reddy@in.ibm.com</a> Mob: 9880406693
6	Member	Mrs. Shwetha Basavaraj Senior Project Manager, Infosys, Bengaluru <a href="mailto:Shwetha_basavaraj@infosys.com">Shwetha_basavaraj@infosys.com</a> Mob: 9535663663
7	Internal Faculty Members with Various specializations	Dr. Bharathi S Associate Professor Dept. of M.C.A Dr. A.I.T, Bangalore-56 e-mail: <a href="mailto:bharathishivus@yahoo.co.in">bharathishivus@yahoo.co.in</a> Mob: 9902084476 Dr. Indumathi. S. K Associate Professor, Dept. of M.C.A Dr. A.I.T, Bangalore-56 e-mail: <a href="mailto:indukarthik2009@yahoo.in">indukarthik2009@yahoo.in</a> Mob: 9739910995 Ms. Shobha Rani B R Associate Professor, Dept. of M.C.A Dr. A.I.T, Bangalore-56 e-mail: <a href="mailto:shobhakrishna8@gmail.com">shobhakrishna8@gmail.com</a> Mob: 9740098198 Ms. Anitha J Assistant Professor, Dept of M.C.A. Dr. AIT, Bangalore - 56 Email: <a href="mailto:alochan@rediffmail.com">alochan@rediffmail.com</a>

  
**Dr. L. MANJUNATHA RAO**  
 Professor & Head  
 MCA Programme  
 Ankur Institute of Technology  
 Bangalore - 560 056.

The Board of Studies has recommended the syllabus of MCA Programme (2018-21 Scheme) for the academic year 2019-20. The following suggestions were made

1. Proposed the scheme and the detailed syllabus of all semesters of MCA programme (2018-21 scheme) as per Outcome Based Education in accordance with professional societies like ACM, IEEE - Computer Society of India and NBA graduate attributes.
2. The syllabus has been framed with equal weightage of credits to all the components (core academics, industry requirement, research orientation, lifelong learning and societal consciousness)
3. Electives were offered in the light of new advancements in the field of information technology.
4. Proposed credit weightage for lectures, tutorials, lab sessions, seminars, mini project, internship and major project for each course.
5. The Syllabus is designed with proportionate credits as per NBA program outcomes of MCA programme by including mathematics, management, humanities, professional core, electives, project work, seminar, internship, lifelong learning and societal consciousness as per VTU guidelines.
6. Proposed the Scheme of Teaching and Examination for all six semesters of MCA programme.
7. Defined the Course Outcomes (COs) as per the Outcome Based Education of NBA.
8. The BoS has recommended the detailed syllabus, rules and regulations, scheme of teaching and examination for all the six semesters.
9. Proposed the complete scheme with course title, course code, credit distribution details, examination hours, marks allotted etc. The BoS members recommended the proposed scheme with few suggestions, accordingly the scheme was updated.
10. The BoS members proposed the following recommendations  
Members suggested to have 1.5 credits to each lab that is 18MCAL58 (Cloud Computing Lab) and 18MCAL57 (Big Data Analytics Lab)
11. The BOS members advised to carry out the internship of 2016-19 scheme to be completed before the commencement of V semester soon after the examinations of IV semester for the students of V semester for the academic year 2019-20. Internship has to be evaluated in MCA V semester by the respective guides and the marks has to be entered along with the sixth semester marks as per the MCA 6<sup>th</sup> semester 2016-19 scheme. (To provide the entire 6<sup>th</sup> semester to carry out major project)
12. The BoS has recommended MCA III and IV semester detailed syllabus of 2018-21 scheme and MCA V and VI semester syllabus of 2016-19 scheme.

-2-

  
Dr. L. MANJUNATHA RAO  
Professor & Head  
MCA Programme  
Dr. Ambedkar Institute of Technology  
Mumbai - 560 056.

13. The Syllabus was finalized by incorporating all the suggestions made by the honorable members.

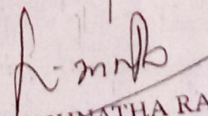
14. Dr. Kavya of VTU nominee has suggested to include NOSQL in ADBMS course and accordingly incorporated.

15. The members suggested to include Research Methodology in IV semester and allow the students to carry out the project as a full-time intern.

16. The following are the recommendations in III and IV semester syllabus from the academic year 2019-20

### III Semester

Proposed Scheme		Recommended Scheme		Remarks
Subj. Code	Subj. Name	Subj. Code	Subj. Name	
18MCA31	Network Architecture And Management	18MCA31	Network Architecture & Management	No Change
18MCA32	Python Programming	18MCA32	Python Programming	No Change
18MCA34	Advanced Software Engineering	18MCA33	Advanced Software Engineering	No Change
18MCA33	Object Oriented Modelling and Design	18MCA34	Data Science using R	Recommended
18MCA35	Elective - I	18MCA35	Elective - I	
18MCAL36	Computer Networks Lab	18MCAL36	Network Architecture Lab	No Change
18MCAL37	Python Programming Lab	18MCAL37	Python Lab	No Change
18MCAL38	OOMD Lab	18MCAL38	Data Science using R Lab	Recommended
<b>Elective - I</b>				
18MCA351	NOSQL	18MCA351	Software Testing and Practices	Recommended
18MCA352	Aptitude Skill based learning	18MCA352	Advanced DBMS	Recommended
18MCA353	Operations Research	18MCA353	Artificial Intelligence	Recommended

  
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 Dr. Ambedkar Institute of Technology  
 Bangalore - 560 056.

IV Semester

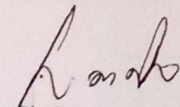
Proposed Scheme		Recommended Scheme		Remarks
Subj. Code	Subj. Name	Subj. Code	Subj. Name	
18MCA41	Advanced Java Programming	18MCA41	Enterprise Applications - I	No Change
18MCA42	Advanced Web Technologies	18MCA42	Advanced Web Technologies	No Change
18MCA43	Software Testing and Practices	18MCA43	Analytical Skills and Building Professional Development	Recommended
18MCA44	Elective - 2	18MCA44	Elective - 2	
18MCA45	Management Elective - 3	18MCA45	Elective - 3	
		18MCA46	Research Methodology	Recommended
18MCAL46	Advanced Java Programming Lab			
18MCAL47	Software Testing Lab	18MCAL47	Enterprise Applications Lab	Recommended
18MCAL48	Mini project using Web Technologies Lab	18MCAL48	Advanced Web Technologies Lab	Recommended
		18MCA49	Mini project using Android	Recommended
<b>Elective - 2</b>				
18MCA441	Data science using R	18MCA441	Information Security	Recommended
18MCA442	Artificial Intelligence	18MCA442	Advanced DBMS	Recommended
18MCA443	Software Architecturd	18MCA443	Object Oriented and Design	Recommended
18MCA444	Soft Computing	-	-	-
<b>Elective - 3</b>				
Proposed Scheme		Recommended Scheme		Remarks
18MCA451	Software Project Management	18MCA441	Software Quality & Performance Evaluation	Recommended
18MCA452	Professional Development and Leadership	18MCA452	Software Architecture	Recommended
18MCA453	Enterprise Resource Planning	18MCA453	Enterprise Resource Planning	No Change

Dr. L. MANJUNATHA RAO  
 Professor & Head  
 MCA Programme  
 Dr. Ambedkar Institute of Technology

**BOARD OF STUDIES MEETING – MCA BOARD**  
**Members Present**

Sl. No	Nomination of the Committee	Name of the Person
1	Chairman HOD	Dr. L. Manjunatha . Rao Prof. & Head, Dept. of M.C.A Dr. A.I.T, Bangalore-56 e-mail: manjuarjun2004@yahoo.com Mob: 9341214327
2	VTU Nominee	Dr. N P Kavya. Professor, MCA Program RNSIT, Bengaluru . Mailid: <a href="mailto:npkavya@gmail.com">npkavya@gmail.com</a> Mob: 9945275345
3	Industry / R & D representatives	Prof. .M R Muralidharan Principal Research Scientist IISc, Bengaluru <a href="mailto:murali@iisc.ac.in">murali@iisc.ac.in</a> Ph: 22932895
4	External Subject Experts	Dr. Daya Sagar Professor Systems Science and Informatics Unit Indian Statistical Institute-Bangalore Centre, Bengaluru <a href="mailto:bsdsagar@isibang.ac.in">bsdsagar@isibang.ac.in</a> +91-9880893291
5	Industry Representative	Mr. Mekala V Reddy Business Operations Leader IBM, Bengaluru <a href="mailto:Mekala.reddy@in.ibm.com">Mekala.reddy@in.ibm.com</a> Mob: 9880406693
6	Member	Mrs. Shwetha Basavaraj Senior Project Manager, Infosys, Bengaluru

7	Internal Faculty Members with Various specializations	<p><u>Shwetha_basavaraj@infosys.com</u> Mob: 9535663663</p>
		<p>Dr. Bharathi. S Associate Professor Dept. of M.C.A Dr. A.I.T, Bangalore-56 e-mail: <u>bharathishivu_s@yahoo.co.in</u> Mob: 9902084476</p>
		<p>Dr. Indumathi. S. K Associate Professor, Dept. of M.C.A Dr. A.I.T, Bangalore-56 e-mail: <u>indukarthik2009@yahoo.in</u> Mob: 9739910995</p>
		<p>Ms. Shobha Rani. B.R Associate Professor, Dept. of M.C.A Dr. A.I.T, Bangalore-56 e-mail: <u>shobhakrishna8@gmail.com</u> Mob: 9740098198</p>
		<p>Ms. Anitha J Assistant Professor, Dept of M.C.A. Dr. AIT, Bangalore – 56 Email: <u>alochan@rediffmail.com</u></p>

  
Chairman – BOS

MCA Program

Dr. Ambedkar Institute of Technology

Dr. L. MANJUNATHA RAO  
Professor & Head  
MCA Programme  
Dr. Ambedkar Institute of Technology  
Bangalore - 560 056.





**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
(An Autonomous Institute, Affiliated to V T U, Belagavi)  
**Master of Computer Applications (MCA)**

**VENUE : MCA Department**

31<sup>st</sup> May, 2019

The Board of Studies meeting of MCA Program at Dr. Ambedkar Institute of Technology to be held on 31st of March 2019 at 10.30 a.m. in the Department of M.C.A., Dr. AIT Campus, Bengaluru - 560056.

**AGENDA:**

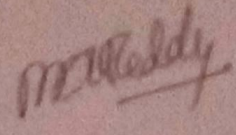
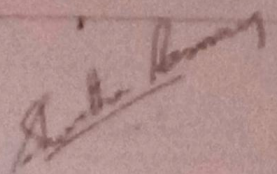
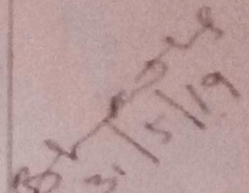
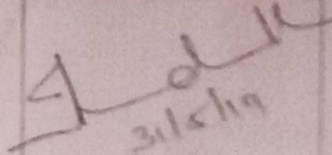
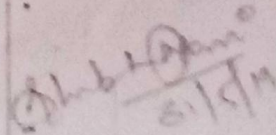
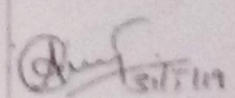
1. MCA Program Syllabus 2018-21 scheme  
(Review of Vision, Mission, and Program Educational Objectives)
2. Review of MCA III and IV semester syllabus for the academic year 2019-20
3. Review of MCA V and VI semester scheme
4. Review of internship for 2016-19 scheme
5. Any other curriculum related matter

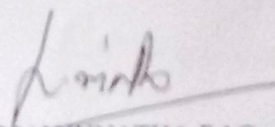
The following are the members of BoS meeting

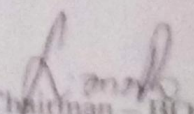
Sl. No	Nomination of the Committee	Name of the Person	Signature
1	Chairman HOD	Dr. L. Manjunatha Rao Prof. & Head, Dept. of M.C.A Dr. A.I.T, Bangalore-56 e-mail: manjuarjun2004@yahoo.com Mob: 9341214327	
2.	VTU Nominee	Dr. N P Kavya Professor, MCA Program RNSIT, Bengaluru e-mail: npkavya@gmail.com Mob: 9945275345	
3.	Industry / R & D representatives	Prof. MR Muralidharan Principal Research Scientist IISc, Bengaluru e-mail :murali@iisc.ac.in Mob: 22932895	
4		Dr. Hanumanthappa .M Professor & Chairman, Department of Computer Science & Applications, Bangalore University, Bangalore	

-6-

Dr. L. MANJUNATHA RAO  
Professor & Head  
MCA Programme  
Dr. Ambedkar Institute of Technology

Sl. No	Nomination of the Committee	Name of the Person	Signature
5	Industry Representative	Mr. Mekala V Reddy Business Operations Leader IBM, Bengaluru <a href="mailto:Mekala.reddy@in.ibm.com">Mekala.reddy@in.ibm.com</a> Mob: 9880406693	
6	Member	Mrs. Shwetha Basavaraj Senior Project Manager, Infosys, Bengaluru <a href="mailto:Shwetha_basavaraj@infosys.com">Shwetha_basavaraj@infosys.com</a> Mob: 9535663663	
7	Internal Faculty Members with Various specializations	Dr. Bharathi S Associate Professor Dept. of M.C.A Dr. A.I.T, Bangalore-56 e-mail: <a href="mailto:bharathishivu_s@yahoo.co.in">bharathishivu_s@yahoo.co.in</a> Mob: 9902084476	
		Dr. Indumathi. S. K Associate Professor, Dept. of M.C.A Dr. A.I.T, Bangalore-56 e-mail: <a href="mailto:indukarthik2009@yahoo.in">indukarthik2009@yahoo.in</a> Mob: 9739910995	
		Ms. Shobha Rani B.R Associate Professor, Dept. of M.C.A Dr. A.I.T, Bangalore-56 e-mail: <a href="mailto:shobhakrishna8@gmail.com">shobhakrishna8@gmail.com</a> Mob: 9740098198	
		Ms. Anitha J Assistant Professor, Dept of M.C.A Dr. AIT, Bangalore - 56 Email: <a href="mailto:alochan@rediffmail.com">alochan@rediffmail.com</a>	

  
**Dr. L. MANJUNATHA RAO**  
 Professor & Head  
 MCA Programme  
 Dr. Ambedkar Institute of Technology  
 Bangalore - 560 056.

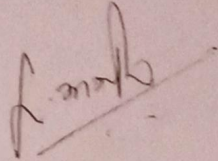
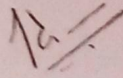
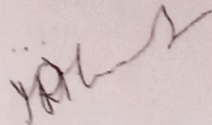
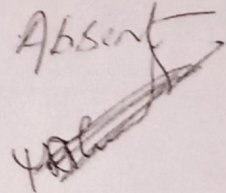
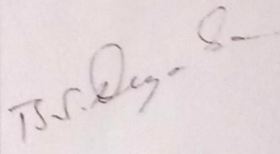
  
 Chairman - BOS  
 MCA Program 2/15/19

-7-

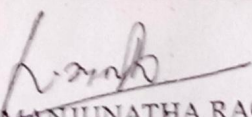
**Dr. Ambedkar Institute of Technology, Bengaluru – 560 056**  
**Master of Computer Applications**

**BOARD OF STUDIES MEETING – MCA BOARD**

**Signature of Participants**

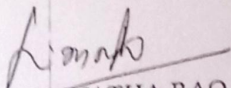
Sl. No	Nomination of the Committee	Name of the Person	Signature
1	Chairman HOD	Dr. L.Manjunatha . Rao Prof. & Head, Dept. of M.C.A Dr. A.I.T,Bangalore-56 e-mail: manjuarjun2004@yahoo.com Mob: 9341214327	
2	VTU Nominee	Dr. N P Kavya. Professor, MCA Program RNSIT, Bengaluru Mailid: npkavya@gmail.com Mob: 9945275345	
3	Industry / R & D representatives	Prof. M R Muralidharan Principal Research Scientist IISc, Bengaluru <a href="mailto:murali@iisc.ac.in">murali@iisc.ac.in</a> Ph: 22932895	
4	External Subject Experts	Dr. Hanumanthappa . M Professor & Chairman, Department of Computer Science & Applications, Bangalore University, Bangalore 56. Ph:9448819017, 080-22961451	
		Dr. Daya Sagar Professor Systems Science and Informatics Unit Indian Statistical Institute-Bangalore Centre, Bengaluru <a href="mailto:bsdsagar@isibang.ac.in">bsdsagar@isibang.ac.in</a> +91-9880893291	

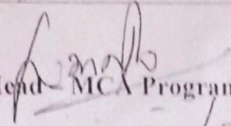
-8-

  
**Dr. L. MANJUNATHA RAO**  
 Professor & Head  
 MCA Programme  
 Dr. Ambedkar Institute of Technology  
 Bangalore - 560 056.

External Subject Experts	<p>e-mail:hanu6572@bub.ernet.in          Mob:9448819017, 080-22961451</p> <p>Dr. Daya Sagar          Professor, Systems Science and Informatics Unit          Indian Statistical Institute-Bangalore Centre, Bengaluru  <u>e-mail: bsd@sagar@isibang.ac.in</u>          Mob:91-9880893291</p>	7/5/19
5 Industry Representative	<p>Mr. Mekala V Reddy          Business Operations Leader          IBM, Bengaluru  <u>e-mail: Mekala.reddy@in.ibm.com</u>          Mob: 9880406693</p>	Mekala Reddy
6 Member	<p>Mrs. Shwetha Basavaraj          Senior Project Manager,          Infosys, Bengaluru  <u>e-mail: Shwetha_basavaraj@infosys.com</u>          Mob: 9535663663</p>	Shwetha Basavaraj
7 Internal Faculty Members with Various specializations	<p>Dr. Bharathi.S          Associate Professor Dept. of M.C.A          Dr. A.I.T,Bangalore-56  <u>e-mail: bharathishivya@yahoo.co.in</u>          Mob: 9902084476</p>	Bharathi S 31/5/19
	<p>Dr. Indumathi. S. K          Associate Professor, Dept. of M.C.A          Dr. A.I.T,Bangalore-56  <u>e-mail: indukarthik2009@yahoo.in</u>          Mob: 9739910995</p>	Indumathi S.K 31/5/19
	<p>Ms. Shobha Rani. B.R          Associate Professor, Dept. of M.C.A          Dr. A.I.T,Bangalore-56  <u>e-mail: shobhakrishna8@gmail.com</u>          Mob: 9740098198</p>	Shobha Rani 31/5/19
	<p>Ms. Anitha J          Assistant Professor, Dept. of M.C.A.          Dr. AIT, Bangalore - 56  <u>e-mail: alochan@rediffmail.com</u>          Mob:9845518391</p>	Anitha J 31/5/19

-9-

  
 Dr. L. MANJUNATHA RAO  
 Professor & Head  
 MCA Programme  
 Dr. Ambedkar Institute of Technology  
 Bangalore - 560 056.

  
 Head - MCA Program  
 31/5/2019

# **Dr. Ambedkar Institute of Technology, Bengaluru-56**

(An Autonomous Institute, Approved by AICTE, Affiliated to V T U, Belagavi)

Nationally Accredited by NAAC with 'A' Grade

## **Master of Computer Applications**

(Accredited by National Board of Accreditation)



**MCA I to VI Semester**

**(2018-21) Scheme & Syllabus**

**As per BoS recommendations the scheme was finalized**

**(31<sup>st</sup> of May 2019)**

# **Dr. Ambedkar Institute of Technology, Bengaluru – 560056**

## **Master of Computer Applications**

### **Institute - Vision and Mission**

#### **Vision**

To create Dynamic, Resourceful, Adept and Innovative Technical professionals to meet global challenges.

#### **Mission**

- To offer state-of-the-art under graduate, post graduate and doctoral programs in the fields of Engineering, Technology and Management
- To generate new knowledge by engaging faculty and students in research, development and innovation.
- To provide strong theoretical foundation to the students, supported by extensive practical training to meet the industrial requirements.
- To instill moral and ethical values with social and professional commitment.

### **DEPARTMENT - VISION AND MISSION**

#### **VISION**

To create a quality human resource with good technical competence to face the global challenges.

#### **MISSION**

- To create a Center of Excellence through industry institute interaction.
- To prepare students for utilizing more creativity, innovativeness and leadership Qualities.
- To inculcate a sense of commitment to the students towards socio-economic development of the nation

### **Program Educational Objectives**

**PEO 1:** Graduates are prepared to be employed in IT industries and be engaged in learning, understanding, and applying new ideas.

**PEO 2:** To prepare students for utilizing more creativity, innovativeness and leadership Qualities.

**PEO 3:** To provide an opportunity to students to learn the latest trends in computer technology and make them ready for life-long learning process with leadership skills and corporate social responsibilities.

**Program Outcomes:**

**PO 1:** Ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modelling and design of computer based systems.

**PO 2:** Graduates will be able to demonstrate with excellent programming, analytical, logical and problem solving skills.

**PO 3:** Graduates will be able to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability.

**PO 4:** An ability to devise and conduct experiments, interpret data and provide well informed conclusions.

**PO 5:** An ability to select modern computing tools and techniques and use them with dexterity.

**PO 6:** An ability to function professionally with ethical responsibility as an individual as well as in multidisciplinary teams with positive attitude.

**PO 7:** An ability to appreciate the importance of goal setting and to recognize the need for life-long learning.

**PO 8:** Develop and maintain medium to large scale application software using theoretical and applied knowledge of software engineering and project management.

**PO 9:** An ability to communicate effectively.

**PO 10:** An ability to understand the impact of system solutions in a contemporary, global, economic, environmental, and societal context for sustainable development.

**PO 11:** An ability to execute the project either individually or in a group.

**PO 12:** An ability to become an Entrepreneur in the field of information technology to create a value and wealth for the betterment of the individual and society at large.

		<b>I Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
18MCA11	OOPS using C++	4	-	-	4	3	50	50	100
18MCA12	Linux Programming	4	-	-	4	3	50	50	100
18MCA13	Web Technologies	4	-	-	4	3	50	50	100
18MCA14	Discrete Mathematical Structures	4	-	-	4	3	50	50	100
18MCA15	Computer Organization and Architecture	3	-	-	3	3	50	50	100
18MCAL16	OOPS Lab	--	-	1	1	3	50	50	100
18MCAL17	Linux Lab	--	-	1	1	3	50	50	100
18MCAL18	Web Technology Lab	--	-	1	1	3	50	50	100
<b>Total</b>		<b>19</b>	<b>-</b>	<b>3</b>	<b>22</b>	<b>24</b>	<b>400</b>	<b>400</b>	<b>800</b>



		<b>II Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
18MCA21	Java Programming	4	-	-	4	3	50	50	100
18MCA22	Data Structures using C++	4	-	-	4	3	50	50	100
18MCA23	Analysis and Design of Algorithms	4	-	-	4	3	50	50	100
18MCA24	Database Management System	4	-	-	4	3	50	50	100
18MCA25	Operating System	3	-	-	3	3	50	50	100
18MCAL26	Java Programming Lab	--	-	1	1	3	50	50	100
18MCAL27	Data Structures Lab	--	-	1	1	3	50	50	100
18MCAL28	DBMS lab	--	-	1	1	3	50	50	100
<b>Total</b>		<b>19</b>	<b>-</b>	<b>3</b>	<b>22</b>	<b>24</b>	<b>400</b>	<b>400</b>	<b>800</b>



		<b>III Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>Practicals</b>			<b>CIE</b>	<b>SEE</b>	
18MCA31	Network Architecture & Management	4	-	-	4	3	50	50	100
18MCA32	Python Programming	4	-	-	4	3	50	50	100
18MCA33	Advanced Software Engineering	4	-	-	4	3	50	50	100
18MCA34	Data Science using R	3	-	-	3	3	50	50	100
18MCA35	Elective-1	3	-	-	3	3	50	50	100
18MCAL36	Network Architecture Lab	--	-	1	1	3	50	50	100
18MCAL37	Python programming Lab	--	-	1	1	3	50	50	100
18MCAL38	Data Science using R Lab	--	-	1	1	3	50	50	100
<b>Total</b>		<b>18</b>	<b>-</b>	<b>3</b>	<b>21</b>	<b>24</b>	<b>400</b>	<b>400</b>	<b>800</b>

**ELECTIVE-1**

<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>				<b>Exam Duration</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>		<b>CIE</b>	<b>SEE</b>	
18MCA351	Software Testing and Practices	3	-	-	3	3	50	50	100
18MCA352	Advanced DBMS	3	-	-	3	3	50	50	100
18MCA353	Artificial Intelligence	3	-	-	3	3	50	50	100

		<b>IV Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>practicals</b>			<b>CIE</b>	<b>SEE</b>	
18MCA41	Enterprise Applications-1	3	-	-	3	3	50	50	100
18MCA42	Advanced Web Technologies	3	-	-	3	3	50	50	100
18MCA43	Analytical Skills And Building Professional Development	2	1	-	3	3	50	50	100
18MCA44	Elective-2	3	-	-	3	3	50	50	100
18MCA45	Elective-3	3	-	-	3	3	50	50	100
18MCA46	Research Methodology	2	-	--	2	3	50	50	100
18MCAL47	Enterprise Applications Lab	--	-	1	1	3	50	50	100
18MCAL48	Advanced Web Technologies Lab	--	-	1	1	3	50	50	100
18MCAM49	Mini Project using Android	--	1	1	2	3	50	50	100
<b>Total</b>		<b>16</b>	<b>2</b>	<b>3</b>	<b>21</b>	<b>27</b>	<b>450</b>	<b>450</b>	<b>900</b>

**ELECTIVE-2**

<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>				<b>Exam Duration</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>		<b>CIE</b>	<b>SEE</b>	
18MCA441	Information Security	3	-	--	3	3	50	50	100
18MCA442	Data Mining & Business Intelligence	3	-	--	3	3	50	50	100
18MCA443	Object oriented Modelling & Design	3	-	--	3	3	50	50	100

**ELECTIVE-3**

<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>				<b>Exam Duration</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>		<b>CIE</b>	<b>SEE</b>	
18MCA451	Software Quality & Performance Evaluation	3	-	--	3	3	50	50	100
18MCA452	Software Architecture	3	-	--	3	3	50	50	100
18MCA453	Enterprise Resource Planning	3	-	--	3	3	50	50	100

		<b>V Semester</b>							
<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>			<b>Total Credits</b>	<b>Exam Duration in Hours</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>Lecture</b>	<b>Tutorial</b>	<b>practicals</b>			<b>CIE</b>	<b>SEE</b>	
18MCA51	Machine Learning	4	-	-	4	3	50	50	100
18MCA52	Big Data Analytics	3	-	-	3	3	50	50	100
18MCA53	Cloud Computing	3	-	-	3	3	50	50	100
18MCA54	Elective -4	3	-	-	3	3	50	50	100
18MCA55	Elective -5	3	-	-	3	3	50	50	100
18MCAL56	Machine Learning Lab	--	-	1	1	3	50	50	100
18MCAL57	Big Data Analytics Lab	--	-	1	1	3	50	50	100
18MCAL58	Cloud Computing Lab	--	-	1	1	3	50	50	100
18MCAI59	Industry Internship (6 weeks)	--	--	--	5	3	50	50	100
<b>Total</b>		<b>16</b>	<b>-</b>	<b>3</b>	<b>24</b>	<b>27</b>	<b>450</b>	<b>450</b>	<b>900</b>

**ELECTIVE-4****V SEMESTER**

<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>				<b>Exam Duration</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>		<b>CIE</b>	<b>SEE</b>	
18MCA541	Enterprise Application-2	3	-	--	3	3	50	50	100
18MCA542	Full Stack Development with MERN	3	-	--	3	3	50	50	100
18MCA543	DevOps	3	-	--	3	3	50	50	100

**ELECTIVE-5****V SEMESTER**

<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Credits</b>				<b>Exam Duration</b>	<b>Marks</b>		<b>Total Marks</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>		<b>CIE</b>	<b>SEE</b>	
18MCA551	Web Services	3	-	--	3	3	50	50	100
18MCA552	Internet of Things	3	-	--	3	3	50	50	100
18MCA553	Block Chain Technology	3	-	--	3	3	50	50	100



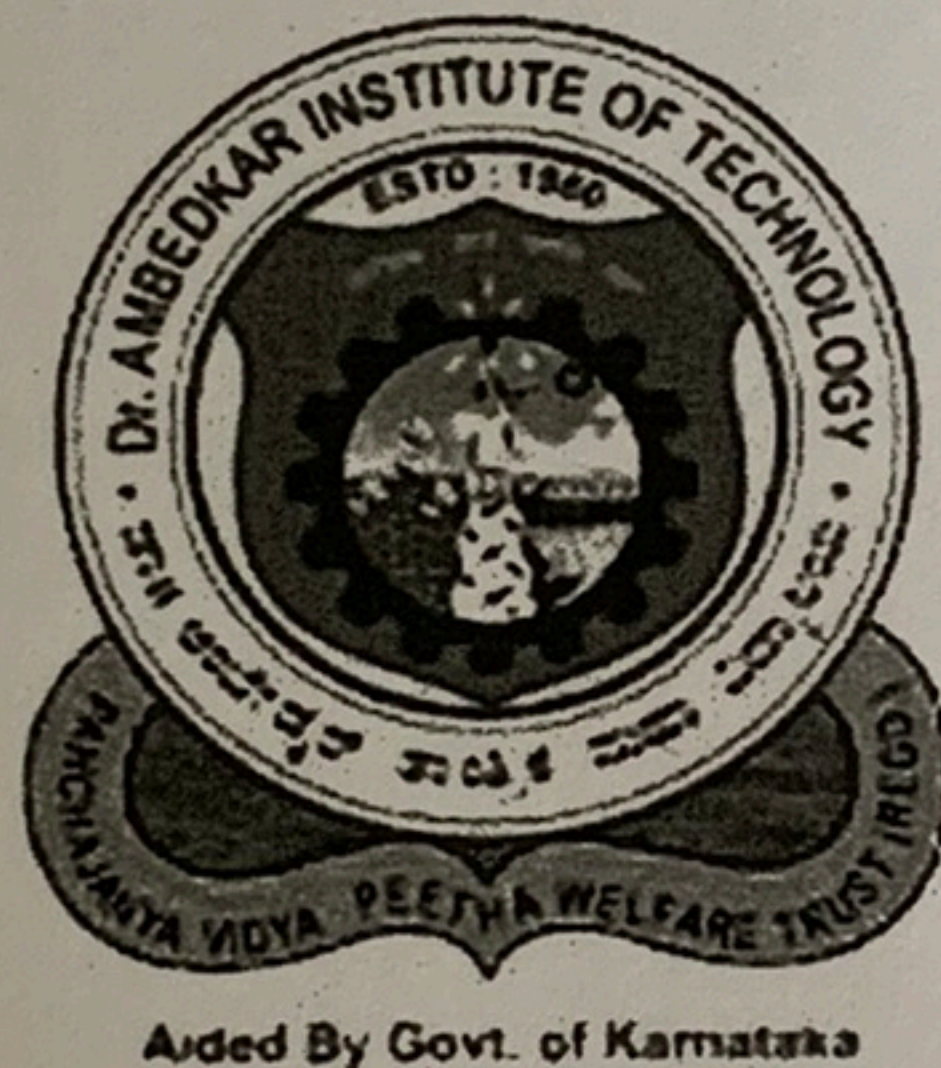
**VI SEMESTER**

<b>Subject Code</b>	<b>Name of the Subject</b>	<b>Internal</b>	<b>External</b>	<b>Dissertation Evaluation</b>	<b>Viva voce</b>	<b>Total Marks</b>	<b>Credits</b>
18MCAS61	Technical Seminar	50	--	--	--	50	2
18MCAP62	Project Work	50	-	100	100	250	20
Total		100	--	100	100	300	22

**Grand Total (I to VI Semesters): 4500 Marks : 132 Credits**

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**Master of Computer Applications Program**  
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BOS-2020

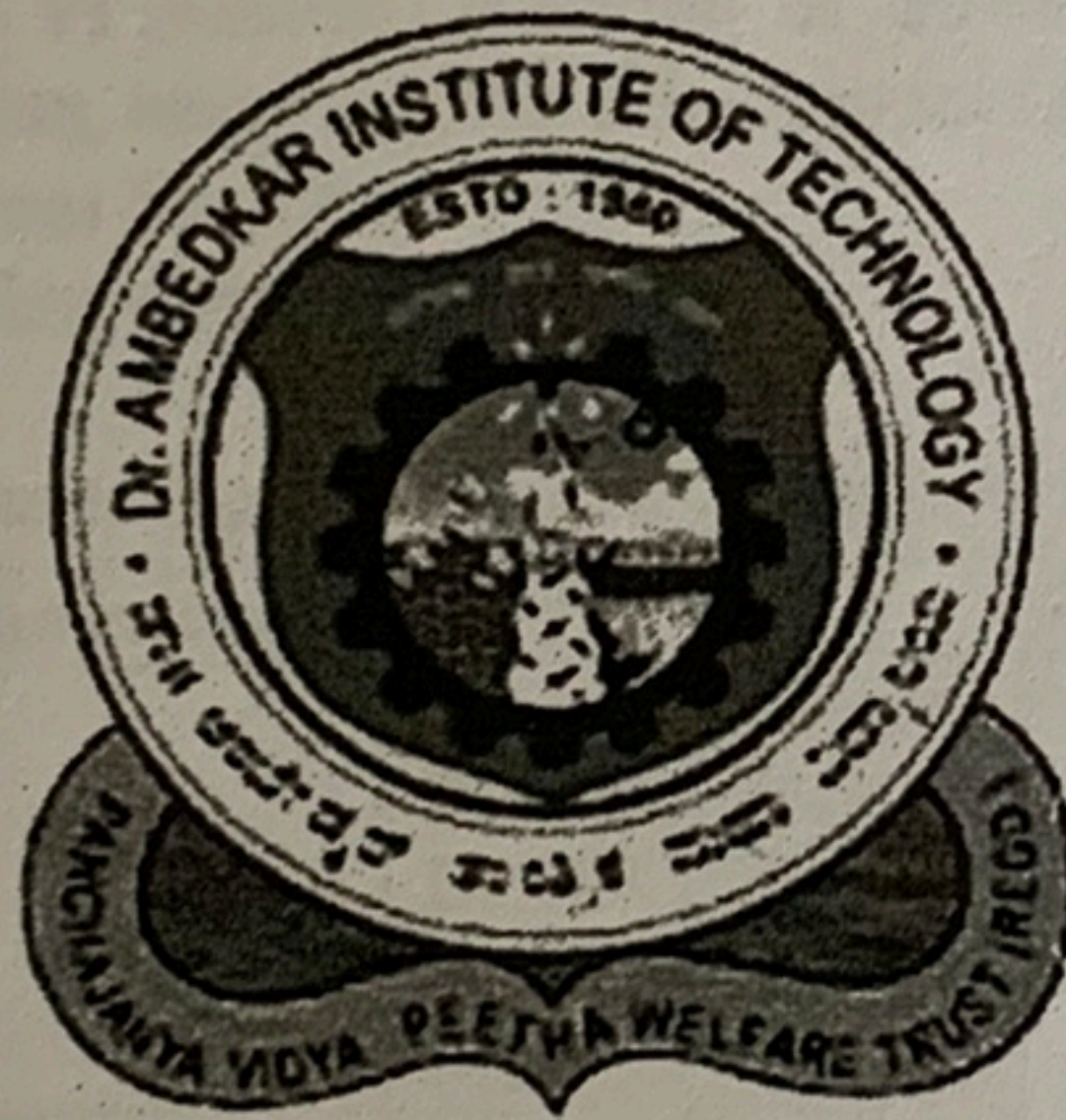
## **Board of Studies**

**held on 13<sup>th</sup>, August 2020**

- 1. MCA BoS Meeting Proceedings**
- 2. Scheme And Syllabus of MCA 2 years (100 Credits)**
- 3. Scheme And Syllabus of MCA V and VI semester (2018-21 Scheme)**
- 4. Scheme and Syllabus of Inter department Electives**

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Aided By Govt. of Karnataka

**Board of Studies**

held on 13<sup>th</sup>, August 2020

**MCA BoS Meeting Proceedings**



**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
(An Autonomous Institution, Affiliated to V T U, Belagavi)  
**Master of Computer Applications (MCA)**

**MINUTES OF BOARD OF STUDIES MEETING – MCA BOARD**

**VENUE : MCA Department**

13<sup>th</sup> August 2020

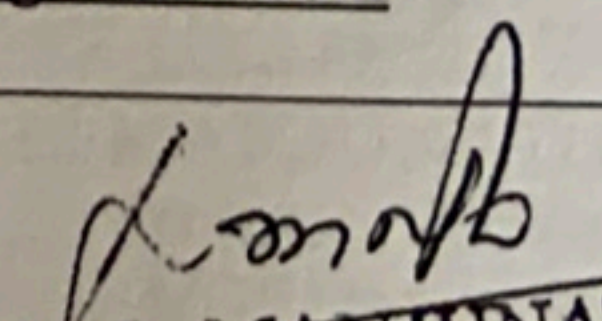
The Board of Studies meeting of MCA Program was held through online on 13<sup>th</sup> of August 2020 at 11.00 a.m. in the MCA Department at Dr. Ambedkar Institute of Technology, Bengaluru

**AGENDA:**

1. Finalization of MCA curriculum Scheme for two years duration (2020-22 scheme for 100 credits)
2. Finalization of I year Syllabus for 2020 – 2022 scheme.
3. Review of MCA V and VI semester syllabus of 2018-21 scheme.
4. Review of Vision, Mission, and Program Educational Objectives of MCA program
5. Proposing Inter department Electives
6. Any other curriculum related matter

**The following are the members of Board of Studies**

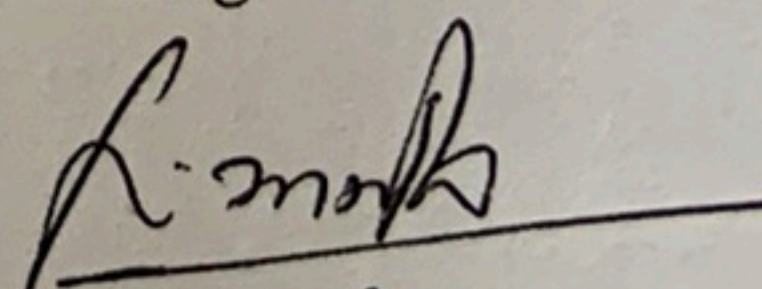
Sl. No	Nomination of the Committee	Member Details
1	Chairman	Dr. L. Manjunatha Rao Professor & Head, Dept. of M.C.A Dr. A.I.T, Bangalore-56 Email: manjuarjun2004@yahoo.com Mob: 9341214327
2.	VTU Nominee	Dr. N.P Kavya. Professor and Director, MCA Program RNSIT, Bengaluru Email: npkavya@gmail.com Mob: 9945275345
3.	R & D representative	Prof. M R Muralidharan Principal Research Scientist IISc, Bengaluru Email: murali@iisc.ac.in Ph: 22932895
4	External Subject Experts	Dr. Hanumanthappa. M Professor & Director(IQAC- NAAC) Department of Computer Science & Applications, Bangalore University, Bangalore 56. Email: hanu6572@gmail.com Ph: 9448819017, 080-22961451 Dr. Daya Sagar Professor, Systems Science and Informatics Unit Indian Statistical Institute-Bangalore Centre, Bengaluru Email: bsdsagar@isibang.ac.in +91-9880893291
5	Industry Representative	Mr. Mekala V. Reddy Business Operations Leader IBM, Bengaluru Email: Mekala.reddy@in.ibm.com Mob: 9880406693

  
**DR. L. MANJUNATHA RAO**  
Professor & Head  
MCA Programme

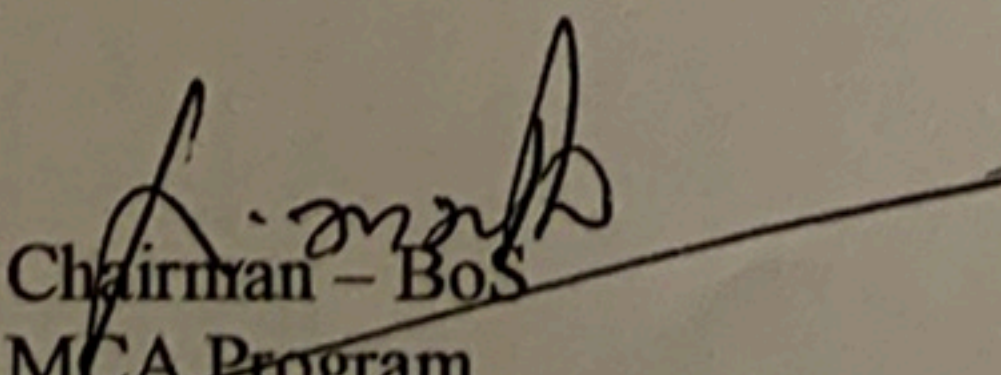
Sl. No	Nomination of the Committee	Member Details
6	Member - Alumni	Mr. Varun Patel Consultant Quinnox Bangalore Email: varunpatel3069@gmail.com Mob: 9886850355
7	Internal Faculty Members with Various specializations	Dr. Bharathi.S Professor(CAS), Dept. of M.C.A Dr. A.I.T, Bangalore-56 Email: <a href="mailto:bharathishivus@yahoo.co.in">bharathishivus@yahoo.co.in</a> Mob: 9902084476
		Dr. Indumathi. S. K Associate Professor, Dept. of M.C.A Dr. A.I.T, Bangalore-56 Email: <a href="mailto:indukarthik2009@yahoo.in">indukarthik2009@yahoo.in</a> Mob: 9739910995
		Ms. Shobha Rani. B.R Associate Professor, Dept. of M.C.A Dr. A.I.T, Bangalore-56 Email: <a href="mailto:shobhakrishna8@gmail.com">shobhakrishna8@gmail.com</a> Mob: 9740098198
		Ms. Anitha J Assistant Professor, Dept of M.C.A. Dr. AIT, Bangalore - 56 Email: <a href="mailto:alochan@rediffmail.com">alochan@rediffmail.com</a>

**The Board of Studies has recommended the following points after detailed deliberations.**

1. The HOD invited all the BoS members to the Google meet and welcomed all the members individually. All the members were present for the meeting.
2. The HOD has presented the scheme and syllabus of 2020-22 of 2 years MCA Programme for 100 credits in detail and discussed semester wise, each member has suggested few changes as listed in the following points.
3. Mathematical Foundations for Computer Applications in I semester is to be redesigned to have 2 modules of statistics to support data science subjects as suggested by Dr. Dayasagar Sir and Mr. Mekala V. Reddy Sir.
4. Dr. Muralidharan sir has proposed to change the course title in the second semester from Network Architecture and Management to Network Architecture and Programming.

  
 Dr. L. MANJUNATHA RAO  
 Professor & Head  
 MCA Programme  
 Dr. Ambedkar Institute of Technology  
 Bangalore - 560 056.

5. Dr. N.P. Kavya madam has proposed to change the course title in the second semester as Web Technologies instead of Advances in Web Technologies and also suggested to emphasize more on fundamentals.
6. Dr. N.P. Kavya madam has suggested to remove the NOSQL Databases course and introduce RDBMS course in the second semester and also suggested to include NOSQL as one of the modules in Big Data Analytics as elective course.
7. Dr. N.P. Kavya madam has suggested changing the course title from Industry Internship and MOOC Course to MOOC Course and Industry Internship in the fourth semester.
8. Mr. Varun has suggested to advice the students to take up the same problem for both internship and project work to gain more technical knowledge and confidence in the same domain.
9. Mr. Mekhala V. Reddy sir has suggested to register a MOOC course in the same area of internship and project to get in depth technical skills in a specific area of interest.
10. The members appreciated the listed courses and suggested the department to implement all the courses effectively.
11. The members of BoS recommended the scheme and syllabus of **2020-22 scheme** for 100 credits with the above specified updations and the same shall be implemented from the academic year 2020 onwards.
12. The HOD has presented the scheme and syllabus of V and VI semesters of 2018-21 scheme of three years MCA Programme which will be implemented during 2020-21 onwards.
13. The members reviewed the 2018-21 scheme and suggested to change the course title as Machine Learning using Python (18MCA51) instead of Machine Learning in the fifth semester and recommended the syllabus of MCA V and VI semesters to implement from the academic year 2020-21 onwards.
14. The members reviewed the department vision, mission and PEOs and recommended the same.
15. The BoS has recommended the list of inter department electives.
16. The BoS meeting was concluded with vote of thanks by the BoS - Chairman

  
Chairman - BoS  
MCA Program  
Dr. Ambedkar Institute of Technology

Dr. L. MANJUNATHA RAO  
Professor & Head  
MCA Programme  
Dr. Ambedkar Institute of Technology  
Bangalore - 560 050.

**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
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**Master of Computer Applications Program**  
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MCA I - IV semester Syllabus  
Two years Duration  
(2020 - 2022)

**Scheme And Syllabus of MCA 2 years (100 Credits)**

**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
(An Autonomous Institute, Affiliated to VTU, Belagavi)

**Master of Computer Applications Program**  
(Accredited by National Board of Accreditation)



**MCA I – IV semester Syllabus**  
**Two Years Duration**  
**(2020 – 2022)**



# **Dr. Ambedkar Institute of Technology, Bengaluru – 560056**

## **Master of Computer Applications**

### **Institute - Vision and Mission**

#### **Vision**

To create Dynamic, Resourceful, Adept and Innovative Technical professionals to meet global challenges.

#### **Mission**

- To offer state-of-the-art under graduate, post graduate and doctoral programs in the fields of Engineering, Technology and Management
- To generate new knowledge by engaging faculty and students in research, development and innovation.
- To provide strong theoretical foundation to the students, supported by extensive practical training to meet the industrial requirements.
- To instil moral and ethical values with social and professional commitment.

### **DEPARTMENT - VISION AND MISSION**

#### **VISION**

To create a quality human resource with good technical competence to face the global challenges.

#### **MISSION**

- To create a Centre of Excellence through industry institute interaction.
- To prepare students for utilizing more creativity, innovativeness and leadership Qualities.
- To inculcate a sense of commitment to the students towards socio-economic development of the nation

#### **Program Educational Objectives**

**PEO 1:** Graduates are prepared to be employed in IT industries and be engaged in learning, understanding, and applying new ideas.

**PEO 2:** To prepare students for utilizing more creativity, innovativeness and leadership Qualities.

**PEO 3:** To provide an opportunity to students to learn the latest trends in computer technology and make them ready for life-long learning process with leadership skills and corporate social responsibilities.

### **Program Outcomes:**

**PO 1:** Ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modelling and design of computer based systems.

**PO 2:** Graduates will be able to demonstrate with excellent programming, analytical, logical and problem solving skills.

**PO 3:** Graduates will be able to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability.

**PO 4:** An ability to devise and conduct experiments, interpret data and provide well informed conclusions.

**PO 5:** An ability to select modern computing tools and techniques and use them with dexterity.

**PO 6:** An ability to function professionally with ethical responsibility as an individual as well as in multidisciplinary teams with positive attitude.

**PO 7:** An ability to appreciate the importance of goal setting and to recognize the need for life-long learning.

**PO 8:** Develop and maintain medium to large scale application software using theoretical and applied knowledge of software engineering and project management.

**PO 9:** An ability to communicate effectively.

**PO 10:** An ability to understand the impact of system solutions in a contemporary, global, economical, environmental, and societal context for sustainable development.

**PO 11:** An ability to execute the project either individually or in a group.

**PO 12:** An ability to become an Entrepreneur in the field of information technology to create a value and wealth for the betterment of the individual and society at large.

# Dr. Ambedkar Institute of Technology

(An Autonomous Institute affiliated to VTU, Accredited by NAAC with 'A' grade)

## Department of Master of Computer Applications

**SCHEME OF TEACHING AND EXAMINATION OF MCA FIRST SEMESTER  
(AUTONOMOUS) 2020-2022**

Sl. No.	Course Code	Course Title	Teaching hours per week			Examination				Credits
			Lecture	Tutorial/ Seminar/ Assignment	Practical / Project	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	20MCA11	Object Oriented Programming using Java	4	-	-	3	50	50	100	4
2	20MCA12	Data Structures and Algorithms	4	-	-	3	50	50	100	4
3	20MCA13	Web Technologies	4	-	-	3	50	50	100	4
4	20MCA14	RDBMS	3	-	2	3	50	50	100	4
5	20MCA15	Mathematical and Statistical Modelling for Computer Applications	4	-	-	3	50	50	100	4
6	20MCAL16	Object Oriented Programming using Java Lab	-	-	2	3	50	50	100	1
7	20MCAL17	Data Structures and Algorithms Lab	-	-	2	3	50	50	100	1
8	20MCAM18	Mini Project in Web Technologies	-	2	2	3	50	50	100	2
9	20MCAB19	Principles of Programming (Bridge Course – Non-credit)	3	-	-	3	50	50	100	0
Total			22	02	08	27	450	450	900	24

# Dr. Ambedkar Institute of Technology

(An Autonomous Institute affiliated to VTU, Accredited by NAAC with 'A' grade)

## Department of Master of Computer Applications

SCHEME OF TEACHING AND EXAMINATION OF MCA SECOND SEMESTER  
(AUTONOMOUS) 2020-2022

Sl. No.	Course Code	Course Title	Teaching hours per week			Examination				Credits
			Lecture	Tutorial/ Seminar/ Assignment	Practical / Project	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	20MCA21	Python Programming	4	-	-	3	50	50	100	4
2	20MCA22	Internet of Things	4	-	-	3	50	50	100	4
3	20MCA23	Software Engineering and Project Management	4	-	-	3	50	50	100	4
4	20MCA24	Research Methodology	3	-	-	3	50	50	100	3
5	20MCA25	Elective – 1	3		2	3	50	50	100	4
6	20MCA26	Elective - 2	3	-	-	3	50	50	100	3
7	20MCAL27	Python Programming Lab	-	-	2	3	50	50	100	1
8	20MCAL28	Internet of Things Lab	-		2	3	50	50	100	1
09	20MCAM29	Mini Project in Mobile Application Development	-	2	2	3	50	50	100	2
Total			21	02	08	27	450	450	900	26

**Dr. Ambedkar Institute of Technology**  
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**Department of Master of Computer Applications**  
**MCA SECOND SEMESTER ELECTIVE COURSES**

**Elective – 1**

S.No	Course Code	Course Title
1.	20MCA251	Cyber Security
2.	20MCA252	Software Testing and Automation
3.	20MCA253	Data Science using R
4.	20MCA254	Programming using C#
5.	20MCA255	Ethical Hacking

**Elective – 2**

S.No	Course Code	Course Title
1.	20MCA261	Data Mining and Business Intelligence
2.	20MCA262	Enterprise Resource Planning
3.	20MCA263	Supply Chain Management
4.	20MCA264	Storage Area Networks
5.	20MCA265	Distributed Operating Systems

# Dr. Ambedkar Institute of Technology

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## Department of Master of Computer Applications

**SCHEME OF TEACHING AND EXAMINATION OF MCA THIRD SEMESTER  
(AUTONOMOUS) 2020-2022**

Sl. No.	Course Code	Course Title	Teaching hours per week			Examination				Credits
			Lecture	Tutorial/ Seminar/ Assignme	Practical / Project	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	20MCA31	Machine Learning using Python	4	-	-	3	50	50	100	4
2	20MCA32	Advanced Java Programming	4	-	-	3	50	50	100	4
3.	20MCA33	Network Architecture and Programming	3	-	2	3	50	50	100	4
4	20MCA34	Elective – 3	3		2	3	50	50	100	4
5	20MCA35	Elective - 4	3		-	3	50	50	100	3
6	20MCAL36	Machine Learning using Python Lab	-	-	2	3	50	50	100	1
7	20MCAL37	Advanced Java Programming Lab	-	-	2	3	50	50	100	1
8	20MCAM38	Mini Project	-	-	4	3	50	50	100	2
9.	20MCAS39	Technical Seminar	-	-	2	-	-	50	50	2
Total			17	00	12	27	400	450	850	25

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**Department of Master of Computer Applications**  
**MCA THIRD SEMESTER ELECTIVE COURSES**

**Elective – 3**

S.No	Course Code	Course Title
1.	20MCA341	Digital Marketing
2.	20MCA342	Cloud Computing
3.	20MCA343	Big Data Analytics
4.	20MCA344	Programming using GOLang
5.	20MCA345	Full Stack Web Development

**Elective-4**

S.No	Course Code	Course Title
1.	20MCA351	Block Chain Technology
2.	20MCA352	5G Wireless Technologies
3..	20MCA353	Artificial Intelligence
4.	20MCA354	Software Architecture and Design Patterns
5.	20MCA355	Graph Theory

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**Department of Master of Computer Applications**  
**SCHEME OF TEACHING AND EXAMINATION OF MCA FOURTH SEMESTER**  
 (AUTONOMOUS) 2020-2022

Sl. No.	Course Code	Course Title	Teaching hours per week			Examination				Credits
			Lecture	Tutorial	Practical / Seminar	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1.	20MCAI41	MOOC Course and Industry Internship	-	-	2	3	50	50	100	5
2.	20MCAP42	Project Work	-	-	4	3	150	100	250	20
<b>Total</b>			-	-	<b>6</b>	<b>6</b>	<b>200</b>	<b>150</b>	<b>350</b>	<b>25</b>
<b>Grand Total</b>						<b>350</b>				<b>3000</b>

**Dr. Ambedkar Institute of Technology**



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**Department of Master of Computer Applications**  
**SCHEME OF TEACHING AND EXAMINATION OF MCA INTERDEPARTMENT**  
**ELECTIVE (AUTONOMOUS) 2020-2022**

Sl. No.	Course Code	Course Title	Teaching hours per week			Examination			Credits	Eligibility	
			Lecture	Tutorial	Practical / Seminar	Duration in hours	SEE Marks	CIE Marks			Total Marks
1	20MCAE01	Data Science using Python	3	-	-	3	50	50	100	3	All Branches
2.	20MCAE02	Professional Practices for Higher Education	3	-	-	3	50	50	100	3	All Branches
3.	20MCAE03	R programming for statistics and data Science	3			3	50	50	100	3	All Branches
4.	20MCAE04	Full stack web development	3			3	50	50	100	3	All Branches
5.	20MCAE05	Animation and Gaming	3			3	50	50	100	3	All Branches
6.	20MCAE06	Ethical Hacking	3			3	50	50	100	3	All Branches
<b>Total</b>			<b>6</b>	<b>-</b>	<b>-</b>	<b>6</b>	<b>100</b>	<b>100</b>	<b>200</b>	<b>06</b>	

**Dr. Ambedkar Institute of Technology**

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**Department of Master of Computer Applications**  
(AUTONOMOUS) 2020-2022

**MCA Course Matrix**

<b>Components</b>	<b>Semester 1 (Credits)</b>	<b>Semester 2 (Credits)</b>	<b>Semester 3 (Credits)</b>	<b>Semester 4 (Credits)</b>	<b>Total (Credits)</b>
<b>Core Courses</b>	<b>20</b>	<b>15</b>	<b>12</b>	<b>-</b>	<b>47</b>
<b>Elective Courses</b>	<b>-</b>	<b>07</b>	<b>07</b>	<b>-</b>	<b>14</b>
<b>Lab Courses</b>	<b>04</b>	<b>04</b>	<b>02</b>	<b>-</b>	<b>10</b>
<b>Mini Project</b>	<b>-</b>	<b>-</b>	<b>02</b>	<b>-</b>	<b>02</b>
<b>Seminar</b>	<b>-</b>	<b>-</b>	<b>02</b>	<b>-</b>	<b>02</b>
<b>Internship</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>05</b>	<b>05</b>
<b>Project</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>20</b>	<b>20</b>
<b>Non-Credit Course</b>	<b>1 course</b>	<b>-</b>	<b>-</b>		<b>1 course</b>
<b>Total Credits</b>	<b>24</b>	<b>26</b>	<b>25</b>	<b>25</b>	<b>100</b>
<b>Total Marks</b>	<b>900</b>	<b>900</b>	<b>850</b>	<b>350</b>	<b>3000</b>

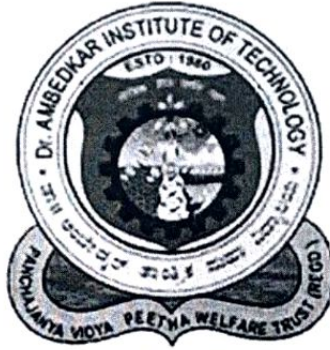
## **Dr. Ambedkar Institute of Technology, Bengaluru-56**

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### **Master of Computer Applications**

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## **BOARD OF STUDIES**

**HELD ON 15<sup>th</sup> of June 2021**

**MCA BoS Meeting Proceedings**

**Dr. Ambedkar Institute of Technology, Bengaluru-56**

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**BOARD OF STUDIES**

**HELD ON 15<sup>th</sup> of June 2021**

1. MCA BoS Meeting Proceedings
2. Scheme and Syllabus of MCA 2020-2022
3. Scheme and Syllabus of MCA V and VI semester of 2018-2021
4. Scheme and Syllabus of Inter department Electives



**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
 (An Autonomous Institution, Affiliated to V T U, Belagavi)  
**Master of Computer Applications (MCA)**

**MINUTES OF BOARD OF STUDIES MEETING – MCA BOARD**

**VENUE : MCA Department**

15<sup>th</sup> June 2021

The Board of Studies meeting of MCA Program was held through online on 15<sup>th</sup> of June 2021 at 11.00 a.m.in the MCA Department at Dr. Ambedkar Institute of Technology, Bengaluru.

**AGENDA:**

1. Finalization of III and IV semester (II year) Syllabus for 2020 – 2022 scheme.
2. Review of MCA I and II semester syllabus of 2020-22 scheme.
3. Review of MCA V and VI semester syllabus of 2018-21 scheme
4. Review of Vision, Mission, and Program Educational Objectives of MCA program
5. Proposing Inter department Electives
6. Any other curriculum related matter

**The following are the members of Board of Studies**

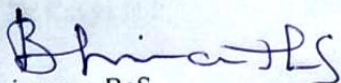
Sl. No	Nomination of the Committee	Member Details
1	Chairman	Dr. Bharathi.S Professor(CAS), Dept. of M.C.A Dr. A.I.T, Bangalore-56 Email: <a href="mailto:bharathi.mca@drait.edu.in">bharathi.mca@drait.edu.in</a> Mob: 9902084476
2.	VTU Nominee	Dr. N.P Kavya. Professor and Director, MCA Program RNSIT, Bengaluru Email: <a href="mailto:npkavya@gmail.com">npkavya@gmail.com</a> Mob: 9945275345
3.	R & D representative	Prof. .M R Muralidharan Principal Research Scientist IISc, Bengaluru Email: <a href="mailto:murali@iisc.ac.in">murali@iisc.ac.in</a> Ph: 22932895
4	External Subject Experts	Dr. Ashoka S. B. Assistant Professor & PG Coordinator Department of Computer Science Maharani Cluster University Bengaluru – 560 001 <a href="mailto:dr.ashoksbcs@gmail.com">dr.ashoksbcs@gmail.com</a>
		Dr. Daya Sagar Professor, Systems Science and Informatics Unit Indian Statistical Institute-Bangalore Centre, Bengaluru Email: <a href="mailto:bsdsagar@isibang.ac.in">bsdsagar@isibang.ac.in</a> +91-9880893291
5	Industry Representative	Mr. Mekala V. Reddy Business Operations Leader IBM, Bengaluru Email: <a href="mailto:Mekala.reddy@in.ibm.com">Mekala.reddy@in.ibm.com</a> Mob: 9880406693

Sl. No	Nomination of the Committee	Member Details
6	Member - Alumni	Mr. Varun Patel Consultant Quinnox Bangalore Email: varunpatel3069@gmail.com Mob: 9886850355
7	Internal Faculty Members with Various specializations	Dr. Indumathi. S, K Associate Professor, Dept. of M.C.A Dr. A.I.T, Bangalore-56 Email: <a href="mailto:indumathi.mca@drait.edu.in">indumathi.mca@drait.edu.in</a> Mob: 9739910995
		Ms. Shobha Rani. B.R Associate Professor, Dept. of M.C.A Dr. A.I.T, Bangalore-56 Email: <a href="mailto:shobharani.mca@drait.edu.in">shobharani.mca@drait.edu.in</a> Mob: 9740098198
		Ms. Anitha J Assistant Professor, Dept of M.C.A. Dr. A.I.T. , Bangalore – 56 Email: <a href="mailto:anitha.mca@drait.edu.in">anitha.mca@drait.edu.in</a> Mob: 9845518391

**The Board of Studies has recommended the following points after detailed deliberations.**

1. The HOD invited all the BoS members to the Google meet and welcomed all the members individually.
2. The HOD has presented the scheme and syllabus of 2020-22 of 2 years MCA Programme for 100 credits in detail and discussed semester wise, each member has suggested few changes as listed in the following points.
3. Dr. Muralidharan sir has proposed to change the course title of 20MCA32 in the III semester from Advances in Java Programming to Advanced Java Programming.
4. Dr. N.P. Kavya madam has proposed to include a program on Q-Learning in Machine learning using python lab (20MCAL36).
5. Dr. Muralidharan sir has proposed to include any network tool like wireshark in the network architecture and programming (20MCA33).
6. Mr. Varun has suggested to rename a module in Full stack web development (20MCA345) as Exposing REST APIs.

7. Dr. N.P. Kavya madam has suggested that the student technical seminar in the III semester to be related to the mini project (20MCAS39).
8. Dr. N.P. Kavya madam has suggested to include the industry certification courses along with MOOC Courses (20MCAI41) in the IV semester.
9. The BoS members recommended to rearrange the concepts of statistics in research methodology (20MCA24) and mathematical and statistical foundations for computer applications (20MCA15) in the I year syllabus.
10. The BoS has recommended modifications in the course content of Web Technologies (20MCA13) in I semester.
11. The BoS has suggested to include the ethical hacking tools in the course content of Ethical Hacking (20MCA255) in II semester.
12. The BoS has approved the list of interdepartment electives.
13. The members appreciated the designed curriculum and suggested the department to implement all the courses effectively.
14. The members of BoS recommended the scheme and syllabus of **2020-22 scheme** for 100 credits with the above specified updations and the same shall be implemented from the academic year 2021-22 onwards.
15. The HOD has presented the scheme and syllabus of V and VI semesters of 2018-21 scheme of three years MCA Programme which will be implemented during 2021-22..
16. The members reviewed the department vision, mission and PEOs and recommended the same.
17. The BoS meeting was concluded with vote of thanks by the BoS - Chairman



Chairman – BoS  
MCA Program  
Dr. Ambedkar Institute of Technology  
Dept: of Master of Computer Applications  
Dr. Ambedkar Institute of Technology  
Bangalore - 560 058

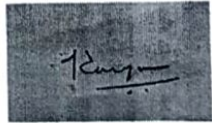
To  
The Chairman  
BOS – MCA  
Dr.AIT, Bengaluru

This is to inform that the Board of Studies meeting of MCA Program was held through online on 15<sup>th</sup> of June 2021 at 11.00 a.m.in the MCA Department at Dr. Ambedkar Institute of Technology, Bengaluru.

I have reviewed the syllabus of MCA I and II semester syllabus of 2020-22 scheme and III & IV semester (II year) Syllabus for 2020 – 2022 scheme found the following changes which can be incorporated as mentioned below.

**Comments/ Suggestions**

I hereby indicate my approval for the revised syllabus of MCA after conduction of BOS meeting held on 15<sup>th</sup> June 2021 ,as the suggestions are well incorporated

#	Name of the Nominated Member	Institution	Signature with Date
1.	Dr Kavya N P	RNSIT,Bengaluru	




To  
The Chairman  
BOS – MCA  
Dr.AIT, Bengaluru

This is to inform that the Board of Studies meeting of MCA Program was held through online on 15<sup>th</sup> of June 2021 at 11.00 a.m.in the MCA Department at Dr. Ambedkar Institute of Technology, Bengaluru.

I have reviewed the syllabus of MCA I and II semester syllabus of 2020-22 scheme and III & IV semester (II year) Syllabus for 2020 – 2022 scheme found the following changes which can be incorporated as mentioned below.

**Comments/ Suggestions**

i) The changes suggested are incorporated in the syllabus.

	<b>Name of the Nominated Member</b>	<b>Institution</b>	<b>Signature with Date</b>
2.	M.R. Muralidharan	Indian Institute of Science Bangalore	 5/7/2021

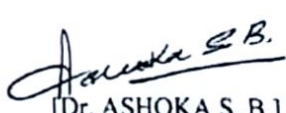
To  
The Chairman  
BOS – MCA  
Dr.AIT, Bengaluru

This is to inform that the Board of Studies meeting of MCA Program was held through online on 15<sup>th</sup> of June 2021 at 11.00 a.m.in the MCA Department at Dr. Ambedkar Institute of Technology, Bengaluru.

I have reviewed the syllabus of MCA I and II semester syllabus of 2020-22 scheme and III & IV semester (II year) Syllabus for 2020 – 2022 scheme found the following changes which can be incorporated as mentioned below.

**Comments/ Suggestions**

- i) The syllabus is Very Useful for students to seek their career in industries.
- ii) Introducing Industry level courses helps a lot for students as well as faculties
- iii) The changes suggested are incorporated in the syllabus

#	Name of the Nominated Member	Institution	Signature with Date
1.	Dr Ashoka .S.B	Maharani Cluster University.	 [Dr. ASHOKA S. B.]

To  
The Chairman  
BOS – MCA  
Dr.AIT, Bengaluru

This is to inform that the Board of Studies meeting of MCA Program was held through online on 15<sup>th</sup> of June 2021 at 11.00 a.m.in the MCA Department at Dr. Ambedkar Institute of Technology, Bengaluru.

I have reviewed the syllabus of MCA I and II semester syllabus of 2020-22 scheme and III & IV semester (II year) Syllabus for 2020 – 2022 scheme found the following changes which can be incorporated as mentioned below.

**Comments/ Suggestions**

- i) The changes suggested are incorporated in the syllabus.
- ii) Syllabus is formed based on Emerging Trends in Information Technology.

#	Name of the Nominated Member	Institution	Signature with Date
1.	B. S. Daya Sagar	Indian Statistical Institute – Bangalore Centre	B. S. Daya Sagar

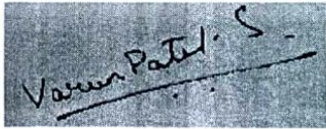
To  
The Chairman  
BOS – MCA  
Dr.AIT, Bengaluru

This is to inform that the Board of Studies meeting of MCA Program was held through online on 15<sup>th</sup> of June 2021 at 11.00 a.m.in the MCA Department at Dr. Ambedkar Institute of Technology, Bengaluru.

I have reviewed the syllabus of MCA I and II semester syllabus of 2020-22 scheme and III & IV semester (II year) Syllabus for 2020 – 2022 scheme found the following changes which can be incorporated as mentioned below.

**Comments/ Suggestions**

- i) The changes suggested are incorporated in the syllabus.
- ii) Syllabus is formed based on Emerging Trends in Information Technology.

#	Name of the Nominated Member	Institution	Signature with Date
3.	Varun Patel S	Dr. A.I.T.	 09/07/2021

**Dr. Ambedkar Institute of Technology, Bengaluru-56**  
(An Autonomous Institute, Affiliated to VTU, Belagavi)

**Master of Computer Applications Program**  
(Accredited by National Board of Accreditation)



**MCA I – IV semester Syllabus**  
**Two Years Duration**  
**(2020 – 2022)**

# **Dr. Ambedkar Institute of Technology, Bengaluru – 560056**

## **Master of Computer Applications**

### **Institute - Vision and Mission**

#### **Vision**

To create Dynamic, Resourceful, Adept and Innovative Technical professionals to meet global challenges.

#### **Mission**

- To offer state-of-the-art under graduate, post graduate and doctoral programs in the fields of Engineering, Technology and Management
- To generate new knowledge by engaging faculty and students in research, development and innovation.
- To provide strong theoretical foundation to the students, supported by extensive practical training to meet the industrial requirements.
- To instil moral and ethical values with social and professional commitment.

### **DEPARTMENT - VISION AND MISSION**

#### **VISION**

To create a quality human resource with good technical competence to face the global challenges.

#### **MISSION**

- To create a Centre of Excellence through industry institute interaction.
- To prepare students for utilizing more creativity, innovativeness and leadership Qualities.
- To inculcate a sense of commitment to the students towards socio-economic development of the nation

#### **Program Educational Objectives**

**PEO 1:** Graduates are prepared to be employed in IT industries and be engaged in learning, understanding, and applying new ideas.

**PEO 2:** To prepare students for utilizing more creativity, innovativeness and leadership Qualities.

**PEO 3:** To provide an opportunity to students to learn the latest trends in computer technology and make them ready for life-long learning process with leadership skills and corporate social responsibilities.

### **Program Outcomes:**

**PO 1:** Ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modelling and design of computer based systems.

**PO 2:** Graduates will be able to demonstrate with excellent programming, analytical, logical and problem solving skills.

**PO 3:** Graduates will be able to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability.

**PO 4:** An ability to devise and conduct experiments, interpret data and provide well informed conclusions.

**PO 5:** An ability to select modern computing tools and techniques and use them with dexterity.

**PO 6:** An ability to function professionally with ethical responsibility as an individual as well as in multidisciplinary teams with positive attitude.

**PO 7:** An ability to appreciate the importance of goal setting and to recognize the need for life-long learning.

**PO 8:** Develop and maintain medium to large scale application software using theoretical and applied knowledge of software engineering and project management.

**PO 9:** An ability to communicate effectively.

**PO 10:** An ability to understand the impact of system solutions in a contemporary, global, economical, environmental, and societal context for sustainable development.

**PO 11:** An ability to execute the project either individually or in a group.

**PO 12:** An ability to become an Entrepreneur in the field of information technology to create a value and wealth for the betterment of the individual and society at large.

# Dr. Ambedkar Institute of Technology

(An Autonomous Institute affiliated to VTU, Accredited by NAAC with 'A' grade)

## Department of Master of Computer Applications

**SCHEME OF TEACHING AND EXAMINATION OF MCA FIRST SEMESTER  
(AUTONOMOUS) 2020-2022**

Sl. No.	Course Code	Course Title	Teaching hours per week			Examination				Credits
			Lecture	Tutorial/ Seminar/ Assignment	Practical / Project	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	20MCA11	Object Oriented Programming using Java	4	-	-	3	50	50	100	4
2	20MCA12	Data Structures and Algorithms	4	-	-	3	50	50	100	4
3	20MCA13	Web Technologies	4	-	-	3	50	50	100	4
4	20MCA14	RDBMS	3	-	2	3	50	50	100	4
5	20MCA15	Mathematical and Statistical Modelling for Computer Applications	4	-	-	3	50	50	100	4
6	20MCAL16	Object Oriented Programming using Java Lab	-	-	2	3	50	50	100	1
7	20MCAL17	Data Structures and Algorithms Lab	-	-	2	3	50	50	100	1
8	20MCAM18	Mini Project in Web Technologies	-	2	2	3	50	50	100	2
9	20MCAB19	Principles of Programming (Bridge Course – Non-credit)	3	-	-	3	50	50	100	0
Total			22	02	08	27	450	450	900	24



# Dr. Ambedkar Institute of Technology

(An Autonomous Institute affiliated to VTU, Accredited by NAAC with 'A' grade)

## Department of Master of Computer Applications

### SCHEME OF TEACHING AND EXAMINATION OF MCA SECOND SEMESTER (AUTONOMOUS) 2020-2022

Sl. No.	Course Code	Course Title	Teaching hours per week			Examination				Credits
			Lecture	Tutorial/ Seminar/ Assignment	Practical / Project	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	20MCA21	Python Programming	4	-	-	3	50	50	100	4
2	20MCA22	Internet of Things	4	-	-	3	50	50	100	4
3	20MCA23	Software Engineering and Project Management	4	-	-	3	50	50	100	4
4	20MCA24	Research Methodology	3	-	-	3	50	50	100	3
5	20MCA25	Elective – 1	3		2	3	50	50	100	4
6	20MCA26	Elective - 2	3	-	-	3	50	50	100	3
7	20MCAL27	Python Programming Lab	-	-	2	3	50	50	100	1
8	20MCAL28	Internet of Things Lab	-		2	3	50	50	100	1
09	20MCAM29	Mini Project in Mobile Application Development	-	2	2	3	50	50	100	2
Total			21	02	08	27	450	450	900	26

**Dr. Ambedkar Institute of Technology**  
(An Autonomous Institute affiliated to VTU, Accredited by NAAC with 'A' grade)  
**Department of Master of Computer Applications**  
**MCA SECOND SEMESTER ELECTIVE COURSES**

**Elective – 1**

S.No	Course Code	Course Title
1.	20MCA251	Cyber Security
2.	20MCA252	Software Testing and Automation
3.	20MCA253	Data Science using R
4.	20MCA254	Programming using C#
5.	20MCA255	Ethical Hacking

**Elective – 2**

S.No	Course Code	Course Title
1.	20MCA261	Data Mining and Business Intelligence
2.	20MCA262	Enterprise Resource Planning
3.	20MCA263	Supply Chain Management
4.	20MCA264	Storage Area Networks
5.	20MCA265	Distributed Operating Systems

# Dr. Ambedkar Institute of Technology

(An Autonomous Institute affiliated to VTU, Accredited by NAAC with 'A' grade)

## Department of Master of Computer Applications

**SCHEME OF TEACHING AND EXAMINATION OF MCA THIRD SEMESTER  
(AUTONOMOUS) 2020-2022**

Sl. No.	Course Code	Course Title	Teaching hours per week			Examination				Credits
			Lecture	Tutorial/ Seminar/ Assignme	Practical / Project	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	20MCA31	Machine Learning using Python	4	-	-	3	50	50	100	4
2	20MCA32	Advanced Java Programming	4	-	-	3	50	50	100	4
3.	20MCA33	Network Architecture and Programming	3	-	2	3	50	50	100	4
4	20MCA34	Elective – 3	3		2	3	50	50	100	4
5	20MCA35	Elective - 4	3		-	3	50	50	100	3
6	20MCAL36	Machine Learning using Python Lab	-	-	2	3	50	50	100	1
7	20MCAL37	Advanced Java Programming Lab	-	-	2	3	50	50	100	1
8	20MCAM38	Mini Project	-	-	4	3	50	50	100	2
9.	20MCAS39	Technical Seminar	-	-	2	-	-	50	50	2
Total			17	00	12	27	400	450	850	25

**Dr. Ambedkar Institute of Technology**  
(An Autonomous Institute affiliated to VTU, Accredited by NAAC with 'A' grade)  
**Department of Master of Computer Applications**  
**MCA THIRD SEMESTER ELECTIVE COURSES**

**Elective – 3**

S.No	Course Code	Course Title
1.	20MCA341	Digital Marketing
2.	20MCA342	Cloud Computing
3.	20MCA343	Big Data Analytics
4.	20MCA344	Programming using GOLang
5.	20MCA345	Full Stack Web Development

**Elective-4**

S.No	Course Code	Course Title
1.	20MCA351	Block Chain Technology
2.	20MCA352	5G Wireless Technologies
3..	20MCA353	Artificial Intelligence
4.	20MCA354	Software Architecture and Design Patterns
5.	20MCA355	Graph Theory

**Dr. Ambedkar Institute of Technology**  
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**Department of Master of Computer Applications**  
**SCHEME OF TEACHING AND EXAMINATION OF MCA FOURTH SEMESTER**  
 (AUTONOMOUS) 2020-2022

Sl. No.	Course Code	Course Title	Teaching hours per week			Examination				Credits
			Lecture	Tutorial	Practical / Seminar	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1.	20MCAI41	MOOC Course and Industry Internship	-	-	2	3	50	50	100	5
2.	20MCAP42	Project Work	-	-	4	3	150	100	250	20
<b>Total</b>			-	-	<b>6</b>	<b>6</b>	<b>200</b>	<b>150</b>	<b>350</b>	<b>25</b>
<b>Grand Total</b>						<b>350</b>				<b>3000</b>

**Dr. Ambedkar Institute of Technology**

(An Autonomous Institute affiliated to VTU, Accredited by NAAC with 'A' grade)  
**Department of Master of Computer Applications**  
**SCHEME OF TEACHING AND EXAMINATION OF MCA INTERDEPARTMENT**  
**ELECTIVE (AUTONOMOUS) 2020-2022**

Sl. No.	Course Code	Course Title	Teaching hours per week			Examination			Credits	Eligibility	
			Lecture	Tutorial	Practical / Seminar	Duration in hours	SEE Marks	CIE Marks			Total Marks
1	20MCAE01	Data Science using Python	3	-	-	3	50	50	100	3	All Branches
2.	20MCAE02	Professional Practices for Higher Education	3	-	-	3	50	50	100	3	All Branches
3.	20MCAE03	R programming for statistics and data Science	3			3	50	50	100	3	All Branches
4.	20MCAE04	Full stack web development	3			3	50	50	100	3	All Branches
5.	20MCAE05	Animation and Gaming	3			3	50	50	100	3	All Branches
6.	20MCAE06	Ethical Hacking	3			3	50	50	100	3	All Branches
<b>Total</b>			<b>6</b>	<b>-</b>	<b>-</b>	<b>6</b>	<b>100</b>	<b>100</b>	<b>200</b>	<b>06</b>	

**Dr. Ambedkar Institute of Technology**

(An Autonomous Institute affiliated to VTU, Accredited by NAAC with 'A' grade)  
**Department of Master of Computer Applications**  
(AUTONOMOUS) 2020-2022

**MCA Course Matrix**

<b>Components</b>	<b>Semester 1 (Credits)</b>	<b>Semester 2 (Credits)</b>	<b>Semester 3 (Credits)</b>	<b>Semester 4 (Credits)</b>	<b>Total (Credits)</b>
<b>Core Courses</b>	<b>20</b>	<b>15</b>	<b>12</b>	<b>-</b>	<b>47</b>
<b>Elective Courses</b>	<b>-</b>	<b>07</b>	<b>07</b>	<b>-</b>	<b>14</b>
<b>Lab Courses</b>	<b>04</b>	<b>04</b>	<b>02</b>	<b>-</b>	<b>10</b>
<b>Mini Project</b>	<b>-</b>	<b>-</b>	<b>02</b>	<b>-</b>	<b>02</b>
<b>Seminar</b>	<b>-</b>	<b>-</b>	<b>02</b>	<b>-</b>	<b>02</b>
<b>Internship</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>05</b>	<b>05</b>
<b>Project</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>20</b>	<b>20</b>
<b>Non-Credit Course</b>	<b>1 course</b>	<b>-</b>	<b>-</b>		<b>1 course</b>
<b>Total Credits</b>	<b>24</b>	<b>26</b>	<b>25</b>	<b>25</b>	<b>100</b>
<b>Total Marks</b>	<b>900</b>	<b>900</b>	<b>850</b>	<b>350</b>	<b>3000</b>