

1. **Name of the Faculty: Shiv Naresh Shivhare**
2. **Course: Cognitive Analytics**
3. **Program: B. Tech CS+AIML**
4. **Target: Level 2**

Course Code: CSBA3009
L: 2
T: 0
P: 0
C: 2

COURSE PLAN

| | |
|---------|------------------|
| Target | 50% (marks) |
| Level-1 | 40% (population) |
| Level-2 | 50% (population) |
| Level-3 | 60% (population) |

1. Method of Evaluation

| UG | PG |
|----------------------------------|---|
| Quizzes/Tests, Assignments (30%) | Quizzes/Tests, Assignments, seminar (50%) |
| Mid Examination (20%) | End semester (50%) |
| End examination (50%) | |

*may be keep as per Program (UG/PG)

2. Passing Criteria

| Scale | PG | UG |
|-----------------------------|---|---|
| Out of 10point scale | SGPA – “6.00” in each semester CGPA – “6.00” Min. Individual Course Grade – “C” Course Grade Point – “4.0” | SGPA – “5.0” in each semester CGPA – “5.0” Min. Individual Course Grade – “C” Course Grade Point – “4.0” |

*for PG, passing marks are 40/100 in a paper

*for UG, passing marks are 35/100 in a paper

3. Pre-requisites:

- Basics of mathematics, AI and machine learning

4. Course Objectives:

- To understand the fundamentals of cognitive analytics
- To explore potentially successful applications in Cognitive Computing.
- Evaluate future directions of Cognitive Computing.

5. Pedagogy

- Synchronous Mode using BB Collaborate aided with power point presentations.
- Asynchronous Mode using Recorded Lectures/Voice over Power Points.
- 1 Discussion will be covered every week on working/non-working day as per faculty/student convenience. Proper record will be maintained for it.
- Regular Communication for Tests/Quizzes/Assignments as well as discussions will be ensured by the faculty through email or Blackboard announcements.

1. **Name of the Faculty:** Shiv Naresh Shivhare
2. **Course:** Cognitive Analytics
3. **Program:** B. Tech CS+AIML
4. **Target:** Level 2

Course Code: CSBA3009**L:** 2**T:** 0**P:** 0**C:** 2**6. References:**

| Text Books | Web resources | Journals | Reference books |
|---|---------------|----------|-----------------|
| T1: Cognitive Analytics (IBM ICE Publications) | | | |

1. **Name of the Faculty:** Shiv Naresh Shivhare
2. **Course:** Cognitive Analytics
3. **Program:** B. Tech CS+AIML
4. **Target:** Level 2

Course Code: CSBA3009
L: 2
T: 0
P: 0
C: 2

GUIDELINES TO STUDY THE SUBJECT

Instructions to Students:

1. Go through the 'Syllabus' in the Black Board section of the web-site(<https://learn.upes.ac.in>) in order to find out the Reading List.
2. Get your schedule and try to pace your studies as close to the timeline as possible.
3. Get your on-line lecture notes (Content, videos) at Lecture Notes section. These are our lecture notes. Make sure you use them during this course.
4. check your blackboard regularly
5. go through study material
6. check mails and announcements on blackboard
7. keep updated with the posts, assignments and examinations which shall be conducted on the blackboard
8. Be regular, so that you do not suffer in any way
9. **Cell Phones and other Electronic Communication Devices:** Cell phones and other electronic communication devices (such as Blackberries/Laptops) are not permitted in classes during Tests or the Mid/Final Examination. Such devices MUST be turned off in the class room.
10. **E-Mail and online learning tool:** Each student in the class should have an e-mail id and a password to access the LMS system regularly. Regularly, important information – Date of conducting class tests, guest lectures, via online learning tool. The best way to arrange meetings with us or ask specific questions is by email and prior appointment. All the assignments/tests/quizzes and asynchronous lectures (Recorded Lectures or Voice over ppt) will be uploaded on online learning tool BlackBoard. Various research papers/reference material will be mailed/uploaded on online learning platform time to time.
11. **Attendance:** Students are required to have minimum attendance of 75% in each subject. Students with less than said percentage shall NOT be allowed to appear in the end semester examination.

This much should be enough to get you organized and on your way to having a great semester! If you need us for anything, send your feedback through e-mail to sshivhare@ddn.upes.ac.in. Please use an appropriate subject line to indicate your message details.

1. **Name of the Faculty:** Shiv Naresh Shivhare
2. **Course:** Cognitive Analytics
3. **Program:** B. Tech CS+AIML
4. **Target:** Level 2

Course Code: CSBA3009
L: 2
T: 0
P: 0
C: 2

RELATED OUTCOMES

1. The expected outcomes of the Program are:

| | |
|-------------|--|
| PO1 | Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| PO2 | Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| PO3 | Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| PO4 | Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| PO5 | Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| PO6 | The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| PO7 | Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| PO8 | Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| PO9 | Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| PO10 | Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and |

1. **Name of the Faculty:** Shiv Naresh Shivhare
2. **Course:** Cognitive Analytics
3. **Program:** B. Tech CS+AIML
4. **Target:** Level 2

Course Code: CSBA3009
L: 2
T: 0
P: 0
C: 2

| | |
|-------------|--|
| | write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| PO11 | Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| PO12 | Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |

2. The expected outcomes of the Specific Program are: (upto 3)

| | |
|-------------|--|
| PSO1 | Perform system and application programming using computer system concepts, concepts of Data Structures, algorithm development, problem solving and optimizing techniques |
| PSO2 | Apply software development and project management methodologies using concepts of front-end and back-end development and emerging technologies and platforms. |
| PSO3 | Ability to create & develop most efficient solutions by applying machine learning with analytical emphasis on industrial and research problems. |

3. The expected outcomes of the Course are: (minimum 3 and maximum 6)

| | |
|-------------|---|
| CO 1 | To discuss the concept of cognitive computing and predictive modelling. |
| CO 2 | Practice the machine learning algorithms using programming language. |
| CO 3 | To discuss the various available cognitive services on cloud. |

4. Co-Relationship Matrix

| Course Outcomes | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | PSO 2 | PSO 3 |
|-----------------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| CO1 | | | 1 | 1 | 1 | | | | | | | | 1 | 2 | 3 |
| CO2 | | | 1 | 1 | 1 | | | | | | | | 1 | 2 | 3 |
| CO3 | | | 1 | 1 | 1 | | | | | | | | 1 | 2 | 3 |
| Average | | | 1 | 1 | 1 | | | | | | | | 1 | 2 | 3 |

Indicate the relationships by 1- Slight (low) 2- Moderate (Medium) 3-Substantial (high)

1. **Name of the Faculty:** Shiv Naresh Shivhare
2. **Course:** Cognitive Analytics
3. **Program:** B. Tech CS+AIML
4. **Target:** Level 2

Course Code: CSBA3009**L:** 2**T:** 0**P:** 0**C:** 2**5. Course outcomes assessment plan:**

| components Course Outcomes | Assignment | Test/Quiz | Mid Semester | End Semester | Any other |
|---|-------------------|------------------|---------------------|---------------------|--------------------------|
| CO 1 | ✓ | ✓ | ✓ | ✓ | <input type="checkbox"/> |
| CO 2 | ✓ | ✓ | ✓ | ✓ | <input type="checkbox"/> |
| CO3 | ✓ | ✓ | | ✓ | <input type="checkbox"/> |

1. Name of the Faculty: Shiv Naresh Shivhare
2. Course: Cognitive Analytics
3. Program: B. Tech CS+AIML
4. Target: Level 2

Course Code: CSBA3009
L: 2
T: 0
P: 0
C: 2

OVERVIEW OF COURSE DELIVERY/BROAD PLAN OF COURSE COVERAGE

Course Activities:

| S. No. | Description | Planned | | | Actual | | | Remarks |
|--------|---|----------|----------|--------------|--------|----|--------------|---------------|
| | | From | To | No. of Sess. | From | TO | No. of Sess. | |
| 1. | Introduction & Basic of Cognitive computing | 10 Jan | 24 Jan | 05 | | | | |
| 2. | Predictive Modeling | 27 Jan | 14 Feb | 06 | | | | Assignment -1 |
| 3. | Machine learning using Python | 17 Feb | 10 March | 07 | | | | MIDSEM |
| 4. | Machine learning using R | 14 March | 28 March | 05 | | | | Assignment -2 |
| 5. | Cognitive Services on cloud | 31 March | 11 Apr | 04 | | | | Assignment -3 |

Total No. of Instructional periods available for the course: 27 Sessions

Signature of HOD/Dean

Signature of Faculty

Date:

Date:

1. **Name of the Faculty:** Shiv Naresh Shivhare
2. **Course:** Cognitive Analytics
3. **Program:** B. Tech CS+AIML
4. **Target:** Level 2

Course Code: CSBA3009
L: 2
T: 0
P: 0
C: 2

SESSION PLAN

UNIT-I

Introduction & Basic of Cognitive computing (5 hrs)

| Session Plan | | | | Actual Delivery | | | |
|---------------------|-------------|-----------------------------|---------------------------|------------------------|-------------|------------------------------|-----------------------------|
| Le ct. | Date | Topics to be Covered | CO Map ped | Lec t. | Date | Topics Covered | CO Achie ved |
| 1 | 10-01-22 | What is Cognitive | CO1 | | | What is Cognitive | CO1 |
| 2 | 13-01-22 | Cognitive Applications | CO1 | | | Cognitive Applications | CO1 |
| 3 | 17-01-22 | Data & Data visualization | CO1 | | | Data & Data visualization | CO1 |
| 4 | 20-01-22 | Basics of statistics | CO1 | | | Basics of statistics | CO1 |
| 5 | 24-01-22 | Basics of statistics | CO1 | | | Basics of statistics | CO1 |

Signature of faculty

Date

1. **Name of the Faculty:** Shiv Naresh Shivhare
2. **Course:** Cognitive Analytics
3. **Program:** B. Tech CS+AIML
4. **Target:** Level 2

Course Code: CSBA3009
L: 2
T: 0
P: 0
C: 2

SESSION PLAN

UNIT-II

Predictive Modelling (06 hrs)

| Session Plan | | | | Actual Delivery | | | |
|--------------|----------|---|------------------|-----------------|------|---|--------------------|
| Lec t. | Date | Topics to be Covered | CO Map ped | Lec t. | Date | Topics Covered | CO Achi eved |
| 6 | 27-01-22 | Introduction to Big data life cycle | CO2 | | | Introduction to Big data life cycle | CO2 |
| 7 | 31-01-22 | Introduction to Big data life cycle | CO2 | | | Introduction to Big data life cycle | CO2 |
| 8 | 03-02-22 | Introduction to Data mining | CO2 | | | Introduction to Data mining | CO2 |
| 9 | 07-02-22 | Introduction to Data mining | CO2 | | | Introduction to Data mining | CO2 |
| 10 | 10-02-22 | Data mining process | CO2 | | | Data mining process | CO2 |
| 11 | 14-02-22 | Modeling techniques, Modeling evaluation | CO2 | | | Modeling techniques, Modeling evaluation | CO2 |

Signature of faculty

Date

1. **Name of the Faculty:** Shiv Naresh Shivhare
2. **Course:** Cognitive Analytics
3. **Program:** B. Tech CS+AIML
4. **Target:** Level 2

Course Code: CSBA3009
L: 2
T: 0
P: 0
C: 2

SESSION PLAN

UNIT-III

Machine learning using Python (7 hrs)

| Session Plan | | | | Actual Delivery | | | |
|--------------|----------|----------------------------------|-----------|-----------------|------|----------------------------------|-------------|
| Lect. | Date | Topics to be Covered | CO Mapped | Lect. | Date | Topics Covered | CO Achieved |
| 12 | 17-02-22 | Introduction to Machine Learning | CO2 | | | Introduction to Machine Learning | CO2 |
| 13 | 21-02-22 | Regression | CO2 | | | Regression | CO2 |
| 14 | 24-02-22 | Regression | CO2 | | | Regression | CO2 |
| 15 | 28-02-22 | Classification | CO2 | | | Classification | CO2 |
| 16 | 03-03-22 | Classification | CO2 | | | Classification | CO2 |
| 17 | 07-03-22 | Unsupervised Learning | CO2 | | | Unsupervised Learning | CO2 |
| 18 | 10-03-22 | Unsupervised Learning | CO2 | | | Unsupervised Learning | CO2 |

Signature of faculty

Date:

1. **Name of the Faculty:** Shiv Naresh Shivhare
2. **Course:** Cognitive Analytics
3. **Program:** B. Tech CS+AIML
4. **Target:** Level 2

Course Code: CSBA3009
L: 2
T: 0
P: 0
C: 2

SESSION PLAN

UNIT-IV

Machine learning using R (5 hrs)

| Session Plan | | | | Actual Delivery | | | |
|--------------|----------|--|------------------|-----------------|------|--|--------------------|
| Lec t. | Date | Topics to be Covered | CO Map ped | Lec t. | Date | Topics Covered | CO Achi eved |
| 19 | 14-03-22 | Machine Learning vs Statistical Modeling | CO2 | | | Machine Learning vs Statistical Modeling | CO2 |
| 20 | 17-03-22 | Supervised vs Unsupervised Learning | CO2 | | | Supervised vs Unsupervised Learning | CO2 |
| 21 | 21-03-22 | Supervised, Unsupervised Learning | CO2 | | | Supervised, Unsupervised Learning | CO2 |
| 22 | 24-03-22 | Dimensionality Reduction | CO2 | | | Dimensionality Reduction | CO2 |
| 23 | 28-03-22 | Collaborative Filtering | CO2 | | | Collaborative Filtering | CO2 |

Signature of faculty

Date:

1. **Name of the Faculty:** Shiv Naresh Shivhare
2. **Course:** Cognitive Analytics
3. **Program:** B. Tech CS+AIML
4. **Target:** Level 2

Course Code: CSBA3009
L: 2
T: 0
P: 0
C: 2

SESSION PLAN

UNIT-V

Cognitive Services on cloud (04 hrs)

| Session Plan | | | Actual Delivery | | | | |
|--------------|----------|---------------------------------|------------------|-----------|------|---------------------------------|--------------------|
| Le ct. | Date | Topics to be Covered | CO Mapp ed | Lec t. | Date | Topics Covered | CO Achi eved |
| 24 | 31-03-22 | Introduction to cloud | CO3 | | | Introduction to cloud | CO3 |
| 25 | 04-04-22 | Cognitive services on cloud | CO3 | | | Cognitive services on cloud | CO3 |
| 26 | 07-04-22 | Use case for cognitive services | CO3 | | | Use case for cognitive services | CO3 |
| 27 | 11-04-22 | Examples of cognitive service | CO3 | | | Examples of cognitive service | CO3 |

Signature of faculty

Date: