

# **KONGUNADU ARTS AND SCIENCE COLLEGE**

**(AUTONOMOUS)**

**Coimbatore - 641 029**



## **DEPARTMENT OF COMPUTER SCIENCE WITH DATA ANALYTICS**

**CURRICULUM AND SCHEME OF EXAMINATIONS  
(2025 - 2026)**

## **DEPARTMENT OF COMPUTER SCIENCE WITH DATA ANALYTICS**

### **Vision**

To emerge as a throbbing and pioneering academic and research hub of global standards to empower students in Computer Science with Data Analytics.

### **Mission**

- To incorporate modern trends in Data Science and Analytics.
- To fuel the passion in student community to excel in all fronts like logical thinking, decision making, reliability and application based on strong theoretical foundation and extensive practical training.
- To undertake industry – institute collaborations for knowledge and technology exchange.
- To generate new knowledge by high impact research in data analytics that has significant benefits for individual, industry and society by enabling better decision making.

**Programme Outcomes (POs)****On successful completion of the B.Sc. Computer Science with Data Analytics**

|            |                                                                                                                                                                                                                          |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PO1</b> | Apply analytical and critical thinking to identify, formulate, analyze, and solve complex problems in order to reach authenticated conclusions                                                                           |
| <b>PO2</b> | Establish the ability to Listen, read, proficiently communicate and articulate complex ideas with respect to the needs and abilities of diverse audiences.                                                               |
| <b>PO3</b> | Design and develop research-based solutions for complex problems with specified needs through appropriate consideration for the public health, safety, cultural, societal, and environmental and sustainability concerns |
| <b>PO4</b> | Deliver innovative ideas to instigate new business ventures and possess the qualities of a good entrepreneur                                                                                                             |
| <b>PO5</b> | Function as socially responsible individual with ethical values and accountable to ethically validate any actions or decisions before proceeding and actively contribute to the societal concerns.                       |

**Programme Specific Outcomes (PSOs)****After the successful completion of B.Sc. Computer Science with Data Analytics programme the students are expected to**

|             |                                                                                                                                                                               |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PSO1</b> | Impart education with domain knowledge effectively and efficiently in par with the expected quality standards for Data analyst professional.                                  |
| <b>PSO2</b> | Ability to apply the mathematical, technical and critical thinking skills in the discipline of Data analytics to find solutions for complex problems.                         |
| <b>PSO3</b> | Ability to engage in life-long learning and adopt fast changing technology to Prepare for professional development.                                                           |
| <b>PSO4</b> | Expose the students to key technologies in data science and business analytics: data mining, machine learning, visualization techniques, predictive modeling, and statistics. |
| <b>PSO5</b> | Inculcate effective communication skills combined with professional & ethical Attitude.                                                                                       |

# KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)

COIMBATORE – 641 029

Programme Name: **B. Sc Computer Science with Data Analytics**

Curriculum and Scheme of Examination under CBCS

(Applicable to the students admitted during the Academic Year 2025-2026)

| Semester   | Part         | Subject Code                       | Title of the Paper                                                 | Instruction hours/cycle | Exam. Marks |           |            | Duration of Exam (hours) | Credits   |
|------------|--------------|------------------------------------|--------------------------------------------------------------------|-------------------------|-------------|-----------|------------|--------------------------|-----------|
|            |              |                                    |                                                                    |                         | CIA         | ESE       | TOTAL      |                          |           |
| <b>I</b>   | I            | 25TML101                           | Language I@                                                        | 6                       | 25          | 75        | 100        | 3                        | 3         |
|            | II           | 25ENG101                           | English -I                                                         | 6                       | 25          | 75        | 100        | 3                        | 3         |
|            | III          | 25UDA101                           | Core Paper 1- Problem Solving using C Programming                  | 5                       | 25          | 75        | 100        | 3                        | 4         |
|            | III          | 25UDA1CL                           | Core Practical 1- Problem Solving using C Lab                      | 5                       | 40          | 60        | 100        | 3                        | 2         |
|            | III          | 25UDA1A1                           | Allied Paper 1 - Discrete Mathematics and Statistics               | 6                       | 25          | 75        | 100        | 3                        | 5         |
|            | IV           | 25EVS101                           | Environmental Studies **                                           | 2                       | -           | 50        | 50         | 3                        | 2         |
|            | <b>Total</b> |                                    |                                                                    | <b>30</b>               | <b>-</b>    | <b>-</b>  | <b>550</b> | <b>-</b>                 | <b>19</b> |
| <b>II</b>  | I            | 25TML202                           | Language II@                                                       | 6                       | 25          | 75        | 100        | 3                        | 3         |
|            | II           | 25ENG202                           | English –II                                                        | 6                       | 25          | 75        | 100        | 3                        | 3         |
|            | III          | 25UDA202                           | Core Paper 2 - Object Oriented Programming in Java                 | 5                       | 25          | 75        | 100        | 3                        | 4         |
|            | III          | 25UDA2CM                           | Core Practical 2- Object Oriented Programming in Java Lab          | 5                       | 40          | 60        | 100        | 3                        | 2         |
|            | III          | 25UDA2A2                           | Allied Paper 2 - Optimization Techniques and Linear Algebra        | 6                       | 25          | 75        | 100        | 3                        | 5         |
|            | IV           | 25VED201                           | Value Education- Moral and Ethics**                                | 2                       | -           | 50        | 50         | 3                        | 2         |
|            | <b>Total</b> |                                    |                                                                    | <b>30</b>               | <b>-</b>    | <b>-</b>  | <b>550</b> | <b>-</b>                 | <b>19</b> |
| <b>III</b> | I            | 25TML303                           | Language III@                                                      | 6                       | 25          | 75        | 100        | 3                        | 3         |
|            | II           | 25ENG303                           | English –III                                                       | 6                       | 25          | 75        | 100        | 3                        | 3         |
|            | III          | 25UDA303                           | Core Paper 3- Python Programming                                   | 3                       | 25          | 75        | 100        | 3                        | 4         |
|            | III          | 25UDA3CN                           | Core Practical 3 - Python Programming Lab                          | 5                       | 40          | 60        | 100        | 3                        | 4         |
|            | III          | 25UDA3A3                           | Allied Paper 3 – Distributed Operating System                      | 6                       | 25          | 75        | 100        | 3                        | 5         |
|            | IV           | 25UGC3S1                           | <b>Skill Based Subject 1- Cyber Security</b>                       | 2                       | <b>100</b>  | <b>-</b>  | <b>100</b> | <b>3</b>                 | <b>3</b>  |
|            | IV           | 25TBT301/<br>25TAT301/<br>25UHR3N1 | Basic Tamil* / Advanced Tamil**/ Non-major elective- I**           | 2                       | -           | 75        | 75         | 3                        | 2         |
|            | <b>Total</b> |                                    |                                                                    | <b>30</b>               | <b>-</b>    | <b>-</b>  | <b>675</b> | <b>-</b>                 | <b>24</b> |
| <b>IV</b>  | I            | 25TML404                           | Language IV@                                                       | 6                       | 25          | 75        | 100        | 3                        | 3         |
|            | II           | 25ENG404                           | English –IV                                                        | 6                       | 25          | 75        | 100        | 3                        | 3         |
|            | III          | 25UDA404                           | Core Paper 4- Fundamentals of Data Analytics                       | 3                       | 25          | 75        | 100        | 3                        | 4         |
|            | III          | 25UDA4CO                           | Core Practical 4- Data Analytics and its Applications Lab          | 5                       | 40          | 60        | 100        | 3                        | 4         |
|            | III          | 25UDA4A4                           | Allied Paper 4 – Design and Analysis of Algorithms                 | 6                       | 25          | 75        | 100        | 3                        | 5         |
|            | IV           | 25UDA4SL                           | <b>Skill Based Subject 2- Web Design Lab</b>                       | 2                       | <b>40</b>   | <b>60</b> | <b>100</b> | <b>3</b>                 | <b>3</b>  |
|            | IV           | 25TBT402/<br>25TAT402/<br>25UWR4N2 | Basic Tamil* / Advanced Tamil**/ Non-major elective- II**          | 2                       | -           | 75        | 75         | 3                        | 2         |
|            | <b>Total</b> |                                    |                                                                    | <b>30</b>               | <b>-</b>    | <b>-</b>  | <b>675</b> | <b>-</b>                 | <b>24</b> |
| <b>V</b>   | III          | 25UDA505                           | Core Paper 5- R Programming                                        | 6                       | 25          | 75        | 100        | 3                        | 4         |
|            | III          | 25UDA5CP                           | Core Practical 5- R Programming Lab                                | 6                       | 40          | 60        | 100        | 3                        | 4         |
|            | III          | 25UDA506                           | Core Paper 6- Relational Database Management System                | 5                       | 25          | 75        | 100        | 3                        | 4         |
|            | III          | 25UDA5CQ                           | Core Practical 6 – Relational Database Management System Lab       | 6                       | 40          | 60        | 100        | 3                        | 4         |
|            | III          | 25UDA5E1                           | Major Elective Paper 1 -                                           | 5                       | 25          | 75        | 100        | 3                        | 5         |
|            | IV           | -                                  | <b>EDC</b>                                                         | 2                       | 100         | -         | 100        | 3                        | 3         |
|            | -            | 25UDA5IT                           | <b>Internship Training ****</b>                                    | <b>Grade</b>            |             |           |            |                          |           |
|            | <b>Total</b> |                                    |                                                                    | <b>30</b>               | <b>-</b>    | <b>-</b>  | <b>600</b> | <b>-</b>                 | <b>24</b> |
| <b>VI</b>  | III          | 25UDA607                           | Core Paper 7- Artificial Intelligence and its Applications         | 5                       | 25          | 75        | 100        | 3                        | 4         |
|            | III          | 25UDA6CR                           | Core Practical 7- Artificial Intelligence and Machine Learning Lab | 5                       | 40          | 60        | 100        | 3                        | 4         |
|            | III          | 25UDA608                           | Core Paper 8- Machine Learning                                     | 5                       | 25          | 75        | 100        | 3                        | 4         |
|            | III          | 25UDA6CS                           | Core Practical 8- Data Visualization Lab                           | 4                       | 40          | 60        | 100        | 3                        | 4         |

|  |     |                                                       |                                      |           |          |          |             |          |            |
|--|-----|-------------------------------------------------------|--------------------------------------|-----------|----------|----------|-------------|----------|------------|
|  | III | 25UDA6E2                                              | Major Elective Paper 2 -             | 5         | 25       | 75       | 100         | 3        | 5          |
|  | III | 25UDA6Z1                                              | Project and Viva Voce***             | 4&&       | 20       | 80       | 100         | -        | 5          |
|  | IV  | 25UBI6S3                                              | Skill Based Subject 3- Basics of IPR | 2         | 100      | -        | 100         | 3        | 3          |
|  |     |                                                       | <b>Total</b>                         | <b>30</b> | <b>-</b> | <b>-</b> | <b>700</b>  | <b>-</b> | <b>29</b>  |
|  | V   | 25NCC \$ /<br>NSS/YRC<br>/PYE/ECC/<br>RRC/WEC10<br>1# | Cocurricular Activities*             | -         | 50       | -        | 50          | -        | 1          |
|  |     |                                                       | <b>Grand Total</b>                   | <b>-</b>  | <b>-</b> | <b>-</b> | <b>3800</b> | <b>-</b> | <b>140</b> |

**Note :**

CBCS – Choice Based Credit system, CIA– Continuous Internal Assessment, ESE– End of Semester Examinations

\$ For those students who opt NCC under Cocurricular activities will be studying the prescribed syllabi of the UGC which will include Theory, Practical & Camp components. Such students who qualify the prescribed requirements will earn an additional 24 credits.

@ Hindi/Malayalam/ French/ Sanskrit – 25HIN/MLM/FRN/SAN101 - 404

\* - No End-of-Semester Examinations. Only Continuous Internal Assessment (CIA)

\*\* - No Continuous Internal Assessment (CIA). Only End-of-Semester Examinations (ESE)

\*\*\* Project Report – 60 marks; Viva voce – 20 marks; Internal-20 marks

&& 4 Hours allotted for project will not be allocated in staff workload.

\*\*\*\* The students shall undergo Internship training / field work for a minimum period of 14 working days at the end of the fourth semester during summer vacation and submit the report in the fifth semester which will be evaluated for 100 marks by the concerned guide and followed by an Internal Viva voce by the respective faculty or HOD as decided by the department. According to their marks, the grades will be awarded as given below.

| Marks %  | Grade        |
|----------|--------------|
| 85 – 100 | O            |
| 70 – 84  | D            |
| 60 – 69  | A            |
| 50 – 59  | B            |
| 40 – 49  | C            |
| < 40     | U (Reappear) |

**Major Elective Papers (2 papers are to be chosen from the following 8 papers)**

1. Internet of Things
2. Software Testing and Quality Assurance
3. Cloud Computing Fundamentals
4. Digital Forensics
5. Natural Language Processing
6. Deep Learning
7. Data Warehousing and Data Mining
8. Cryptography and Information system

**Non-Major Elective Papers**

1. Human Rights
2. Women's Rights
3. Consumer Affairs

**Sub. Code & Title of the Extra Departmental Course (EDC):**

25UDA5XL - Internet Basics and Advanced Excel Lab

### # List of Cocurricular Activities:

1. National Cadet Corps (NCC)
2. National Service Scheme (NSS)
3. Youth Red Cross (YRC)
4. Physical Education (PYE)
5. Eco Club (ECC)
6. Red Ribbon Club (RRC)
7. Women Empowerment Cell (WEC)

**Note:** In core/ allied subjects, no. of papers both theory and practical are included wherever applicable. However, the total credits and marks for core/allied subjects remain the same as stated below.

### Tally Table:

| S.No. | Part | Subject                                                   | Marks       | Credits    |
|-------|------|-----------------------------------------------------------|-------------|------------|
| 1.    | I    | Language – Tamil/Hindi/Malayalam/<br>French/ Sanskrit     | 400         | 12         |
| 2.    | II   | English                                                   | 400         | 12         |
| 3.    | III  | Core – Theory/Practical                                   | 1600        | 60         |
|       | III  | Allied                                                    | 400         | 20         |
|       |      | Electives/Project                                         | 300         | 15         |
| 4.    | IV   | Basic Tamil / Advanced Tamil (OR) Non-<br>major electives | 150         | 4          |
|       |      | Skill Based subject                                       | 300         | 9          |
|       |      | EDC                                                       | 100         | 3          |
|       |      | Environmental Studies                                     | 50          | 2          |
|       |      | Value Education                                           | 50          | 2          |
| 5.    | V    | Cocurricular Activities                                   | 50          | 1          |
|       |      | <b>Total</b>                                              | <b>3800</b> | <b>140</b> |

- 25 % CIA is applicable to all subjects except JOC, COP and SWAYAM courses which are considered as extra credit courses.
- 100 % CIA for Cyber Security, EDC and Basics of IPR.
- The students should complete **Health and Wellness Programme (25UHW401)###** in the 4<sup>th</sup> semester and the completion marks should be submitted through the HOD to the Controller of Examinations. Extra credits will be given to the candidates who have successfully completed.
- The students should complete any **MOOC course available for Online learning platforms like SWAYAM, NPTEL, Coursera<sup>\$\$</sup>, IIT Bombay Spoken Tutorial, e-Pathshala etc.**, with a minimum of 4 weeks in duration before the completion of the 5<sup>th</sup> semester and the course completion certificate should be submitted through the HOD to the Controller of Examinations. Extra credits will be given to the candidates who have successfully completed.

**\$\$Note:** One course to be taken from course era for all the under graduate students of self-finance stream during the even semester of the I year. Appropriate extra credits and certification as applicable shall be awarded to the students who have completed the course.

- An **Onsite Training** preferably relevant to the course may be undertaken as per the discretion of the HOD.
- Students who successfully complete **Naan Mudhalvan** courses in 3<sup>rd</sup> and 5<sup>th</sup> semester will be given 2 extra credits for each course. They are asked to submit the marks to Controller of Examinations through and undersigned by the HOD.

| Semester | Naan Mudhalvan Course Title                             |
|----------|---------------------------------------------------------|
| III      | E-COMMERCE APPLICATION DEVELOPMENT<br>WITH MENDIX       |
| V        | DATA ANALYTICS USING TABLEAU AND<br>SIEMENS INSIGHT HUB |

**Components of Continuous Internal Assessment**

| Components           |    | Marks            | Total |
|----------------------|----|------------------|-------|
| Theory               |    |                  |       |
| CIA I                | 75 | (75+75 = 150/10) | 25    |
| CIA II               | 75 |                  |       |
| Assignment/Seminar   |    | 5                |       |
| Attendance           |    | 5                |       |
| Practical            |    |                  |       |
| CIA Practical        |    | 25               | 40    |
| Observation Notebook |    | 10               |       |
| Attendance           |    | 5                |       |
| Project              |    |                  |       |
| Review               |    | 15               | 20    |
| Regularity           |    | 5                |       |

**BLOOM'S TAXONOMY BASED ASSESSMENT PATTERN**

**K1-Remembering;K2-Understanding;K3-Appling;K4-Analyzing;K5-Evaluating**

**1. ESE Theory Examination:****(i) CIA I & II and ESE: 75 Marks**

| Knowledge Level      | Section               | Marks       | Description            | Total |
|----------------------|-----------------------|-------------|------------------------|-------|
| K1<br>Q1 to 10       | A (Answer all)        | 10 x 1 = 10 | MCQ                    | 75    |
| K1 – K5<br>Q11 to 15 | B (Either or pattern) | 5 x 5 = 25  | Short Answers          |       |
| K2 – K5<br>Q16 to 20 | C (Either or pattern) | 5 x 8 = 40  | Descriptive / Detailed |       |

**2. ESE Practical Examination:**

| Knowledge Level | Section                        | Marks | Total |
|-----------------|--------------------------------|-------|-------|
| K3              | Experiments<br><br>Record Work | 50    | 60    |
| K4              |                                | 10    |       |
| K5              |                                |       |       |

**3. ESE Project Viva Voce:**

| Knowledge Level | Section        | Marks     | Total |
|-----------------|----------------|-----------|-------|
| K3              | Project Report | 60        | 80    |
| K4              |                | Viva voce |       |
| K5              | 20             |           |       |

**Scheme of Evaluation - Health and Wellness Programme (25UHW401)###**

| Part         | Description                              | Mark       |
|--------------|------------------------------------------|------------|
| A            | Report                                   | 40         |
| B            | Attendance                               | 20         |
| C            | Activities (Observation during Practice) | 40         |
| <b>Total</b> |                                          | <b>100</b> |