

**SCHEME OF STUDIES  
COMPUTER SCIENCE (SPECIALIZATION IN ARTIFICIAL INTELLIGENCE)**

| Batch 2022  |                                 |  |    |    |    |
|---|---------------------------------|--|----|----|----|
| FIRST YEAR  |                                 | SEMESTER SYSTEM                        |    |    |    |
| Course Code   | Course Title                    | Crd Hrs                                |    |    |    |
|   |                                 | Th                                     | Pr | T  |    |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b> |                                 |  |    |    |    |
| FALL 2022   | CT-175                          | Programming Fundamentals               | 3  | 1  | 4  |
|   | CT-174                          | Fundamentals of Information Technology | 2  | 1  | 3  |
|   | MT-171                          | Differential & Integral Calculus       | 3  | 0  | 3  |
|   | PH-122                          | Applied Physics                        | 3  | 1  | 4  |
|   | HS-205                          | Islamic Studies OR                     | 2  | 0  | 2  |
| SPRING 2023   | HS-209                          | Ethical Behaviour                      |    |    |    |
|   | MT-001                          | Mathematics-1 (for Pre-Medical)        |    |    | NC |
|   | CS-251                          | Logic Design & Switching Theory        | 3  | 1  | 4  |
|   | CT-162                          | Discrete Structures                    | 3  | 0  | 3  |
|   | CT-260                          | Object Oriented Programming            | 3  | 1  | 4  |
|   | HS-104                          | Functional English                     | 3  | 0  | 3  |
|   | HS-105                          | Pakistan Studies OR                    | 2  | 0  | 2  |
|   | HS-127                          | Pakistan Studies (for Foreigners)      |    |    |    |
|   | HS-220                          | Chinese Language-I                     |    |    | NC |
|   | HS-231                          | Turkish Language-I                     |    |    | NC |
| HS-224  | German language-I               |  |    | NC |    |
| HS-226  | French language-I               |  |    | NC |    |
| MT-002  | Mathematics-2 (for Pre-Medical) |  |    | NC |    |
| <b>New Specialisation vide Resolution No. SYN-200.6(b)(iv)</b>      |                                 |  |    |    |    |

| Batch 2023   |                 |   |          |          |          |
|--|-----------------|---|----------|----------|----------|
| FIRST YEAR   |                 | SEMESTER SYSTEM                             |          |          |          |
| Course Code  | Course Title    | Crd Hrs                                     |          |          |          |
|  |                 | Th  | Pr       | T        |          |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b>  |                 |   |          |          |          |
| FALL 2023  | CT-175          | Programming Fundamentals                    | 3        | 1        | 4        |
|  | CT-174          | Fundamentals of Information Technology      | 2        | 1        | 3        |
|  | <b>*EA-104</b>  | <b>Functional English</b>                   | <b>3</b> | <b>0</b> | <b>3</b> |
|  | PH-122          | Applied Physics                             | 3        | 1        | 4        |
|  | <b>**ES-205</b> | <b>Islamic Studies OR</b>                   | <b>2</b> | <b>0</b> | <b>2</b> |
| SPRING 2024  | <b>**ES-209</b> | <b>Ethical Behaviour</b>                    |          |          |          |
|  | MT-001          | Mathematics-1 (for Pre-Medical)             |          |          | NC       |
|  | CS-251          | Logic Design & Switching Theory             | 3        | 1        | 4        |
|  | CT-162          | Discrete Structures                         | 3        | 0        | 3        |
|  | CT-260          | Object Oriented Programming                 | 3        | 1        | 4        |
|  | <b>*MT-171</b>  | <b>Differential &amp; Integral Calculus</b> | <b>3</b> | <b>0</b> | <b>3</b> |
|  | <b>**ES-105</b> | <b>Pakistan Studies OR</b>                  | <b>2</b> | <b>0</b> | <b>2</b> |
|  | <b>**ES-127</b> | <b>Pakistan Studies (for Foreigners)</b>    |          |          |          |
|  | HS-220          | Chinese Language-I                          |          |          | NC       |
|  | HS-231          | Turkish Language-I                          |          |          | NC       |
| * Changed vide Resolution No. EMG-AC-1(A)<br>** Under Section 28(iv) Offic Order Acad42(156)16911<br>*** Under Section 28(iv) Offic Order Acad42(156)16909 |                 |   |          |          |          |

| Batch 2022  |                 |  |          |          |          |
|---|-----------------|--|----------|----------|----------|
| SECOND YEAR   |                 | SEMESTER SYSTEM                          |          |          |          |
| Course Code   | Course Title    | Crd Hrs                                  |          |          |          |
|   |                 | Th                                       | Pr       | T        |          |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b>   |                 |  |          |          |          |
| FALL 2023   | CT-159          | Data Structure Algorithms & Applications | 3        | 1        | 4        |
|   | MT-227          | Differential Equations                   | 3        | 0        | 3        |
|   | <b>**EA-115</b> | <b>Academic Reading and Writing</b>      | <b>3</b> | <b>0</b> | <b>3</b> |
|   | <b>**EA-219</b> | <b>Professional Ethics</b>               | <b>2</b> | <b>0</b> | <b>2</b> |
|   | CT-259          | System Analysis & Design                 | 3        | 0        | 3        |
| SPRING 2024   | <b>**EA-221</b> | <b>Chinese Language-II</b>               |          |          | NC       |
|   | <b>**EA-232</b> | <b>Turkish Language-II</b>               |          |          | NC       |
|   | <b>**EA-225</b> | <b>German language-II</b>                |          |          | NC       |
|   | <b>**EA-227</b> | <b>French language-II</b>                |          |          | NC       |
|   | CS-252          | Computer Architecture & Organisation     | 3        | 1        | 4        |
|   | CT-261          | Database Management Systems              | 3        | 1        | 4        |
|   | <b>**EA-218</b> | <b>Business Communications</b>           | <b>2</b> | <b>1</b> | <b>3</b> |
|   | <b>*EC-209</b>  | <b>Financial &amp; Cost Accounting</b>   | <b>3</b> | <b>0</b> | <b>3</b> |
|   | MT-272          | Linear Algebra & Geometry                | 3        | 0        | 3        |
|   | <b>**EA-200</b> | <b>Community Service</b>                 |          |          | NC       |
| <b>New Specialisation vide Resolution No. SYN-200.6(b)(iv)</b><br>* Changed vide Resolution No. EMG-AC-1(A)<br>** Under Section 28(iv) Offic Order Acad42(156)16909 |                 |  |          |          |          |

| Batch 2023  |  |  |          |          |          |
|---|--|--|----------|----------|----------|
| SECOND YEAR   |  | SEMESTER SYSTEM                          |          |          |          |
| Course Code   | Course Title                               | Crd Hrs                                  |          |          |          |
|   |  | Th                                       | Pr       | T        |          |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b> |  |  |          |          |          |
| FALL 2024   | CT-159                                     | Data Structure Algorithms & Applications | 3        | 1        | 4        |
|   | MT-227                                     | Differential Equations                   | 3        | 0        | 3        |
|   | EA-115                                     | Academic Reading and Writing             | 3        | 0        | 3        |
|   | EA-219                                     | Professional Ethics                      | 2        | 0        | 2        |
|   | <b>*MT-331</b>                             | <b>Probability &amp; Statistics</b>      | <b>3</b> | <b>0</b> | <b>3</b> |
| SPRING 2025   | CS-252                                     | Computer Architecture & Organisation     | 3        | 1        | 4        |
|   | CT-261                                     | Database Management Systems              | 3        | 1        | 4        |
|   | EA-218                                     | Business Communications                  | 2        | 1        | 3        |
|   | EC-209                                     | Financial & Cost Accounting              | 3        | 0        | 3        |
|   | MT-272                                     | Linear Algebra & Geometry                | 3        | 0        | 3        |
|   | EA-200                                     | Community Service                        |          |          | NC       |
|   | * Changed vide Resolution No. AC-163.5(iv) |  |          |          |          |

| Batch 2022  |                |  |          |          |          |
|---|----------------|--|----------|----------|----------|
| THIRD YEAR  |                | SEMESTER SYSTEM                          |          |          |          |
| Course Code   | Course Title   | Crd Hrs                                  |          |          |          |
|   |                | Th                                       | Pr       | T        |          |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b>   |                |  |          |          |          |
| FALL 2024   | CT-361         | Artificial Intelligence & Expert Systems | 3        | 1        | 4        |
|   | CT-351         | Knowledge Representation & Reasoning     | 3        | 0        | 3        |
|   | CT-353         | Operating Systems                        | 3        | 1        | 4        |
|   | CT-###         | AI Elective-I                            | 3        | 0        | 3        |
|   | CT-365         | Software Engineering                     | 3        | 0        | 3        |
| SPRING 2025   | CT-354         | Machine Learning                         | 3        | 1        | 4        |
|   | <b>*CT-376</b> | <b>Computer Communication Networks</b>   | <b>3</b> | <b>1</b> | <b>4</b> |
|   | CS-428         | Parallel & Distributed Computing         | 3        | 1        | 4        |
|   | CT-363         | Design & Analysis of Algorithms          | 3        | 0        | 3        |
|   | CT-###         | AI Elective-II                           | 3        | 0        | 3        |
| <b>New Specialisation vide Resolution No. SYN-200.6(b)(iv)</b><br>* Changed vide Resolution No. EMG-AC-1(A) |                |  |          |          |          |

| Batch 2023   |                           |   |    |    |   |
|--|---------------------------|---|----|----|---|
| THIRD YEAR   |                           | SEMESTER SYSTEM                             |    |    |   |
| Course Code  | Course Title              | Crd Hrs                                     |    |    |   |
|  |                           | Th  | Pr | T  |   |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b>                              |                           |   |    |    |   |
| FALL 2025  | <b>*CT-XXX</b>            | <b>Artificial Intelligence Elective-I</b>   |    |    |   |
|  | <b>*CT-XXX</b>            | <b>Artificial Intelligence Elective-II</b>  |    |    |   |
|  | CT-361                    | Artificial Intelligence & Expert Systems    | 3  | 1  | 4 |
|  | CT-353                    | Operating Systems                           | 3  | 1  | 4 |
|  | CT-365                    | Software Engineering                        | 3  | 0  | 3 |
| SPRING 2026  | <b>*CT-XXX</b>            | <b>Artificial Intelligence Elective-III</b> |    |    |   |
|  | CT-363                    | Design & Analysis of Algorithms             | 3  | 0  | 3 |
|  | CT-376                    | Computer Communication Networks             | 3  | 1  | 4 |
|  | CS-428                    | Parallel & Distributed Computing            | 3  | 1  | 4 |
|  | CT-354                    | Machine Learning                            | 3  | 1  | 4 |
| <b>*EA/ES</b>  | <b>Foreign Language-I</b> |   |    | NC |   |
| * Changed vide Resolution No.AC-163.5(i)<br>** Under Section 28(iv) Offic Order Acad42(156)16909 |                           |   |    |    |   |

| Batch 2024  |                    |   |    |    |   |
|---|--------------------|---|----|----|---|
| THIRD YEAR  |                    | SEMESTER SYSTEM                             |    |    |   |
| Course Code   | Course Title       | Crd Hrs                                     |    |    |   |
|   |                    | Th  | Pr | T  |   |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b> |                    |   |    |    |   |
| FALL 2026   | <b>*CT-XXX</b>     | <b>Artificial Intelligence Elective-I</b>   |    |    |   |
|   | <b>*CT-XXX</b>     | <b>Artificial Intelligence Elective-II</b>  |    |    |   |
|   | CT-361             | Artificial Intelligence & Expert Systems    | 3  | 1  | 4 |
|   | CT-353             | Operating Systems                           | 3  | 1  | 4 |
|   | CT-365             | Software Engineering                        | 3  | 0  | 3 |
| SPRING 2027   | <b>*CT-XXX</b>     | <b>Artificial Intelligence Elective-III</b> |    |    |   |
|   | CT-363             | Design & Analysis of Algorithms             | 3  | 0  | 3 |
|   | CT-376             | Computer Communication Networks             | 3  | 1  | 4 |
|   | CS-428             | Parallel & Distributed Computing            | 3  | 1  | 4 |
|   | CT-354             | Machine Learning                            | 3  | 1  | 4 |
| EA/ES   | Foreign Language-I |   |    | NC |   |
| * Changed vide Resolution No.AC-163.5(i)                            |                    |   |    |    |   |

| Batch 2025  |                    |  |    |    |   |
|---|--------------------|--|----|----|---|
| THIRD YEAR  |                    | SEMESTER SYSTEM                            |    |    |   |
| Course Code   | Course Title       | Crd Hrs                                    |    |    |   |
|   |                    | Th   | Pr | T  |   |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b> |                    |  |    |    |   |
| FALL 2027   | CT-353             | Operating Systems                          | 3  | 1  | 4 |
|   | CT-361             | Artificial Intelligence and Expert Systems | 3  | 1  | 4 |
|   | CT-363             | Design and Analysis of Algorithms          | 3  | 0  | 3 |
|   | CT-###             | Artificial Intelligence Elective I         |    |    |   |
|   | CT-###             | Artificial Intelligence Elective II        |    |    |   |
| SPRING 2028   | CT-351             | Knowledge Representation and Reasoning     | 3  | 0  | 3 |
|   | CT-376             | Computer Communication Networks            | 3  | 1  | 4 |
|   | CT-392             | Machine Learning                           | 3  | 1  | 4 |
|   | CT-###             | Artificial Intelligence Elective III       |    |    |   |
|   | CS-428             | Parallel and Distributed Computing         | 3  | 1  | 4 |
| EA/ES   | Foreign Language-I |  |    | NC |   |
| <b>Changed with vide Resolution No. AC-168.4(vii)</b>               |                    |  |    |    |   |

| Batch 2022  |              |                                    |    |   |   |
|---|--------------|------------------------------------|----|---|---|
| FINAL YEAR  |              | SEMESTER SYSTEM                    |    |   |   |
| Course Code   | Course Title | Crd Hrs                            |    |   |   |
|   |              | Th                                 | Pr | T |   |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b> |              |                                    |    |   |   |
| FALL 2025   | CT-499       | Software Based Project             | 0  | 3 | 3 |
|   | CT-486       | Artificial Neural Networks         | 3  | 0 | 3 |
|   | CT-485       | Natural Language Processing        | 3  | 0 | 3 |
|   | CT-###       | AI Elective-III                    | 3  | 0 | 3 |
|   | MG-482       | Organisational Behaviour           | 3  | 0 | 3 |
| SPRING 2026   | CT-499       | Software Based Project             | 0  | 3 | 3 |
|   | CT-355       | Information Security               | 3  | 0 | 3 |
|   | CT-467       | Image Processing & Computer Vision | 3  | 1 | 4 |
|   | MG-481       | Entrepreneurship                   | 3  | 0 | 3 |
|   | CT-###       | AI Elective-IV                     | 3  | 0 | 3 |
| <b>New Specialisation vide Resolution No. SYN-200.6(b)(iv)</b>      |              |                                    |    |   |   |

| Batch 2023   |                                    |   |          |          |          |
|--|------------------------------------|---|----------|----------|----------|
| FINAL YEAR   |                                    | SEMESTER SYSTEM                                 |          |          |          |
| Course Code  | Course Title                       | Crd Hrs   |          |          |          |
|  |                                    | Th  | Pr       | T        |          |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b>                              |                                    |   |          |          |          |
| FALL 2026  | <b>**CT-499</b>                    | <b>Computer Science Project</b>                 | <b>0</b> | <b>3</b> | <b>3</b> |
|  | <b>*CT-XXX</b>                     | <b>Artificial Intelligence Elective-IV</b>      |          |          |          |
|  | CT-466                             | Artificial Neural Networks                      | 3        | 0        | 3        |
|  | CT-485                             | Natural Language Processing                     | 3        | 0        | 3        |
|  | MG-482                             | Organisational Behaviour                        | 3        | 0        | 3        |
| SPRING 2027  | <b>*CT-351</b>                     | <b>Knowledge Representation &amp; Reasoning</b> | <b>3</b> | <b>0</b> | <b>3</b> |
|  | <b>*EA/ES</b>                      | <b>Foreign Language-II</b>                      |          |          | NC       |
|  | <b>**CT-499</b>                    | <b>Computer Science Project</b>                 | <b>0</b> | <b>3</b> | <b>3</b> |
|  | <b>*CT-XXX</b>                     | <b>Artificial Intelligence Elective-V</b>       |          |          |          |
|  | <b>*CT-486</b>                     | <b>Network &amp; Information Security</b>       | <b>3</b> | <b>1</b> | <b>4</b> |
| CT-467   | Image Processing & Computer Vision | 3   | 1        | 4        |          |
| MG-481   | Entrepreneurship                   | 3   | 0        | 3        |          |
| * Changed vide Resolution No.AC-163.5(i)<br>** Under Section 28(iv) Offic Order Acad42(156)16909 |                                    |   |          |          |          |

| Batch 2024  |                                    |  |    |   |    |
|---|------------------------------------|--|----|---|----|
| FINAL YEAR  |                                    | SEMESTER SYSTEM                            |    |   |    |
| Course Code   | Course Title                       | Crd Hrs                                    |    |   |    |
|   |                                    | Th   | Pr | T |    |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b> |                                    |  |    |   |    |
| FALL 2027   | CT-499                             | Computer Science Project                   | 0  | 3 | 3  |
|   | <b>*CT-XXX</b>                     | <b>Artificial Intelligence Elective-IV</b> |    |   |    |
|   | CT-466                             | Artificial Neural Networks                 | 3  | 0 | 3  |
|   | CT-485                             | Natural Language Processing                | 3  | 0 | 3  |
|   | MG-482                             | Organisational Behaviour                   | 3  | 0 | 3  |
| SPRING 2028   | CT-351                             | Knowledge Representation & Reasoning       | 3  | 0 | 3  |
|   | EA/ES                              | Foreign Language-II                        |    |   | NC |
|   | CT-499                             | Computer Science Project                   | 0  | 3 | 3  |
|   | <b>*CT-XXX</b>                     | <b>Artificial Intelligence Elective-V</b>  |    |   |    |
|   | CT-486                             | Network & Information Security             | 3  | 1 | 4  |
| CT-467  | Image Processing & Computer Vision | 3  | 1  | 4 |    |
| MG-481  | Entrepreneurship                   | 3  | 0  | 3 |    |
| * Changed vide Resolution No.AC-163.5(i)                            |                                    |  |    |   |    |

| Batch 2025  |                  |                                      |    |   |    |
|---|------------------|--------------------------------------|----|---|----|
| FINAL YEAR  |                  | SEMESTER SYSTEM                      |    |   |    |
| Course Code   | Course Title     | Crd Hrs                              |    |   |    |
|   |                  | Th                                   | Pr | T |    |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b> |                  |                                      |    |   |    |
| FALL 2028   | CT-486           | Artificial Neural Networks           | 3  | 0 | 3  |
|   | CT-499           | Computer Science Project             | 0  | 3 | 3  |
|   | CT-###           | Artificial Intelligence Elective IV  |    |   |    |
|   | CT-###           | Artificial Intelligence Elective V   |    |   |    |
|   | MG-482           | Organisational Behaviour             | 3  | 0 | 3  |
| SPRING 2029   | EA/ES            | Foreign Language-II                  |    |   | NC |
|   | CT-467           | Image Processing and Computer Vision | 3  | 1 | 4  |
|   | CT-486           | Network and Information Security     | 3  | 1 | 4  |
|   | CT-499           | Computer Science Project             | 0  | 3 | 3  |
|   | CT-###           | Artificial Intelligence Elective VI  |    |   |    |
| MG-481  | Entrepreneurship | 3                                    | 0  | 3 |    |
| <b>Changed with vide Resolution No. AC-168.4(vii)</b>               |                  |                                      |    |   |    |

| Elective-I and II                         |                         |          |          |          |
|---|-------------------------|----------|----------|----------|
| <b>*CT-377</b>                            | <b>Data Mining</b>      | <b>3</b> | <b>0</b> | <b>3</b> |
| CT-357                                    | Speech Processing       | 3        | 0        | 3        |
| CT-358                                    | Fuzzy Systems           | 3        | 0        | 3        |
| CT-359                                    | Knowledge Based Systems | 3        | 0        | 3        |
| Elective-III and IV                       |                         |          |          |          |
| CT-468                                    | Deep Learning           | 3        | 0        | 3        |
| CT-469                                    | Reinforcement Learning  | 3        | 0        | 3        |
| CT-470                                    | Swarm Intelligence      | 3        | 0        | 3        |
| * Changed vide Resolution No. EMG-AC-1(A) |                         |          |          |          |

| Batch 2023  |                                |  |          |          |          |
|---|--------------------------------|--|----------|----------|----------|
| FINAL YEAR  |                                | SEMESTER SYSTEM                                |          |          |          |
| Course Code   | Course Title                   | Crd Hrs  |          |          |          |
|   |                                | Th   | Pr       | T        |          |
| <b>Computer Science (Specialisation in Artificial Intelligence)</b> |                                |  |          |          |          |
| FALL 2026   | <b>**CT-499</b>                | <b>Computer Science Project</b>                | <b>0</b> | <b>3</b> | <b>3</b> |
|   | <b>*CT-264</b>                 | <b>Object Oriented Analysis &amp; Design</b>   | <b>2</b> | <b>1</b> | <b>3</b> |
|   | <b>*CT-264</b>                 | <b>Programming for Artificial Intelligence</b> | <b>2</b> | <b>1</b> | <b>3</b> |
|   | <b>*CT-266</b>                 | <b>Fundamentals of Data Science</b>            | <b>2</b> | <b>1</b> | <b>3</b> |
|   | <b>*CT-266</b>                 | <b>Fundamentals of Cybersecurity</b>           | <b>2</b> | <b>1</b> | <b>3</b> |
| SPRING 2027   | <b>*CT-267</b>                 | <b>Fundamentals of Game Development</b>        | <b>2</b> | <b>1</b> | <b>3</b> |
|   | CT-358                         | Fuzzy Systems                                  | 3        | 0        | 3        |
|   | CT-359                         | Knowledge Based Systems                        | 3        | 0        | 3        |
|   | <b>*CT-377</b>                 | <b>Data Mining</b>                             | <b>3</b> | <b>0</b> | <b>3</b> |
|   | CT-357                         | Speech Processing                              | 3        | 0        | 3        |
| CT-468  | Deep Learning                  | 3  | 0        | 3        |          |
| <b>*CT-403</b>  | <b>Blockchain Technologies</b> | <b>2</b>                                       | <        |          |          |