



**BRAINWARE UNIVERSITY**  
**SCHOOL OF COMPUTATIONAL & APPLIED SCIENCES**  
**DEPARTMENT OF COMPUTATIONAL SCIENCES**  
**BACHELOR OF COMPUTER APPLICATIONS /**  
**BACHELOR OF COMPUTER APPLICATIONS (HONOURS) /**  
**BACHELOR OF COMPUTER APPLICATIONS (HONOURS with RESEARCH) - 2023**  
**Semester– I**

| Sl. No.      | Course Code | Course                            | L         | T        | P        | Evaluation Scheme |            | Total      | Credits   | Course Type |
|--------------|-------------|-----------------------------------|-----------|----------|----------|-------------------|------------|------------|-----------|-------------|
|              |             |                                   |           |          |          | CIE               | ESE        |            |           |             |
| 1            | BCA10101    | Digital Logic                     | 3         | 1        | 0        | 40                | 60         | 100        | 4         | Major       |
| 2            | BCA19102    | Digital Logic Lab                 | 0         | 0        | 4        | 40                | 60         | 100        | 2         | Major       |
| 3            | BCA19103    | Programming in C Lab              | 0         | 0        | 4        | 40                | 60         | 100        | 2         | Major       |
| 4            | BCA10001    | Mathematics and Numerical Methods | 3         | 0        | 0        | 40                | 60         | 100        | 3         | IC          |
| 5            | AEC00005    | Functional English                | 2         | 0        | 0        | 40                | 60         | 100        | 2         | AEC         |
| 6            | BCA10002    | Soft Skills                       | 3         | 0        | 0        | 40                | 60         | 100        | 3         | SEC         |
| 7            | VAC00012    | Problem-Solving Methodologies     | 2         | 0        | 0        | 40                | 60         | 100        | 2         | VAC         |
| 8            | VAC00007    | Human Values and Ethics           | 2         | 0        | 0        | 40                | 60         | 100        | 2         | VAC         |
| <b>TOTAL</b> |             |                                   | <b>15</b> | <b>1</b> | <b>8</b> | <b>320</b>        | <b>480</b> | <b>800</b> | <b>20</b> |             |

**SEMESTER – II**

| Sl. No.      | Course Code | Course                           | L         | T        | P        | Evaluation Scheme |            | Total      | Credits   | Course Type |
|--------------|-------------|----------------------------------|-----------|----------|----------|-------------------|------------|------------|-----------|-------------|
|              |             |                                  |           |          |          | CIE               | ESE        |            |           |             |
| 1            | BCA20104    | Data Structure and Algorithm     | 3         | 1        | 0        | 40                | 60         | 100        | 4         | Major       |
| 2            | BCA29105    | Data Structure and Algorithm Lab | 0         | 0        | 4        | 40                | 60         | 100        | 2         | Major       |
| 3            | BCA29106    | Python Lab                       | 0         | 0        | 4        | 40                | 60         | 100        | 2         | Major       |
| 4            | BCA20001    | Discrete Mathematical Structure  | 3         | 0        | 0        | 40                | 60         | 100        | 3         | IC          |
| 5            | AEC00002    | Communicative English            | 2         | 0        | 0        | 40                | 60         | 100        | 2         | AEC         |
| 6            | BCA20002    | HTML, CSS and CSS Preprocessor   | 3         | 0        | 0        | 40                | 60         | 100        | 3         | SEC         |
| 7            | VAC00003    | Computer Architecture            | 2         | 0        | 0        | 40                | 60         | 100        | 2         | VAC         |
| 8            | VAC00006    | Environmental Studies            | 2         | 0        | 0        | 40                | 60         | 100        | 2         | VAC         |
| <b>TOTAL</b> |             |                                  | <b>15</b> | <b>1</b> | <b>8</b> | <b>320</b>        | <b>480</b> | <b>800</b> | <b>20</b> |             |



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**SEMESTER – III**

| Sl. No.      | Course Code | Course                                  | L         | T        | P         | Evaluation Scheme |            | Total      | Credits   | Course Type |
|--------------|-------------|-----------------------------------------|-----------|----------|-----------|-------------------|------------|------------|-----------|-------------|
|              |             |                                         |           |          |           | CIE               | ESE        |            |           |             |
| 1            | BCA37107    | Database Management System              | 3         | 0        | 2         | 40                | 60         | 100        | 4         | Major       |
| 2            | BCA30108    | Object Oriented Programming in JAVA     | 3         | 0        | 0         | 40                | 60         | 100        | 3         | Major       |
| 3            | BCA39109    | Object Oriented Programming in JAVA Lab | 0         | 0        | 4         | 40                | 60         | 100        | 2         | Major       |
| 4            | BCA30110    | Operating System                        | 3         | 0        | 0         | 40                | 60         | 100        | 3         | Major       |
| 5            | BCA30001    | Vedic Mathematics                       | 3         | 0        | 0         | 40                | 60         | 100        | 3         | IC          |
| 6            | AEC09001    | Communicative English Lab               | 0         | 0        | 4         | 40                | 60         | 100        | 2         | AEC         |
| 7            | BCA37002    | Internet and Web Technologies           | 2         | 0        | 2         | 40                | 60         | 100        | 3         | SEC         |
| <b>TOTAL</b> |             |                                         | <b>14</b> | <b>0</b> | <b>12</b> | <b>280</b>        | <b>420</b> | <b>700</b> | <b>20</b> |             |

**SEMESTER – IV**

| Sl. No.      | Course Code | Course                                                                                | L         | T        | P         | Evaluation Scheme |            | Total      | Credits   | Course Type |
|--------------|-------------|---------------------------------------------------------------------------------------|-----------|----------|-----------|-------------------|------------|------------|-----------|-------------|
|              |             |                                                                                       |           |          |           | CIE               | ESE        |            |           |             |
| 1            | BCA47111    | Design and Analysis of Algorithm                                                      | 2         | 0        | 4         | 40                | 60         | 100        | 4         | Major       |
| 2            | BCA49112    | PHP and MySQL Lab                                                                     | 0         | 0        | 4         | 40                | 60         | 100        | 2         | Major       |
| 3            | BCA47113    | Full-stack Development-I                                                              | 2         | 0        | 4         | 40                | 60         | 100        | 4         | Major       |
| 4            | BCA40201    | Sustainability in Indian Knowledge System                                             | 4         | 0        | 0         | 40                | 60         | 100        | 4         | Minor       |
| 5            | BCA40202    | Computer Network                                                                      | 3         | 1        | 0         | 40                | 60         | 100        | 4         | Minor       |
| 6            | AEC00006    | Modern Indian Language<br>A. Hindi<br>B. Bengali<br>C. Alternative English<br>D. MOOC | 2         | 0        | 0         | 40                | 60         | 100        | 2         | AEC         |
| <b>TOTAL</b> |             |                                                                                       | <b>13</b> | <b>1</b> | <b>12</b> | <b>240</b>        | <b>360</b> | <b>600</b> | <b>20</b> |             |

\*MOOC/Equivalent MOOC approved by BoS Chair (Evaluation scheme as per Blended Learning and MOOCs Policy)



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**SEMESTER –V**

| Sl. No.      | Course Code | Course                     | L         | T        | P         | Evaluation Scheme |            | Total      | Credits   | Course Type |
|--------------|-------------|----------------------------|-----------|----------|-----------|-------------------|------------|------------|-----------|-------------|
|              |             |                            |           |          |           | CIE               | ESE        |            |           |             |
| 1            | BCA50114    | Software Engineering       | 3         | 1        | 0         | 40                | 60         | 100        | 4         | Major       |
| 2            | BCA50115    | Cloud Computing            | 2         | 0        | 0         | 40                | 60         | 100        | 2         | Major       |
| 3            | BCA57116    | Full-stack Development -II | 2         | 0        | 4         | 40                | 60         | 100        | 4         | Major       |
| 4            | BCA57203    | Artificial Intelligence    | 2         | 0        | 4         | 40                | 60         | 100        | 4         | Minor       |
| 5            | BCA57204    | Machine Learning           | 2         | 0        | 4         | 40                | 60         | 100        | 4         | Minor       |
| 6            | BCA58001    | Project-I                  | 0         | 0        | 0         | 40                | 60         | 100        | 2         | IAPC        |
| <b>TOTAL</b> |             |                            | <b>11</b> | <b>1</b> | <b>12</b> | <b>240</b>        | <b>360</b> | <b>600</b> | <b>20</b> |             |

**SEMESTER – VI**

| Sl. No.      | Course Code | Course                                   | L         | T        | P        | Evaluation Scheme |            | Total      | Credits   | Course Type |
|--------------|-------------|------------------------------------------|-----------|----------|----------|-------------------|------------|------------|-----------|-------------|
|              |             |                                          |           |          |          | CIE               | ESE        |            |           |             |
| 1            | BCA60117    | E-Commerce Technologies                  | 4         | 0        | 0        | 40                | 60         | 100        | 4         | Major       |
| 2            | BCA60118    | Cyber Security                           | 2         | 0        | 0        | 40                | 60         | 100        | 2         | Major       |
| 3            | BCA60119    | IT Enabled Services and Entrepreneurship | 4         | 0        | 0        | 40                | 60         | 100        | 4         | Major       |
| 4            | BCA68120    | Project-II                               | 0         | 0        | 0        | 40                | 60         | 100        | 2         | Major       |
| 5            | BCA60205    | Data Warehousing and Data Mining         | 4         | 0        | 0        | 40                | 60         | 100        | 4         | Minor       |
| 6            | BCA60206    | Big Data Analytics                       | 4         | 0        | 0        | 40                | 60         | 100        | 4         | Minor       |
| <b>TOTAL</b> |             |                                          | <b>18</b> | <b>0</b> | <b>0</b> | <b>240</b>        | <b>360</b> | <b>600</b> | <b>20</b> |             |



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**SEMESTER – VII**

| Sl. No.      | Course Code | Course                              | L         | T        | P        | Evaluation Scheme |            | Total      | Credits   | Course Type |
|--------------|-------------|-------------------------------------|-----------|----------|----------|-------------------|------------|------------|-----------|-------------|
|              |             |                                     |           |          |          | CIE               | ESE        |            |           |             |
| 1            | BCA70121    | Research Methodologies              | 4         | 0        | 0        | 40                | 60         | 100        | 4         | Major       |
| 2            | BCA70122    | Distributed Database                | 4         | 0        | 0        | 40                | 60         | 100        | 4         | Major       |
| 3            | BCA70123    | Client Server Computing             | 4         | 0        | 0        | 40                | 60         | 100        | 4         | Major       |
| 4            | BCA70124    | Formal Language and Automata Theory | 4         | 0        | 0        | 40                | 60         | 100        | 4         | Major       |
| 5            | BCA77207    | Image Processing                    | 3         | 0        | 2        | 40                | 60         | 100        | 4         | Minor       |
| <b>TOTAL</b> |             |                                     | <b>19</b> | <b>0</b> | <b>2</b> | <b>200</b>        | <b>300</b> | <b>500</b> | <b>20</b> |             |

**SEMESTER – VIII (Honours)**

| Sl. No.      | Course Code | Course                | L         | T        | P        | Evaluation Scheme |            | Total      | Credits   | Course Type |
|--------------|-------------|-----------------------|-----------|----------|----------|-------------------|------------|------------|-----------|-------------|
|              |             |                       |           |          |          | CIE               | ESE        |            |           |             |
| 1            | BCA80125H   | Compiler Design       | 4         | 0        | 0        | 40                | 60         | 100        | 4         | Major       |
| 2            | BCA80126H   | Blockchain Technology | 4         | 0        | 0        | 40                | 60         | 100        | 4         | Major       |
| 3            | BCA87127H   | Pattern Recognition   | 3         | 0        | 2        | 40                | 60         | 100        | 4         | Major       |
| 4            | BCA88128H   | Project-III           | 0         | 0        | 0        | 40                | 60         | 100        | 4         | Major       |
| 5            | BCA87208H   | Soft Computing        | 3         | 0        | 2        | 40                | 60         | 100        | 4         | Minor       |
| <b>TOTAL</b> |             |                       | <b>14</b> | <b>0</b> | <b>4</b> | <b>200</b>        | <b>300</b> | <b>500</b> | <b>20</b> |             |

**SEMESTER – VIII (HONOURS with RESEARCH)**

| Sl. No.      | Course Code | Course                                | L        | T        | P        | Evaluation Scheme |            | Total      | Credits   | Course Type |
|--------------|-------------|---------------------------------------|----------|----------|----------|-------------------|------------|------------|-----------|-------------|
|              |             |                                       |          |          |          | CIE               | ESE        |            |           |             |
| 1            | BCA80125R   | Natural Language Processing           | 3        | 1        | 0        | 40                | 60         | 100        | 4         | Major       |
| 2            | BCA80208R   | Virtual Reality and Augmented Reality | 3        | 1        | 0        | 40                | 60         | 100        | 4         | Minor       |
| 3            | BCA88001R   | Research Project                      | 0        | 0        | 0        | 40                | 60         | 100        | 12        | RPC         |
| <b>Total</b> |             |                                       | <b>6</b> | <b>2</b> | <b>0</b> | <b>120</b>        | <b>180</b> | <b>300</b> | <b>20</b> |             |