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# DEPARTMENT OF COMPUTER APPLICATIONS

## CIRCULAR

**Date:20.02.2025**

The Department of Computer Applications has planned to conduct a Board of Studies meeting for the BCA, and MCA programmes, on 04.03.2025 from 02.00 PM onwards in blended mode.

**Teams Meeting Link:**

https://teams.microsoft.com/l/meetup-join/19%3ameetingNjFkOWU3MzctYmM0Yi00YmE5LWE4ZDEtODUxMz ZkZGZkYzU5%40thread.v2/0?context=%7b%22Tid%22% 3a%223b0993d8-31db-4db6-b617-64ac193c7ace%22%2c%22Oid%22%3a%2277dcd3e8-f8ef-4d56-adcd-145501500b78%22%7d

All the members are requested to make it convenient to attend the meeting.

**Venue: AFTF-04 , Fourth Floor, U BLOCK, VFSTR**

**The members are**

| S. No | Name of the member | Role |
|---|---|---|
| 1 | Dr.N. Veeranjaneyulu<br>Professor, Joint Dean – SoCI,<br>Department of Computer Applications<br>VFSTR | Chair person |
| 2 | Dr. R. B.V. Subramaanyam<br>Professor<br>Department of CSE, NIT Warangal-506004, Telangana. | External member (Academia) |
| 3 | Dr. B. Premamayudu<br>Associate Professor,<br>Department of Computer Science,<br>Central University of Tamil Nadu, Tiruvarur, Tamil Nadu | External member (Academia) |
| 4 | Mrs.G.Hema Vineela<br>Senior Principals Application Engineer, Oracle, Hyderabad. | External member (Industry) |
| 5 | Dr. K. Santhi Sri<br>Professor & Head<br>Department of Computer Applications, VFSTR | Internal member |
| 6 | Dr.Ch.SivaKoteswarao Rao<br>Associate Professor<br>Department of Computer Applications, VFSTR | Internal member (Nominee-Dean SoCI) |
| 7 | Dr.G.Shiva Kumar<br>Assistant Professor,<br>Department of Computer Applications, VFSTR | Internal member (Nominee Dean-R&D) |

| | | |
|---|---|---|
| 8 | Dr.M.Srikanth Yadav<br>Associate Professor,<br>Department of IT<br>VFSTR | Internal member (Other Department) |
| 9 | Mrs.R.Naga Sirisha<br>Assistant Professor<br>Department of Computer Applications, VFSTR | Internal member |
| 10 | Mrs.A.Siva Rao<br>Assistant Professor<br>Department of Computer Applications, VFSTR | Internal member |
| 11 | Dr.R.S.Padma Priya<br>Assistant Professor, (BoA)<br>Department of Computer Applications<br>VFSTR | Member Secretary |

**Agenda of the BoS Meeting:**

- Discussion and approval of DAAC meeting minutes
- Pre-semester – between Orientation program & First semester
- Credit requirement – BCA (120) MCA (80)
- Re-structuring assessment pattern
- Qualifying Criteria
- Re-structuring course contents incorporating with SDG's and IKS
- Action plan for the AY 2025-2026.
- Any other points based on the requirements

**Member Secretary** **Chairperson**

HOD
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# DEPARTMENT OF COMPUTER APPLICATIONS

Date: 04.03.2025

## Minutes of Board of Studies Meeting

The Department of Computer Applications conducted a Board of Studies (BoS) meeting for the conventional BCA, and MCA programmes, on 04.03.2025 at 02.00 PM in blended mode.

**Teams Meeting Link:**

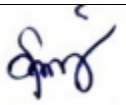
https://teams.microsoft.com/l/meetup-join/19%3ameetingNjFkOWU3MzctYmM0Yi00YmE5LWE4ZDEtODUxMz ZkZGZkYzU5%40thread.v2/0?context=%7b%22Tid%22% 3a%223b0993d8-31db-4db6-b617-64ac193c7ace%22%2c%22Oid%22%3a%2277dcd3e8-f8ef-4d56-adcd-145501500b78%22%7d

**Venue:** AFTF-04, Fourth Floor, U BLOCK, VFSTR

**Agenda of the BoS Meeting:**

- Discussion and approval of DAAC meeting minutes
- Pre-semester – between Orientation program & First semester
- Credit requirement – BCA (120) MCA (80)
- Re-structuring assessment pattern
- Qualifying Criteria
- Re-structuring course contents incorporating with SDG's and IKS
- Approval for NPTEL courses
- Any other points based on the requirements

The following members were present either through offline or online.

| S.No. | Name & Address of the Expert | Member | Signature |
|---|---|---|---|
| 1 | **Dr. N. Veeranjaneyulu**<br>Professor & Joint Dean<br>School of Computing and Informatics<br>VFSTR Deemed to be University | Chairperson |  |
| 2 | **Dr. K. Santhi Sri**<br>Professor & Head<br>Department of Computer Applications<br>VFSTR Deemed to be University | Nominee of Dean, SOCI | FIP<br>(Joined Online) |
| 3 | **Dr. R. B.V. Subramanian**<br>Professor<br>Department of CSE, NIT Warangal-506004, Telangana. | External Member<br>(Academic) | Online |
| 4 | **Dr. B. Premamayudu**<br>Associate Professor,<br>Department of Computer Science,<br>Central University of Tamil Nadu,<br>Tiruvarur, Tamil Nadu | External Member<br>(Academic) | Online |
| 5 | **Mrs.G. Hema Vineela**<br>Senior Principal Applications Engineer<br>Oracle, Hyderabad | External Member<br>(Industry) | Online |
| 6 | **Dr.Ch. Siva Koteswara Rao**<br>Associate Professor<br>Department of Computer Applications<br>VFSTR Deemed to be University | Internal Member<br>(Nominee Dean R &D) | FIP<br>(Joined Online) |
| 7 | **Dr.G. Shiva Kumar**<br>Associate Professor<br>Department of Computer Applications<br>VFSTR | Internal Member |  |
| 8 | **Dr.M. Srikanth Yadav**<br>Assistant Professor<br>Department of IT<br>VFSTR Deemed to be University | Other Department Member |  |
| 9 | **Mrs.R.Naga Sirisha**<br>Assistant Professor<br>Department of Computer Applications<br>VFSTR | Internal Member |  |
| 10 | **Mr.A.Siva Rao**<br>Assistant Professor<br>Department of Computer Applications<br>VFSTR | Internal Member |  |
| 11 | **Dr.R.S. Padma Priya**<br>Associate Professor<br>Department of Computer Applications<br>VFSTR Deemed to be University | Member Secretary |  |

Chairperson Dr. N. Veeranjaneyulu, Professor and Joint Dean - SoCI , VFSTR initiated the meeting by welcoming and introducing the external members and invitees to the internal members.

**The following points were discussed in the BoS meeting:**

- Discussion and approval of DAAC meeting minutes
- Pre-semester – between Orientation program & First semester
- Credit requirement – BCA (120) MCA (80)
- Re-structuring assessment pattern
- Qualifying Criteria
- Re-structuring course contents incorporating with SDG's and IKS
- Approval for NPTEL courses
- Any other points based on the requirements

**The following are the observations:**

1. The minutes of the previous DAAC meeting were presented to the members for review. No modifications were suggested by the experts.
2. Major restructuring has taken place in the curriculum which is oriented towards continuous learning and assessment based on Module structure and is presented in **Appendix-I**
3. The Curriculum encompassing the employability/entrepreneurship/skill development courses are provided in **Appendix - II**
4. Total average percentage of syllabus revised was **35% for BCA and 25 % for MCA** compared to previous curriculum provided in **Appendix - III**.
5. The minutes of the previous DAAC meeting were presented to the members for review. No modifications were suggested by the experts.
6. After deliberations, the BoS approved the R25 Credit Structure & Curriculum of the BCA and MCA Programme.
7. Aligning curriculum with SDGs to foster global sustainability awareness, addressing issues like good health and well-being, quality education, decent work & economic growth, industry innovation and sustainable cities and communities.
8. Suggested to incorporate IKS to ensure that traditional wisdom, local technologies, and community-driven problem-solving approaches are valued, fostering inclusivity and cultural awareness in IT education.
9. BoS members have suggested the possibility to specifically mention the contact hours for each course provided in the Pre Semester.
10. The Panel approved the list of NPTEL courses suggested by the department.

**11.** The significant changes are made in the content of the courses and hence considered as new courses included in **Appendix - IV**

**The following improvements are suggested: (Action Points)**

1. Dr.R.B.V. Subramaanyam suggested to clarify the syllabus variation for IT Workshop & Tools as IT Tools is proposed in pre semester
2. Dr.B. Premamayudu suggested to move Web Technology to second year Semester 1
3. Suggested moving Fundamentals of Network Security to the second year instead of the first year, enabling students to explore more advanced courses in their final year
4. Dr. Ch. Siva Koteswara Rao suggested to include GitHub and Figma tools in Web Technologies lab practices for MCA.
5. Dr.R.B.V. Subramaanyam suggested to include courses on current trends and technologies like Biometrics, Digital forensics, MLOps for MCA students.

**The following recommendations and approvals are made after the discussion:**

1. BoS Members approved the revised curriculum structure, syllabus, assessment schemes of BCA & MCA programmes.
2. The elective courses BCA & MCA Programme for the regulation R25-C25 are approved.

There being no further points for discussion, the Chairperson thanks all the external, internal, invited members and announced that the meeting was concluded. The meeting minutes was forwarded to the Academic Council for approval.

**Member Secretary** **Chairperson**

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# Department of Computer Applications

## Cordially Welcome

## External BoS Members

## for

## BoS Meeting

Dr.K.Santhi Sri
Associate Professor & Head
Department of Computer Applications

04.03.2025 @ 2.00 p.m.

VIGNAN'S

# EXTERNAL MEMBERS

**Dr. R B V Subramanyam**
Professor
Department of CSE
NIT, Warangal

**Dr. B Premamayudu**
Associate Professor
Department of CS
Central university of Tamil Nadu

**Mrs.G.Hema Vineela**
Senior Principal
Application Engineer,
Oracle, Hyderabad

VIGNAN'S

# MCA R25 (C25) 1st Year

## 1st Semester

| S.No | Course Title | C | Course Category |
|---|---|---|---|
| 1 | Data Structures | 4 | Professional Core |
| 2 | Python Programming | 3 | Professional Core |
| 3 | Web Technologies | 2 | Professional Core |
| 4 | Computer Organization and Operating Systems | 4 | Professional Core |
| 5 | Probability and Statistics | 4 | Basic Science |
| 6 | Software Engineering | 3 | Professional Core |
| 7 | Technical English Communication | 2 | Humanities |
| | Total | 22 | |

## 2nd Semester

| S.No | Course Title | C | Course Category |
|---|---|---|---|
| 1 | Database Systems | 4 | Professional Core |
| 2 | Object Oriented Programming | 4 | Professional Core |
| 3 | Computer Networks | 3 | Professional Core |
| 4 | Organization Behavior | 3 | Management |
| 5 | Soft Skills Laboratory | 1 | Humanities |
| 6 | Socially Relevant Project using Design Thinking | 2 | Project |
| 7 | Department Elective - 1 | 4 | Elective 1 |
| 8 | Department Elective - 2 | 4 | Elective 2 |
| | Total | 25 | |

# DEPARTMENT OF COMPUTER APPLICATIONS

## APPENDIX I

## MASTER OF COMPUTER APPLICATIONS (MCA): CURRICULUM STRUCTURE

### I Year I Semester Structure

| S.No | Course Code | Course Title | L | T | P | C | Remarks | Course offered by |
|---|---|---|---|---|---|---|---|---|
| 1 | 25MCXXX | Data Structures | 2 | 2 | 2 | 4 | Professional Core | CA |
| 2 | 25MCXXX | Python Programming | 2 | - | 2 | 3 | Professional Core | CA |
| 3 | 25MCXXX | Web Technologies | - | 2 | 2 | 2 | Professional Core | CA |
| 4 | 25MCXXX | Computer Organization and Operating Systems | 3 | 2 | - | 4 | Professional Core | CA |
| 5 | 25MCXXX | Probability and Statistics | 3 | 2 | - | 4 | Basic Science | Mathematics & Statistics |
| 6 | 25MCXXX | Software Engineering | 2 | 2 | - | 3 | Professional Core | CA |
| 7 | 25MCXXX | Technical English Communication | 1 | - | 2 | 2 | Humanities | Science & Humanities |
| | | Total | | | | **22** | | |

**L=Lecture; T= Tutorial; P= Practical; C=Credits**

### I Year II Semester Structure

| S.No | Subject code | Course Title | L | T | P | C | Remarks | Course offered by |
|---|---|---|---|---|---|---|---|---|
| 1 | 25MCXXX | Database Systems | 3 | - | 2 | 4 | Professional Core | CA |
| 2 | 25MCXXX | Object Oriented Programming | 3 | - | 2 | 4 | Professional Core | CA |
| 3 | 25MCXXX | Computer Networks | 2 | 2 | - | 3 | Professional Core | CA |
| 4 | 25MCXXX | Organization Behaviour | 2 | 2 | - | 3 | Management | Management Studies |
| 5 | 25MCXXX | Soft Skills Laboratory | - | - | 2 | 1 | Humanities | Science & Humanities |
| 6 | 25MCXXX | Socially Relevant Project using Design Thinking | - | - | 4 | 2 | Project | CA |
| 7 | | Department Elective - 1 | 3 | - | 2 | 4 | Elective 1 | CA |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 8 | | Department Elective - 2 | 3 | - | 2 | 4 | Elective 2 | CA |
| | | **Total** | | | | **25** | | |

**II Year I Semester Structure**

| S.No | Subject code | Course Title | L | T | P | C | Remarks | Course offered by |
|---|---|---|---|---|---|---|---|---|
| 1 | 25MCXXX | Cryptography & Network Security | 3 | - | 2 | 4 | Professional Core | CA |
| 2 | 25MCXXX | Full Stack Technologies | 3 | - | 2 | 4 | Professional Core | CA |
| 3 | 25MCXXX | Big Data Analytics | 3 | - | 2 | 4 | Professional Core | CA |
| 4 | | Department Elective – 3 | 3 | - | 2 | 4 | Elective 3 | CA |
| 5 | | Department Elective – 4 | 2 | 2 | 0 | 3 | Elective 4 | CA |
| 6 | | MooCs/NPTEL/Dept. Elective | - | - | - | 2 | | CA |
| | | **Total** | | | | **21** | | |

**II Year II Semester Structure**

| S.No | Subject code | Course Title | L | T | P | C | Remarks | Course offered by |
|---|---|---|---|---|---|---|---|---|
| 1 | 25MCXXX | Internship/Project | - | 2 | 22 | 12 | Project work | CA |
| | | **Total** | | | | **12** | | |

**List of Department Elective Courses**

| S. No. | Course Code | Course Title | L | T | P | C |
|---|---|---|---|---|---|---|
| 1. | 25MCXXX | Machine Learning | 3 | 0 | 2 | 4 |
| 2. | 25MCXXX | Deep Learning | 2 | 2 | 2 | 4 |
| 3. | 25MCXXX | Cloud Computing | 3 | 0 | 0 | 3 |
| 4. | 25MCXXX | Data Wrangling and Visualization | 2 | 2 | 2 | 4 |
| 5. | 25MCXXX | Advanced Web Technologies | 2 | 2 | 2 | 4 |
| 6. | 25MCXXX | Mobile Application Development | 3 | 0 | 2 | 4 |
| 7. | 25MCXXX | Cyber Security | 3 | 0 | 0 | 3 |
| 8. | 25MCXXX | Block Chain Technology | 2 | 2 | 0 | 3 |
| 9. | 25MCXXX | Natural Language Processing | 2 | 2 | 0 | 3 |
| 10. | 25MCXXX | Computer Vision | 2 | 2 | 2 | 4 |
| 11. | 25MCXXX | Mobile Computing | 3 | 0 | 0 | 3 |
| 12. | 25MCXXX | Design and Analysis of Algorithms | 2 | 2 | 2 | 4 |
| 13. | 25MCXXX | Digital Image Processing | 2 | 2 | 2 | 4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 14. | 25MCXXX | Formal Language and Automata Theory | 3 | 0 | 0 | 3 |
| 15. | 25MCXXX | Soft Computing | 2 | 2 | 2 | 4 |
| 16. | 25MCXXX | Data Analysis and Visualization | 2 | 2 | 2 | 4 |
| 17. | 25MCXXX | Text Analytics | 2 | 2 | 0 | 3 |
| 18. | 25MCXXX | Social Media Analytics | 2 | 2 | 0 | 3 |
| 19. | 25MCXXX | Artificial Intelligence and Neural Networks | 3 | 2 | 0 | 4 |
| 20. | 25MCXXX | Reinforcement Learning | 2 | 2 | 0 | 3 |
| 21. | 25MCXXX | Fundamentals of Image Processing | 2 | 2 | 2 | 4 |
| 22. | 25MCXXX | Nature Inspired Computing Methods | 2 | 2 | 0 | 3 |
| 23. | 25MCXXX | Evolutionary Computing | 2 | 2 | 0 | 3 |

**List of NPTEL Courses:**

| S.No | Name of NPTEL Course |
|---|---|
| 1. | Introduction to Industry 4.0 and Industry Internet of Things |
| 2. | Block Chain and its applications |
| 3. | Business Intelligence and Analytics |
| 4. | Quantum Computing: Algorithms and Limitations thru Query Model |
| 5. | Social Networks |
| 6. | Reinforcement Learning |

**Member Secretary**

**Chairperson**

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# DEPARTMENT OF COMPUTER APPLICATIONS

## APPENDIX I

## Bachelor of Computer Applications (BCA) : Curriculum Structure

### Pre Semester

| Course Code | Course Title | L | T | P | SL | C | Course category | Course offered by |
|---|---|---|---|---|---|---|---|---|
| 25BCXXX | Orientation Session | 0 | 2 | 0 | 0 | 1 | Ability Enhancement Courses | CA |
| 25BCXXX | Fundamentals of Mathematical Structures in Computing | 0 | 3 | 2 | 0 | 1 | Core Courses | Mathematics |
| 25BCXXX | English Language and Communication | 0 | 3 | 2 | 0 | 1 | Ability Enhancement Courses | Science & Humanities |
| 25BCXXX | IT Tools | 0 | 0 | 5 | 0 | 1 | Skill Enhancement Courses | CA |
| | **Sub-Total** | **0** | **8** | **9** | **0** | **4** | | |
| | **Total** | **17** | | | **0** | **4** | | |

### I Year I Semester Structure

| Course Code | Course Title | L | T | P | SL | C | Course category | Course offered by |
|---|---|---|---|---|---|---|---|---|
| 25BCXXX | Digital Computer Fundamentals | 2 | 2 | 0 | 2 | 3 | Core Courses | CA |
| 25BCXXX | Programming for Problem Solving | 3 | 0 | 2 | 3 | 4 | Skill Enhancement Courses | CA |
| 25BCXXX | Technical English Communication | 1 | 0 | 2 | 1 | 2 | Ability Enhancement Courses | Science & Humanities |
| 25BCXXX | Web Technology | 0 | 2 | 2 | 0 | 2 | Skill Enhancement Courses | CA |
| 25BCXXX | Mathematical Foundations for Computer Science | 2 | 2 | 0 | 2 | 3 | Core Courses | Mathematics & Statistics |
| 25BCXXX | Environmental Studies ( Field Project) | 1 | 2 | 2 | 1 | 3 | Value added courses | Science & Humanities |
| 25BCXXX | Physical Fitness, Sports and Games | 0 | 0 | 2 | 0 | 1 | Value added courses | PED |
| | **Sub-Total** | **09** | **08** | **10** | **09** | **18** | | |
| | **Total** | **27** | | | | **18** | | |

### I Year II Semester

| Course Code | Course Title | L | T | P | SL | C | Course category | Course offered by |
|---|---|---|---|---|---|---|---|---|
| 25BCXXX | Object Oriented Programming | 3 | 0 | 2 | 3 | 4 | Skill Enhancement Courses | CA |
| 25BCXXX | Data Structures | 2 | 2 | 2 | 2 | 4 | Core Courses | CA |
| 25BCXXX | Discrete Mathematics | 2 | 2 | 0 | 2 | 3 | Core Courses | Mathematics & Statistics |
| 25BCXXX | Computer Organization | 2 | 2 | 0 | 2 | 3 | Core Courses | CA |
| 25BCXXX | Introduction to Cyber Security | 1 | 2 | 0 | 1 | 2 | Skill Enhancement Courses | CA |
| 25BCXXX | Data visualization Laboratory | 0 | 0 | 4 | 0 | 2 | Core Courses | CA |
| 25BCXXX | Soft skills laboratory | 0 | 0 | 4 | 0 | 2 | Ability Enhancement Courses | Science & Humanities |
| 25BCXXX | Indian Knowledge System | 0 | 2 | 0 | 0 | 1 | Multi-Disciplinary Elective Courses | Science & Humanities |
| | **Sub-Total** | **11** | **08** | **12** | **11** | **21** | | |
| | **Total** | **31** | | | | **21** | | |

**II Year I Semester Structure**

| Course Code | Course Title | L | T | P | SL | C | Course category | Course Offered by |
|---|---|---|---|---|---|---|---|---|
| 25BCXXX | Python Programming | 2 | 0 | 2 | 2 | 3 | Skill Enhancement Courses | CA |
| 25BCXXX | Database Systems | 3 | 0 | 2 | 3 | 4 | Core Courses | CA |
| 25BCXXX | Probability and Statistics | 2 | 2 | 0 | 2 | 3 | Core Courses | Mathematics and Statistics |
| 25BCXXX | Operating systems | 3 | 0 | 2 | 3 | 4 | Core Courses | CA |
| 25BCXXX | Management Science | 2 | 2 | 0 | 2 | 3 | Multi- Disciplinary Elective Courses | Management Studies |
| 25BCXXX | Professional Communication Lab | 0 | 0 | 4 | 0 | 2 | Ability Enhancement Courses | Science & Humanities |
| 25BCXXX | Design Thinking | 0 | 0 | 2 | 0 | 1 | Skill Enhancement Courses | CA |
| 25BCXXX | Competitive Coding | 0 | 0 | 2 | 0 | 1 | Core Courses | CA |
| | **Sub-Total** | **12** | **06** | **12** | **12** | **21** | | |
| | **Total** | **30** | | | | **21** | | |

**II Year II Semester**

| Course Code | Course Title | L | T | P | SL | C | Course category | Course offered by |
|---|---|---|---|---|---|---|---|---|
| 25BCXXX | Computer Networks | 3 | 0 | 2 | 3 | 4 | Core Courses | CA |
| 25BCXXX | Machine Learning | 3 | 0 | 2 | 3 | 4 | Core Courses | CA |
| 25BCXXX | Design and Analysis of Algorithms | 3 | 0 | 2 | 3 | 4 | Core Courses | CA |
| 25BCXXX | Organization Behavior | 2 | 2 | 0 | 2 | 3 | Skill Enhancement Courses | CA |
| 25BCXXX | Quantitative Aptitude and Logical Reasoning | 2 | 2 | 0 | 2 | 3 | Skill Enhancement Courses | T&P |
| 25BCXXX | Socially Relevant Project using Design Thinking | 0 | 0 | 4 | 0 | 2 | Skill Enhancement Courses | CA |
| 25BCXXX | Advanced Coding Competency | 0 | 0 | 2 | 0 | 1 | Core Courses | CA |
| 25BCXXX | Universal Human Values | 0 | 2 | 0 | 0 | 1 | Value added courses | Science & Humanities |
| **Sub-Total** | | **12** | **08** | **10** | **12** | **21** | | |
| **Total** | | **30** | | | | **21** | | |

**III Year I Semester Structure**

| Course Code | Course Title | L | T | P | SL | C | Course category | Course offered by |
|---|---|---|---|---|---|---|---|---|
| 25BCXXX | Machine Learning | 3 | 0 | 2 | 3 | 4 | Core Courses | CA |
| 25BCXXX | Cryptography & Network Security | 2 | 2 | 0 | 2 | 3 | Core Courses | CA |
| | Elective – I | 3 | 0 | 2 | 3 | 4 | Discipline Specific Electives | CA |
| | Elective – II | 2 | 2 | 0 | 2 | 3 | Discipline Specific Electives | CA |
| | MooCS/NPTEL/Dept. elective | | | | | 2 | Discipline Specific Electives | CA |
| **Sub-Total** | | **10** | **4** | **4** | **10** | **16** | | |
| **Total** | | **18** | | | | **16** | | |

**III Year II Semester**

| Course Code | Course Title | L | T | P | SL | C | Course category | Course offered by |
|---|---|---|---|---|---|---|---|---|
| | Elective – III | 2 | 2 | 0 | 2 | 3 | Discipline Specific Electives | CA |
| | Elective – IV | 3 | 0 | 2 | 3 | 4 | Discipline Specific Electives | CA |
| 25BCXXX | Project work | 0 | 2 | 22 | 0 | 12 | Skill Enhancement Courses | CA |
| **Sub-Total** | | **05** | **04** | **24** | **05** | **19** | | |
| **Total** | | **33** | | | | **19** | | |

**List of Electives**

| S.No | Course Code | Course Title | L | T | P | SL | C |
|---|---|---|---|---|---|---|---|
| 1 | 25BCXXX | Cloud Computing | 3 | 0 | 2 | 3 | 4 |
| 2 | 25BCXXX | Data Science using Python | 3 | 0 | 2 | 3 | 4 |
| 3 | 25BCXXX | Deep Learning | 3 | 0 | 2 | 3 | 4 |
| 4 | 25BCXXX | Big Data Analytics | 3 | 0 | 2 | 3 | 4 |
| 5 | 25BCXXX | Advanced Web Technologies | 3 | 0 | 2 | 3 | 4 |
| 6 | 25BCXXX | Mobile Application Development | 3 | 0 | 2 | 3 | 4 |
| 7 | 25BCXXX | Network Programming | 3 | 0 | 2 | 3 | 4 |
| 8 | 25BCXXX | Full Stack Technologies | 3 | 0 | 2 | 3 | 4 |
| 9 | 25BCXXX | Artificial Intelligence | 2 | 2 | 0 | 2 | 3 |
| 10 | 25BCXXX | Natural Language Processing | 2 | 2 | 0 | 2 | 3 |
| 11 | 25BCXXX | Reinforcement Learning | 2 | 2 | 0 | 2 | 3 |
| 12 | 25BCXXX | Blockchain technologies | 2 | 2 | 0 | 2 | 3 |
| 13 | 25BCXXX | Soft Computing | 2 | 2 | 0 | 2 | 3 |
| 14 | 25BCXXX | Mobile Computing | 2 | 2 | 0 | 2 | 3 |
| 15 | 25BCXXX | Computer Graphics | 2 | 2 | 0 | 2 | 3 |
| 16 | 25BCXXX | Advanced Computer Architecture | 2 | 2 | 0 | 2 | 3 |
| 17 | 25BCXXX | Digital Marketing | 1 | 2 | 0 | 1 | 2 |
| 18 | 25BCXXX | Fundamentals of Ethical Hacking | 1 | 2 | 0 | 1 | 2 |

**Member Secretary**

**Chairperson**

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# DEPARTMENT OF COMPUTER APPLICATIONS

## APPENDIX II

### List of Courses that Enables Employability or Entrepreneurship or Skill Development (BCA)

| S. No | Course Code | Course Title | Year of Introduction | Employability / Entrepreneurship / Skill development |
|---|---|---|---|---|
| 1 | 25BCXXX | Digital Computer Fundamentals | 2025 | **Employability**: Provides Knowledge of CPU architecture, memory, I/O devices, and data representation builds system literacy**.** |
| 2 | 25BCXXX | Programming for Problem Solving | 2025 | **Skill development** : To develop algorithmic thinking and practical programming skills that enable learners to analyze real-world problems, design efficient solutions, and implement them using structured programming techniques. |
| 3 | 25BCXXX | Technical English Communication | 2025 | **Employability :** Develops clear, confident, and professional communication skills essential for effective workplace interaction and career readiness. |
| 4 | 25BCXXX | Web Technology | 2025 | **Employability :** Provides web development skills to design, build, and maintain interactive websites and applications, enhancing employability in entry-level IT and software roles |
| 5 | 25BCXXX | Object Oriented Programming | 2025 | **Skill development :** To enhance Problem-solving and algorithmic thinking and to design, implement, and maintain modular, reusable, and scalable software solutions. |
| 6 | 25BCXXX | Data Structures | 2025 | **Employability :** Develops strong problem-solving and algorithmic thinking skills essential for efficient software development and employability in IT roles. |

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| 7 | 25BCXXX | Discrete Mathematics | 2025 | **Skill Development** : It builds foundational problem-solving and logical thinking skills |
| 8 | 25BCXXX | Computer Organization | 2025 | **Employability :** Provides foundational knowledge required for Operating Systems, Compilers, Embedded Systems, and Computer Networks |
| 9 | 25BCXXX | Introduction to Cyber Security | 2025 | **Employability :** Builds security awareness and cyber hygiene required across all IT and non-IT jobs |
| 10 | 25BCXXX | Data visualization Laboratory | 2025 | **Skill development** : develops practical, job-ready competencies in visual analytics and data interpretation, thereby enhancing employability. |
| 11 | 25BCXXX | Soft skills laboratory | 2025 | **Skill development** : Focuses on developing practical communication and professional competencies required for workplace success. |
| 12 | 25BCXXX | Indian Knowledge System | 2025 | **Employability :** Develops ethical thinking, leadership values, and social responsibility |
| 13 | 25BCXXX | Python Programming | 2025 | **Skill development :** Builds hands-on skills in coding, problem-solving, automation, data handling, AI/ML, web development |
| 14 | 25BCXXX | Database Systems | 2025 | **Employability :** Develops skills aligned with roles like DBA trainee, backend developer, data analyst |
| 15 | 25BCXXX | Probability and Statistics | 2025 | **Skill development** : Develops analytical and data-driven problem-solving skills for informed decision making under uncertainty in the area of AI,ML and analytics |
| 16 | 25BCXXX | Operating Systems | 2025 | **Skill development:** Builds core technical skills and develops hands-on abilities through labs (Linux commands, scheduling algorithms, synchronization |
| 17 | 25BCXXX | Management Science | 2025 | **Employability:** Develops managerial and professional skills, with indirect entrepreneurial benefits. |
| 18 | 25BCXXX | Design Thinking | 2025 | **Skill Development :** Enhances job-ready skills (problem-solving, creativity, teamwork) and supports innovation, startup thinking, and product design |
| 19 | 25BCXXX | Computer Networks | 2025 | **Employability:** Builds industry-relevant competencies required for |

| | | | | |
|---|---|---|---|---|
| | | | | Network Engineer, System / Network Administrator, IT Support & Infrastructure roles |
| 20 | 25BCXXX | Software Engineering | 2025 | **Skill development** : It builds practical skills (design, development, testing, teamwork) that directly improve job readiness. |
| 21 | 25BCXXX | Design and Analysis of Algorithms | 2025 | **Skill development :** Enhances Strong problem-solving , logical thinking and decision-making ability which are highly valued in software, data, and IT roles. |
| 22 | 25BCXXX | Organization Behavior | 2025 | **Entrepreneurship:** Builds people-management, leadership, and decision-making skills essential for successful entrepreneurship. |
| 23 | 25BCXXX | Quantitative Aptitude and Logical Reasoning | 2025 | **Employability :** Builds strong analytical, numerical, and problem-solving skills essential for effective decision-making and performance |
| 24 | 25BCXXX | Socially Relevant Project using Design Thinking | 2025 | **Skill development** : Develops real-world problem-solving, teamwork, and user-centric innovation skills by applying design thinking to socially relevant challenges. |
| 25 | 25BCXXX | Cloud Computing | 2025 | **Employability:** Ability to design, deploy, and manage scalable, secure cloud-based solutions used in real-world IT and business environments. |
| 26 | 25BCXXX | Cryptography & Network Security | 2025 | **Employability :** ability to design, implement, and manage secure communication systems |

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**Chairperson**

HOD
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Vignan's Foundation for Science, Technology & Research
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# DEPARTMENT OF COMPUTER APPLICATIONS

## APPENDIX II

### List of Courses that Enables Employability or Entrepreneurship or Skill Development (MCA)

| S. No | Course Code | Course Title | Year of Introduction | Employability / Entrepreneurship / Skill development |
|---|---|---|---|---|
| 1 | 25MCXXX | Data Structures | 2025 | **Employability :** Develops strong problem-solving and algorithmic thinking skills essential for efficient software development and employability in IT roles. |
| 2 | 25MCXXX | Python Programming | 2025 | **Skill development** : Builds hands-on skills in coding, problem-solving, automation, data handling, AI/ML, web development |
| 3 | 25MCXXX | Web Technologies | 2025 | **Employability :** Provides web development skills to design, build, and maintain interactive websites and applications, enhancing employability in entry-level IT and software roles |
| 4 | 25MCXXX | Computer Organization and Operating System | 2025 | **Skill Enhancement :** Builds core technical skills in understanding hardware–software interaction, process management, memory management, and system-level problem solving, |
| 5 | 25MCXXX | Probability and Statistics | 2025 | **Skill development** : Develops analytical and data-driven problem-solving skills for informed decision making under uncertainty in the area of AI,ML and analytics |
| 6 | 25MCXXX | Software Engineering | 2025 | **Skill development** : It builds practical skills (design, development, testing, teamwork) that directly improve job readiness. |
| 7 | 25MCXXX | Database Systems | 2025 | **Employability** : Develops skills aligned with roles like DBA trainee, backend developer, data analyst |

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|---|---|---|---|---|
| 8 | 25MCXXX | Object Oriented Programming | 2025 | **Skill development :** Problem-solving and algorithmic thinking and to design, implement, and maintain modular, reusable, and scalable software solutions. |
| 9 | 25MCXXX | Computer Networks | 2025 | **Employability:** Builds industry-relevant competencies required for Network Engineer, System / Network Administrator, IT Support & Infrastructure roles |
| 10 | 25MCXXX | Organization Behaviour | 2025 | **Entrepreneurship:** Builds people-management, leadership, and decision-making skills essential for successful entrepreneurship. |
| 11 | 25MCXXX | Soft Skills Laboratory | 2025 | **Skill development** : Focuses on developing practical communication and professional competencies required for workplace success. |
| 12 | 25MCXXX | Socially Relevant Project using Design Thinking | 2025 | **Skill development** : Develops real-world problem-solving, teamwork, and user-centric innovation skills by applying design thinking to socially relevant challenges |
| 13 | 25MCXXX | Cryptography & Network Security | 2025 | **Employability :** Ability to design, implement, and manage secure communication systems |
| 14 | 25MCXXX | Full Stack Technologies | 2025 | **Employability** Develops industry-ready software development skills by enabling learners to design, build, deploy, and maintain complete web applications, improving employability as full stack developers. |
| 15 | 25MCXXX | Big Data Analytics | 2025 | **Employability** Builds data-driven decision-making skills by training learners to process, analyze, and extract insights from large-scale data, preparing them for roles like data analyst and big data engineer. |

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# DEPARTMENT OF COMPUTER APPLICATIONS

## APPENDIX III

### Comparison of Course Contents between R25-C25 and R22-C22 Curriculums(BCA)

| S. No. | Course Code | Course Title | % of Changes | Justification for the changes |
|---|---|---|---|---|
| 1. | 25BCXXX | Digital Computer Fundamentals | 0% | No changes |
| 2. | 25BCXXX | Programming for Problem Solving | 0% | No changes |
| 3. | 25BCXXX | Technical English Communication | 0% | No changes |
| 4. | 25BCXXX | Web Technology | 0% | No changes |
| 5. | 25BCXXX | Mathematical Foundations for Computer Science | 0% | No changes |
| 6. | 25BCXXX | Environmental Studies ( Field Project) | 0% | No changes |
| 7. | 25BCXXX | Physical Fitness, Sports and Games | 0% | No changes |
| 8. | 25BCXXX | Object Oriented Programming | 10% | Removed applets based on expert suggestions |
| 9. | 25BCXXX | Data Structures | 0% | No changes |
| 10. | 25BCXXX | Discrete mathematics | 100% | New course |
| 11. | 25BCXXX | Computer Organization | 100% | New course |
| 12. | 25BCXXX | Introduction to Cyber Security | 100% | New course |
| 13. | 25BCXXX | Data visualization Laboratory | 0% | No changes |
| 14. | 25BCXXX | Soft skills laboratory | 0% | No changes |
| 15. | 25BCXXX | Indian Knowledge System | 100% | New course |
| 16. | 25BCXXX | Python Programming | 0% | No changes |
| 17. | 25BCXXX | Database Systems | 0% | No changes |
| 18. | 25BCXXX | Probability and Statistics | 0% | No changes |
| 19. | 25BCXXX | Operating Systems | 0% | No changes |
| 20. | 25BCXXX | Management Science | 0% | No changes |
| 21. | 25BCXXX | Professional Communication lab | 0% | No changes |
| 22. | 25BCXXX | Design Thinking | 100% | New course |
| 23. | 25BCXXX | Competitive Coding | 0% | No changes |

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|---|---|---|---|---|
| 24. | 25BCXXX | Computer Networks | 0% | No changes |
| 25. | 25BCXXX | Software Engineering | 0% | No changes |
| 26. | 25BCXXX | Design and Analysis of Algorithms | 100% | New course |
| 27. | 25BCXXX | Organization Behavior | 100% | New course |
| 28. | 25BCXXX | Quantitative Aptitude and Logical Reasoning | 0% | No changes |
| 29. | 25BCXXX | Socially Relevant Project using Design Thinking | 0% | No changes |
| 30. | 25BCXXX | Advanced Coding Competency | 0% | No changes |
| 31. | 25BCXXX | Universal Human Values | 100% | New course |
| 32. | 25BCXXX | Cloud Computing | 0% | No changes |
| 33. | 25BCXXX | Cryptography & Network Security | 40% | Lab practices removed |

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# DEPARTMENT OF COMPUTER APPLICATIONS

## APPENDIX III

### Comparison of Course Contents between R25-C25 and R22- C24 Curriculums(MCA)

| S. No. | Course Code | Course Title | % of Changes | Justification for the changes |
|---|---|---|---|---|
| 1 | 25MCXXX | Data Structures | 0% | No changes |
| 2 | 25MCXXX | Python Programming | 0% | No changes |
| 3 | 25MCXXX | Web Technologies | 30% | Module 2 – Units 2 & 3 revised |
| 4 | 25MCXXX | Computer Organization and Operating Systems | 0% | No changes |
| 5 | 25MCXXX | Probability and Statistics | 0% | No changes |
| 6 | 25MCXXX | Software Engineering | 0% | No changes |
| 7 | 25MCXXX | Technical English Communication | 0% | No changes |
| 8 | 25MCXXX | Database Systems | 0% | No changes |
| 9 | 25MCXXX | Object Oriented Programming | 0% | No changes |
| 10 | 25MCXXX | Computer Networks | 0% | No changes |
| 11 | 25MCXXX | Organization Behaviour | 0% | No changes |
| 12 | 25MCXXX | Soft Skills Laboratory | 0% | No changes |
| 13 | 25MCXXX | Socially Relevant Project using Design Thinking | 0% | No changes |
| 14 | 25MCXXX | Cryptography & Network Security | 0% | No changes |
| 15 | 25MCXXX | Full Stack Technologies | 0% | No changes |
| 16 | 25MCXXX | Big Data Analytics | 0% | No changes |
| 17 | 25MCXXX | Machine Learning | 15% | Incorporated basic concepts of MLOps in Module I, ARIMA/SARIMA, Prophet in Module II |

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# DEPARTMENT OF COMPUTER APPLICATIONS

## APPENDIX IV

### List of New Courses in the R25-C25 Curriculum

| S. No. | Course Code | Course Title | % of Change | Justification for the Changes |
|---|---|---|---|---|
| 1. | 25BCXXX | Discrete mathematics | 100% | New Course introduced based on AICTE |
| 2. | 25BCXXX | Computer Organization | 100% | New Course introduced based on AICTE |
| 3. | 25BCXXX | Introduction to Cyber Security | 100% | New course introduced in place of Fundamentals of Network Security |
| 4. | 25BCXXX | Indian Knowledge System | 100% | New Course introduced based on NEP regulations |
| 5. | 25BCXXX | Design and Analysis of Algorithms | 100% | New Course introduced based on Stakeholders feedback |
| 6. | 25BCXXX | Universal Human Values | 100% | New Course introduced based on Stakeholders feedback |
| 7. | 25BCXXX | Design Thinking | 100% | New Course introduced based on Stakeholders feedback |
| 8. | 25MCXXX | Intellectual Property Rights | 100% | New course introduced for 2 credits based on faculty feedback |
| 9. | 25MCXXX | Research methodology | 100% | New course introduced for 2 credits based on faculty feedback |
| 10. | 25MC823 | Digital Marketing | 100% | New course introduced for 2 credits based on faculty feedback |

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## APPENDIX V

### I. Details of IKS Components Incorporated in R25-C25 Curriculum (MCA)

| Course Type | Total number of Courses | Number of Courses Incorporating IKS | Percentage |
|---|---|---|---|
| Professional Core | 13 | 5 | 40% |
| Department Electives | 05 | 2 | 20% |
| Basic Science & Humanities | 03 | 1 | 5% |
| Management Studies | 01 | 0 | 0% |

### II. List of Courses in the R25-C25 Curriculum Incorporating IKS (MCA)

| S. No. | Course Code | Course Title | Type of course | Module (Unit) | IKS Components Incorporated |
|---|---|---|---|---|---|
| 1. | 25MCXXX | Data Structures | Professional Core | Module 2: Unit 2 | Pingala's work on prosody and recursive combinatorics |
| | | | | Module 2: Unit 3 | Paninian grammar and Indian philosophical categorization systems |
| 2. | 25MCXXX | Computer Organization and Operating System | Professional Core | Module 2:Unit 2,3 | Karya–Karana Siddhanta - concepts like process scheduling, interrupts, deadlocks, and memory management clearly demonstrate cause–effect relationships |
| 3. | 25MCXXX | Probability and Statistics | Basic Science & Humanities | Module 1: Unit 1 | Saṅkhyā, Māna, and Madhya emphasizing traditional numerical reasoning, measurement, and analysis of central tendencies and data variation. |
| | | | | Module 2: Unit 2 | Kārya–Kāraṇa Bhāva - Foundation for Regression modeling and predictive analysis<br>Yukti - Model building and interpretation of correlation/regression results |
| 4. | 25MCXXX | Database Systems | Professional Core | Module 1 : Unit 1 | Ancient Indian record-keeping and classification systems (e.g., Kautilya's Arthashastra, Ayurveda taxonomy) |
| 5. | 25MCXXX | Object Oriented Programming | Professional Core | Module 1: Unit 2 | The hierarchical inheritance structure and encapsulation resemble Guru–Shishya Parampara — |

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| | | | | | knowledge transfer, discipline, and reuse of wisdom. |
| 6. | 25MCXXX | Computer Networks | Professional Core | Module 1 : Unit 2 | Principles of signal propagation and wave transmission were studied in ancient Indian acoustics — “Nada Shastra” and early sound communication practices |
| 7. | 25MCXXX | Soft Skills Laboratory | Humanities | Module 1 : Unit 1 | Yoga Sutras and Bhagavad Gita emphasizing self-awareness, balance, and purpose in life |
| | | | | Module 2 : Unit 2 | Sahavāsya and the Panchatantra teachings promoting cooperation and wisdom through dialogue |
| 8. | 25MCXXX | Cryptography and Network Security | Professional Core | Module 1 : Unit 1 | Kautilya’s Arthashastra - Ancient Indian cryptography methods and military encoding techniques |
| 9. | 25MCXXX | Machine Learning | Department Elective | Module 1 : Unit 2 | Prakṛti (patterns in nature) inspires pattern recognition |
| | | | | Module 2 : Unit 3 | Nyāya/Sānkhya logic: Sequential patterns and prediction in nature |

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# DEPARTMENT OF COMPUTER APPLICATIONS

## APPENDIX VI

### I. (a) Details of SDG Mapped Courses in R25-C25 Curriculum (MCA)

| Course Type | Total number of Courses | Number of Courses Mapped with SDGs | Percentage |
|---|---|---|---|
| Professional Core | 11 | 11 | 100% |
| Department Electives | 05 | 05 | 100% |
| Basic Science & Humanities | 03 | 03 | 100% |
| Management Studies | 01 | 01 | 100% |
| Project Work | 02 | 02 | 100% |
| Total | 22 | 22 | 100% |

### I. (b) Details of SDG Mapped Courses in R25-C25 Curriculum (BCA)

| Course Type | Total number of Courses | Number of Courses Mapped with SDGs | Percentage |
|---|---|---|---|
| Professional Core | 21 | 21 | 100% |
| Department Electives | 05 | 05 | 100% |
| Basic Science & Humanities | 08 | 08 | 100% |
| Management Studies | 02 | 02 | 100% |
| Project work | 02 | 02 | 100% |
| Total | 35 | 35 | 100% |

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