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**SYLLABUS FOR**

**B. TECH. ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**

**2021-22**

**DR. D.Y. PATIL VIDYAPEETH, PUNE**  
**DR. D. Y. PATIL BIOTECHNOLOGY & BIOINFORMATICS INSTITUTE,**  
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**COURSE STRUCTURE FOR**  
**B. TECH. ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**

<b>SEMESTER I</b>						
<b>Course Code</b>	<b>Course Name</b>		<b>T</b>	<b>P</b>	<b>Hr</b>	<b>Cr</b>
BSC 101	Physics	3	0	2	5	4
BSC 102	Chemistry	3	0	2	5	4
ESC 101	Basic Electronics and Electrical Engineering	3	0	2	5	4
ESC 102	Fundamentals of programming Languages	3	0	4	7	5
HSMC 101	Communication Skills	1	2	0	3	3
BSC 103	Mathematics	3	0	0	3	3
<b>Total</b>		<b>16</b>	<b>2</b>	<b>10</b>	<b>28</b>	<b>23</b>
<b>SEMESTER II</b>						
<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Hr</b>	<b>Cr</b>
ESC 201	Problem Solving by Programming	3	0	4	7	5
BSC 201	Computational Statistics	3	0	0	3	3
BSC 202	General Biology	2	1	0	3	3
ESC 202	Engineering Graphics and Design	1	0	4	5	3
ESC 203	Engineering Mechanics	3	0	0	3	3
ESC 204	Project Based Learning –I	0	0	4	4	2
ESC 205	Workshop and manufacturing practices-laboratory	0	0	4	4	2
<b>Total</b>		<b>12</b>	<b>1</b>	<b>16</b>	<b>29</b>	<b>21</b>
<b>SEMESTER III</b>						
<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Hr</b>	<b>Cr</b>
BSC 301	Discrete Mathematics	3	0	0	3	3
PCC-AI 301	Data Structures	3	0	4	7	5
PCC-AI 302	Software Engineering	3	0	0	3	3
PCC-AI 303	System Programming and Operating System	3	0	2	5	4
PCC-AI 304	Principles of Programming Languages	3	0	4	7	5
<b>Total</b>		<b>15</b>	<b>0</b>	<b>10</b>	<b>25</b>	<b>20</b>
<b>SEMESTER IV</b>						
<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Hr</b>	<b>Cr</b>
PCC-AI 401	Database Management System	3	0	4	7	5
PCC-AI 402	Management Information System	3	0	0	3	3
PCC-AI 403	Internet of Things	3	0	2	5	4

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PCC-AI 404	Artificial Intelligence	3	0	4	7	5
PCC-AI 405	R Programming	2	0	2	4	3
ESC 401	Project Based Learning-II	0	0	4	4	2
HSMC 401	Universal Human Values II	3	0	0	3	3
<b>Total</b>		<b>17</b>	<b>0</b>	<b>16</b>	<b>33</b>	<b>25</b>
<b>SEMESTER V</b>						
<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Hr</b>	<b>Cr</b>
PCC-AI 501	Advanced Databases	3	0	4	7	5
PCC-AI 502	Machine Learning	3	0	4	7	5
PCC-AI 503	Web Technology	3	0	2	5	4
PCC-AI 504	Design and Analysis of Algorithm	3	0	0	3	3
PEC-AI 501	Elective-I	3	0	2	5	4
		<b>15</b>	<b>0</b>	<b>12</b>	<b>27</b>	<b>21</b>
<b>Total</b>						
<b>Elective I</b> (Human Computer Interface, System modeling and Design, Pattern Recognition, Structural Biology and Bioinformatics )						
<b>SEMESTER VI</b>						
<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Hr</b>	<b>Cr</b>
PCC-AI 601	Data Warehouse and Mining	3	0	2	5	4
PCC-AI 602	Deep Learning	3	0	4	7	5
PCC-AI 603	Computer Networks and Security	3	0	4	7	5
PCC-AI 604	Information Retrieval	2	0	0	2	2
PEC-AI 601	Elective II	3	0	2	5	4
PCC-AI 606	Seminar and Technical Communication	0	1	0	0	0
<b>Total</b>		<b>14</b>	<b>1</b>	<b>12</b>	<b>26</b>	<b>20</b>
<b>Elective II</b> (Software architecture, Quantum AI , Robotics and Automation, Clinical Science and Data management)						
<b>SEMESTER VII</b>						
<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Hr</b>	<b>Cr</b>
PCC-AI 701	Big Data and Analytics	3	0	4	7	5
PCC-AI 702	Data Modeling & Visualization	3	0	2	5	4
PEC-AI 701	Elective III	3	0	2	5	4
PEC-AI 702	Elective-IV	3	0	0	3	3
PCC-AI 705	Project- I	0	0	4	4	2
<b>Total</b>		<b>12</b>	<b>0</b>	<b>12</b>	<b>24</b>	<b>18</b>
<b>Elective III</b> (Cyber Security, Software Testing and Quality Assurance, Bio-inspired Algorithms, Biomechatronics)						
<b>Elective IV</b> (Principles of Compiler Design, Mobile Computing, AI in Healthcare, Epidemiology and Public Health)						
<b>SEMESTER VIII</b>						
<b>Course Code</b>	<b>Course Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Hr</b>	<b>Cr</b>
PCC-AI 801	Distributed Systems	3	0	2	5	4
PEC-AI 801	Elective V	3	0	0	3	3
PEC-AI 802	Elective VI	3	0	2	5	4

**SYLLABUS FOR B. TECH. ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**

PCCAI 804	Project : II	-	-	12	12	6
<b>Total</b>		<b>9</b>	<b>0</b>	<b>16</b>	<b>25</b>	<b>17</b>
<p><b>Elective V</b> (Cloud computing, High Performance computing, Cyber physical systems, AI in Agriculture)</p> <p><b>Elective VI</b> (Soft Computing, Blockchain Technology, Web Mining and Text Mining, Chemoinformatics and Drug Designing)</p>						
<b>TOTAL CREDITS-165</b>						

Course Code:

BSC	Basic Science Course
ESC	Engineering Science Course
PCC	Professional Core Course
PEC	Professional Elective Course
HSMC	Humanities & Social Sciences including Management