

B.Sc/B.Sc (Hons.) Life/Physical Sciences ,Part-III

Semester -V

Session :2026-27

BCOM301T: AI and Prompt Engineering

Total Marks: 70

External Examination: 50

Internal Assessment: 20

Maximum Time: 3 Hours

Minimum Pass Marks: 35%

Lectures to be delivered: 45-55 Hours

Course outcome :

At the end of the course, the student will be able to:

- Explain the concepts and types of artificial intelligence.
- Illustrate basic machine learning methods for regression, classification and clustering.
CO3: Identify real-world applications across different disciplines.
- Make use of prompt engineering techniques to interact with generative AI tools. CO5: Outline recent trends in artificial intelligence and machine learning.

A) Instructions for the paper setter

The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for the candidates

1. Candidates are required to attempt five questions in all, selecting two questions each from Section A and Section B and compulsory questions of Section C.
2. Use of non-programmable scientific calculators is allowed.

Section A

Introduction to Artificial Intelligence: Artificial Intelligence, How Does AI Work?, Advantages and Disadvantages of Artificial Intelligence, History of Artificial Intelligence, Types of Artificial Intelligence, Weak AI, Strong AI.

Applications of AI: Application of AI in Healthcare, Application of AI in Finance, Application of AI in Retail, Application of AI in Agriculture, Application of AI in Education, Application of AI in Transportation, AI in Experimentation and Multi-disciplinary research.

Machine Intelligence: Defining Intelligence, Components of Intelligence, Differences Between

[Handwritten signatures]



Human and Machine Intelligence, Agent and Environment, Search, Uninformed Search Algorithms, Informed Search Algorithms: Pure Heuristic Search, Best-First Search Algorithm (Greedy Search).

Knowledge Representation: Introduction, Knowledge Representation, Knowledge-Based Agent, Types of Knowledge.

Section B

Introduction to Prompt Engineering: Introduction to Prompt Engineering, The Evolution of Prompt Engineering, Types of Prompts, How Does Prompt Engineering Work?, Comprehending Prompt Engineering's Function in Communication, The Advantages of Prompt Engineering, The Future of LLM Communication.

Prompt Engineering Techniques for ChatGPT: Introduction to Prompt Engineering Techniques, Instructions Prompt Technique, Zero, One, and Few Shot Prompting, Self-Consistency Prompt.

Prompts for Creative Thinking: Introduction, Unlocking Imagination and Innovation.

Prompts for Effective Writing: Introduction, Igniting the Writing Process with Prompts.

Textbooks:

1. Reema Thareja, *Artificial Intelligence: Beyond Classical AI*, Pearson Education, 2023.
2. Ajantha Devi Vairamani and Anand Nayyar, *Prompt Engineering: Empowering Communication*, 1st Edition, CRC Press, Taylor & Francis Group, 2024. (DOI: <https://doi.org/10.1201/9781032692319>).
3. Saptarsi Goswami, Amit Kumar Das and Amlan Chakrabarti, "AI for Everyone – A Beginner's Handbook for Artificial Intelligence", Pearson, 2024.

Reference books / Manuals:

1. Stuart Russell and Peter Norvig, *Artificial Intelligence: A Modern Approach* (4th Edition), Pearson Education, 2023.
2. Elaine Rich, Kevin Knight, and Shivashankar B. Nair, *Artificial Intelligence*, McGraw Hill Education.
3. Tom Taulli, *Prompt Engineering for Generative AI: ChatGPT, LLMs, and Beyond*, Apress, Springer Nature. Nilakshi Jain, *Artificial Intelligence: Making A System Intelligent*, First Edition, Wiley.

[Handwritten signature]



B.Sc./B.Sc. (Hons.) Life Sciences/Physical Sciences, Part III

Semester: VI

Session: 2026-27

BCOM302T: INTRODUCTION TO COMPUTER NETWORK AND INTERNET PROGRAMMING

Total Marks: 70

Maximum Time: 3 Hrs.

External Examination: 50

Minimum Pass Marks: 35%

Internal Assessment: 20

Lectures to be delivered: 45-55 Hrs.

Credit: 3

A) Instructions for paper-setter

The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

1. Candidates are required to attempt two questions each from sections A & B of the question paper and the entire section C.
2. Use of non-programmable scientific calculator is allowed.

Section A

- **Computer networks:** Hardware, Software, users, goals and applications of computer networks.
- **Types of Networks:** Local area networks, wide area networks, metropolitan area networks and value-added networks - their features.
- **Transmission media:** Magnetic media, twisted pair, coaxial cables, fibre optics, radio transmission, microwave transmission, infrared waves and Line of sight transmission, Cellular radio and communication Satellites.

Handwritten signature



- **Internet:** What is Internet, its advantages, disadvantages, internet facilities through WWW and HTML, Internet Protocols, TCP/IP, FTP, newsgroups, remote logins, chat groups etc.
- **WWW:** the client side, the server side, web browsers, web pages, locating information on the web.
- **E-Mail:** architecture, various aspects, user agent, message format, message transfer, e-mail privacy,
- **Network Security:** Various threats, prevention and solutions.

Section B

- **HTML:** Introduction to HTML, SGML, Internet and Web structure of HTML document.
- **Starting an HTML document:** Head element, body element, style element, Script element, Text formatting, using lists to organise information.
- **Organising Data with Table:** Basic table Structures, individual cells and headings, vertical controls, database considerations, displaying real data with a table.
- **Table Layout and Presentation:** Table Syntax, two column layout, staggered body with an index, traditional newspaper layout.
- **Uniform Resource Locators (URLs):** Absolute URLs, Relative URLs, fragment URLs, Types of URL Schemes- HTTP, mail to, news, FTP, Telnet, File etc.
- **Using Hyper Links and Anchors:** Uses to Hyper Links, Structure of Hyper Links, Links to specialised contents.
- **Images:** Adding Images to web page, using images as links, creating menus with image maps, image formats-GIF, JPEG etc.
- **HTML Forms:** Understanding forms, creating simple GO button, fill-in-form page, form security, INPUT element, BUTTON element, SELECT element, TEXT AREA element, LABEL element, FIELDSET and LEGEND elements.

[Handwritten signature]



**BCOM302L: INTRODUCTION TO COMPUTER NETWORK & INTERNET
PROGRAMMING Lab**

Max. Marks: 30

Maximum Time: 3 Hrs.

Practical units to be conducted: 75

Minimum Pass Marks: 35%

Credit: 1

The laboratory course will comprise of exercises to supplement what is learnt under Paper

**BCOM302T: INTRODUCTION TO COMPUTER NETWORK AND INTERNET
PROGRAMMING Lab**

Exercises should cover at least following topics: HTML, Tables and Forms, Applying Style Sheets to HTML, General Commands of Java Script.

Break-up of marks:

- Lab Record: 05 marks
- Viva Voce: 10 marks
- Program Development and Execution: 15 marks

[Handwritten signature]

