

ACHARY NAGARJUNA UNIVERSITY  
(Implemented from Academic Year - 2020-21)  
PROGRAMME: FOUR YEAR B.A./B.Com (Hons)

**Domain Subject: Computer Applications for Arts/Commerce**  
**Skill Enhancement Courses (SECs) for Semester V, from 2022-23 (Syllabus/Curriculum)**

Pair Options of SECs for Semester-V  
(To choose One pair from the Four alternate pairs of SECs)

Univ. Code	Course NO. 6&7	Name of Course	Hrs. / Week	Max Marks IE	Max Marks EE	Credits
	6A	Big data Analytics using R	5	25	75	4
	7A	Data Science using Python	5	25	75	4
OR						
	6B	Mobile application development	5	25	75	4
	7B	Cyber security and malware analysis	5	25	75	4
OR						
	6C	E-commerce application development	5	25	75	4
	7C	Real time governance system (RTGS)	5	25	75	4
OR						
	6D	Multimedia Tools and Applications	5	25	75	4
	7D	Digital imaging	5	25	75	4

**Note-1:** For Semester-V, for the domain subject Computer Applications, any one of the above four pairs of SECs shall be chosen as courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C or 6D & 7D. The pair shall not be broken (ABCD allotment is random, not on any priority basis).

**Note-2:** One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate practical skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the skills embedded in syllabus citing related real field situations.

**Note-3:** Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per subject/course.

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ACHARY NAGARJUNA UNIVERSITY

Semester-wise Revised Syllabus under CBCS, 2019-20

Subject: **Computer Applications for Arts/Commerce**

Four year B.A. /B.Com. (Hons) Semester –V (from 2022-23)

Course Code:

Max Marks: 100

**Course-6A: BIGDATA ANALYTICS USING R**

(Skill Enhancement Course (Elective), 4 credits)

**I. Learning Outcomes:**

Upon successful completion of the course, a student will be able to:

1. Understand data and classification of digital data.
2. Understand Big Data Analytics.
3. Load data in to R.
4. Organize data in the form of R objects and manipulate them as needed.
5. Perform analytics using R programming.

**II. Syllabus:** (Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

**Unit – 1: Introduction to Big data**

(12 h)

Data, classification Of Digital Data--structured, unstructured, semi-structured data, characteristics of data, evaluation of big data, definition and challenges of big data , what is big data and why to use big data ?, business intelligence Vs big data.

**Unit – 2: Big data Analytics**

(10 h)

What is and isn't big data analytics? Why hype around big data analytics? Classification of analytics, top challenges facing big data, importance of big data analytics, technologies needed to meet challenges of big data.

**Unit – 3: Introduction to R and getting started with R**

(13h)

What is R? Why R? , advantages of R over other programming languages, Data types in R-logical, numeric, integer, character, double, complex, raw, coercion, ls() command, expressions, variables and functions, control structures, Array, Matrix, Vectors, R packages.

**Unit – 4: Exploring data in R**

(13h)

Data frames-data frame access, ordering data frames, R functions for data frames dim(), nrow(), ncol(), str(), summary(), names(), head(), tail(), edit() .Load data frames—reading from .CSV files, sub setting data frames, reading from tab separated value files, reading from tables.

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**Unit – 5: Data Visualization using R** (12h)

**Reading and getting data into R (External Data):** XML files, Web Data, JSON files, Databases, Excel files.

**Working with R Charts and Graphs:** Histograms, Bar Charts, Line Graphs, Scatterplots, Pie Charts

**BOOKS**

1. Seema Acharya , Subhashini Chellappan --- Big Data And Analytics second edition, Wiley
2. Seema Acharya--Data Analytics using R, McGraw Hill education (India) Private Limited.
3. Big Data Analytics, Introduction to Hadoop, Spark, and Machine-Learning, Raj kamal, Preeti Saxena, McGraw Hill, 2018.
4. Big Data, Big Analytics: Emerging Business intelligence and Analytic trends for Today's Business, Michael Minelli, Michelle Chambers, and Ambiga Dhiraj, John Wiley & Sons, 2013

**Reference Books:**

1. An Introduction to R, Notes on R: A Programming Environment for Data Analysis and Graphics. W. N. Venables, D.M. Smith and the R Development Core Team

**RECOMMENDED CO-CURRICULAR ACTIVITIES:**

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

**A. Measurable**

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups a steams))
4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

**B. General**

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

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## RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Problem-solving exercises,
4. Practical assignments and laboratory reports.
5. Observation of practical skills,
6. Individual and group project reports like "Creating Text Editor in C".
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work

### Course-6A: Big Data Analytics Using R---- Lab (Practical) Syllabus (15 Hrs.)

*(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)*

1. Create a vector in R and perform operations on it.
2. Create integer, complex, logical, character data type objects in R and print their values and their class using print and class functions.
3. Write code in R to demonstrate sum(), min(), max() and seq() functions.
4. Write code in R to manipulate text in R using grep(), toupper(), tolower() and substr() functions.
5. Create data frame in R and perform operations on it.
6. Import data into R from text and excel files using read.table () and read.csv () functions.
7. Write code in R to find out whether number is prime or not.
8. Print numbers from 1 to 100 using while loop and for loop in R.
9. Write a program to import data from csv file and print the data on the console.
10. Write a program to demonstrate histogram in R.

**Note:** The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned Faculty members.*

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ACHARYA NAGARJUNA UNIVERSITY  
Semester-wise Revised Syllabus under CBCS,  
2019-20  
Four year B.A./B.Com.(Hons) (Hons)

Course Code:

Subject: **Computer Applications for Arts/Commerce**  
Four year B.A. /B.Com. (Hons) Semester –V (from 2022-23)

Max Marks: 100

**Course-7A: DATA SCIENCE USING PYTHON**  
(Skill Enhancement Course (Elective), 4 credits)

### Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand basic concepts of data science
2. Understand why python is a useful scripting language for developers.
3. Use standard programming constructs like selection and repetition.
4. Use aggregated data (list, tuple, and dictionary).
5. Implement functions and modules.

**II. Syllabus :**( Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

#### **Unit – 1: Introduction to data science (12h)**

Data science and its importance, advantages of data science, the process of data science, Responsibilities of a data scientist, qualifications of data scientists, would you be a good data scientist, why to use python for data science.

#### **Unit – 2: Introduction to python (14h)**

What is python , features of python, history of python, writing and executing the python program, basic syntax, variables, keywords, data types ,operators ,indentation, Conditional statements-if, if-else, nested if-else, looping statements-for, while, break, continue, pass

#### **Unit – 3: Control structures and strings (10h)**

**Strings** - definition, accessing, slicing and basic operations

**Lists** - introduction, accessing list, operations, functions and methods,

**Tuples** - introduction, accessing tuple

**Dictionaries** - introduction, accessing values in dictionaries

#### **Unit – 4: Functions and modules (13h)**

**Functions** - defining a function, calling a function, types of functions, function arguments, local and global variables, lambda and recursive functions, Modules- math and random

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## Unit-5: Classes & Objects

(11h)

Classes and Objects, Class method and self-argument, class variables and object variables, public and private data members, private methods, built-in class attributes, static methods.

### Reference Books:

1. Steven cooper--- Data Science from Scratch, Kindle edition
2. Reemathareja—Python Programming using problem solving approach, Oxford Publication

### RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

#### C. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
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4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

#### D. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

### RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

11. The oral and written examinations (Scheduled and surprise tests),
12. Closed-book and open-book tests,
13. Problem-solving exercises,
14. Practical assignments and laboratory reports.
15. Observation of practical skills,
16. Individual and group project reports like "Creating Text Editor in C".
17. Efficient delivery using seminar presentations,
18. Viva voce interviews.
19. Computerized adaptive testing, literature surveys and evaluations,
20. Peers and self-assessment, outputs form individual and collaborative work

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**Course-7A: Data Science Using Python; Lab (Practical) Syllabus (15 Hrs.)**

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1. Python Program to Find the Square Root
2. Python Program to Swap Two Variables
3. Python Program to Generate a Random Number
4. Python Program to Check if a Number is Odd or Even
5. Python Program to Find the Largest Among Three Numbers
6. Python Program to Check Prime Number
7. Python Program to Display the multiplication Table
8. Python Program to Print the Fibonacci sequence
9. Python Program to Find the Sum of Natural Numbers
10. Python Program to Find Factorial of Number Using Recursion
11. Python Program to work with string methods.
12. Python Program to create a dictionary and print its content.
13. Python Program to create class and objects.

**Note:** The list of experiments need not be restricted to the above list. Detailed list of Programming/software tool based exercises can be prepared by the concerned Faculty members.

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Semester-wise Revised Syllabus under CBCS,  
2019-20  
Four year B.A./B.Com.(Hons) (Hons)

Course Code:  
Subject: **Computer Applications for Arts/Commerce**  
Four year B.A./B.Com.(Hons) Semester –V (from 2022-23)  
Max Marks: 100  
Course-6B: **MOBILE APPLICATION DEVELOPMENT**  
(Skill Enhancement Course (Elective), 4 credits)

**Learning Outcomes:**

Upon successful completion of the course, a student will be able to:

1. Identify basic terms ,tools and software related to android systems
2. Describe components of IDE, understand features of android development tools
3. Describe the layouts and controls
4. Explain the significance of displays using the given view
5. Explain the features of services and able to publish android Application
6. Developing interesting Android applications using MIT App Inventor

**Unit-1:**( Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

**10 Hrs**

Introduction to Android ,open headset alliance, Android Ecosystem  
Need of Android  
Features of Android  
Tools and software required for developing an Application

**Unit-2:**

**13Hrs**

operating system, java JDK, Android SDK  
Android development tools  
Android virtual devices  
steps to install and configure Android studio and sdk  
Android activities

**Unit-3:**

**14Hrs**

control flow, directory structure  
components of a screen  
fundamental UI design  
linear layout, absolute layout , table layout  
text view  
edit text  
button, image button, radio button  
radio group, check box, and progress bar  
list view, grid view, image view, scroll view

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time and date picker  
toast

**Unit-4:**

**10Hrs**

android platform services  
Android system Architecture  
Android Security model

**Unit-5 13Hrs.**

Introduction of MIT App Inventor  
Application Coding  
5.3 Programming Basics & Dialog  
Audio & Video  
File

**Text Books:**

1. Erik Hellman, "Android Programming – Pushing the Limits", 1st Edition, Wiley India Pvt Ltd, 2014.
2. App Inventor: create your own Android apps by Wolber, David (David Wayne)

**Reference Books:**

1. Dawn Griffiths and David Griffiths, "Head First Android Development", 1st Edition, O'Reilly SPD Publishers, 2015.
2. J F DiMarzio, "Beginning Android Programming with Android Studio", 4th Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126565580
3. Anubhav Pradhan, Anil V Deshpande, "Composing Mobile Apps" using Android, Wiley 2014, ISBN: 978-81-265-4660-2
4. Android Online Developers Guide
5. <http://developer.android.com/reference/> Udacity: Developing Android
6. Apps- Fundamentals
7. <https://www.udacity.com/course/developing-android-appsfundamentals--ud853-nd>
8. <http://www.appinventor.mit.edu/>

**RECOMMENDED CO-CURRICULAR ACTIVITIES:**

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

**E. Measurable**

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
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4. Study projects (by very small groups of students on selected local real-time

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problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

#### General

- a. Group Discussion
- b. Try to solve MCQ's available online.
- c. Others

#### RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Problem-solving exercises,
4. Practical assignments and laboratory reports.
5. Observation of practical skills,
6. Efficient delivery using seminar presentations,
7. Viva voce interviews.
8. Computerized adaptive testing, literature surveys and evaluations,
9. Peers and self-assessment, outputs form individual and collaborative work

#### Course-6B: Mobile Application Development: Lab (Practical) Syllabus (15 Hrs.)

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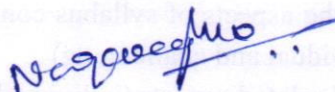
#### Outcomes:

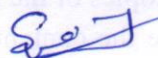
1. Understand the android platform
2. Design and implementation of various mobile applications

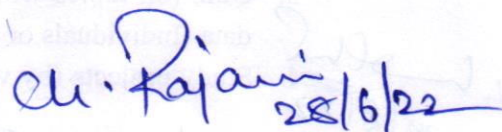
#### Experiments:

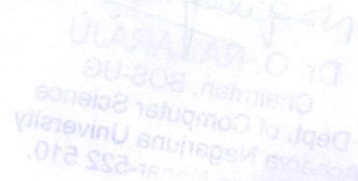
1. Demonstrate mobile technologies and devices
2. Demonstrate Android platform and applications overview
3. Working with texts , shapes, buttons and lists
4. Develop a calculator application
5. Implement an application that creates a alarm clock

**Note:** The list of experiments need not be restricted to the above list. Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.

  
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Semester-wise Revised Syllabus under CBCS,

2019-20

Four year B.A./B.Com.(Hons) (Hons) Semester –V (from 2022-23)

Course Code:

Max Marks: 100

Domain Subject: **Computer Applications for Arts/Commerce**

IV Year B. Sc./B.Com (Hons) – Semester – V

Course-7B: **CYBER SECURITY AND MALWARE ANALYSIS**

(Skill Enhancement Course (Elective), 4 credits)

**COURSE OUTCOMES:**

Upon successful completion of this course, students should have the knowledge and skills to

1. Understand the computer networks, networking tools and cyber security
2. Learn about NIST Cyber Security Framework
3. Understand the OWASP Vulnerabilities
4. Implement various Malware analysis tools
5. Understand about Information Technology act 2000

**Syllabus:** (Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

**UNIT 1: Introduction to Networks & cyber security**

**14hrs**

- Computer Network Basics
- Computer network types
- OSI Reference model
- TCP/IP Protocol suite
- Difference between OSI and TCP/IP
- What is cyber, cyber-crime and cyber-security
- All Layer wise attacks
- Networking devices: router, bridge, switch, server, firewall
- How to configure: router
- How to create LAN

**UNIT 2: NIST Cyber security framework**

**12hrs**

- Introduction to the components of the framework
- Cyber security Framework Tiers
- What is NIST Cyber security framework
- Features of NIST Cyber security framework
- Functions of NIST Cyber security framework
- Turn the NIST Cyber security Framework into Reality/ implementing the framework

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### UNIT 3: OWASP

12hrs

- What is OWASP?
- OWASP Top 10 Vulnerabilities
  - ❖ Injection
  - ❖ Broken Authentication
  - ❖ Sensitive Data Exposure
  - ❖ XML External Entities (XXE)
  - ❖ Broken Access Control
  - ❖ Security Misconfiguration
  - ❖ Cross-Site Scripting (XSS)
  - ❖ Insecure Deserialization
  - ❖ Using Components with Known Vulnerabilities
  - ❖ Insufficient Logging and Monitoring
- Web application firewall

### UNIT 4: MALWARE ANALYSIS

12hrs

- What is malware
- Types of malware
  - ❖ Key loggers
  - ❖ Trojans
  - ❖ Ran some ware
  - ❖ Rootkits
- Antivirus
- Firewalls
- Malware analysis
  - ❖ VM ware
  - ❖ How to use sandbox
  - ❖ Process explorer
  - ❖ Process monitor

### UNIT 5: CYBER SECURITY: Legal Perspectives

10hrs

- Cybercrime and the legal landscape around the world
- Indian IT ACT 2000 --Cybercrime and Punishments
- Challenges to Indian law and cybercrime scenario in India

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### Textbooks:

1. Computer Networks | Fifth Edition | By Pearson (6th Edition)|Tanenbaum, Feamster & Wetherill
2. Computer Networking | A Top-Down Approach | Sixth Edition | By Pearson | Kurose James F. Ross Keith W.
3. Cyber Security by Sunit Belapure, Nina Godbole|Wiley Publications
4. TCP/IP Protocol Suite |Mcgraw-hill| Forouzan|Fourth Edition

### Website References:

- <https://csrc.nist.gov/Projects/cybersecurity-framework/nist-cybersecurity-framework-a-quick-start-guide>
- <https://owasp.org/www-project-top-ten/>
- <https://owasp.org/www-project-juice-shop/>

### Co-Curricular Activities:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

#### A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
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7. Viva-Voce interviews.
8. Computerized adaptive testing, literature surveys and evaluations,
9. Peers and self-assessment, outputs form individual and collaborative work

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**Course-7B: Cyber Security and Malware Analysis; Lab (Practical) Syllabus (15 Hrs.)**

(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)

**Experiments:**

1. Configure a LAN by using a switch
2. Configure a LAN by using Router
3. Perform the packet sniffing mechanism by download the "wire shark" tool and extract the packets
4. Perform an SQL Injection attack and its preventive measure to avoid Injection attack

**Note:** The list of experiments need not be restricted to the above list. Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.

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ACHARYA NAGARJUNA UNIVERSITY

Semester-wise Revised Syllabus under CBCS,

2019-20

Four year B.A. /B.Com. (Hons) Semester –V (from 2022-23)

Domain Subject: **Computer Applications for Arts/Commerce**

Course Code:

Max Marks: 100

**Course-6C: E– COMMERCE APPLICATION DEVELOPMENT**

(Skill Enhancement Course (Elective), 4 credits)

**Learning Outcomes:**

Upon successful completion of the course, a student will be able to:

1. To apply in an integrative and summative fashion the students' knowledge in all fields of business studies by drafting a website presence plan.
2. To understand the factors needed in order to be a successful in ecommerce
3. To gain the skills to bring together knowledge gathered about the different components of building a web presence
4. To critically think about problems and issues that might pop up during the establishment of the web presence
5. To apply Word Press as a content management system (CMS), Plan their website by choosing colour schemes, fonts, layouts, and more

**Syllabus:** (Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

**Unit-1:**

(10h)

Introduction to E– commerce:

Meaning and concept – E– commerce

E– commerce v/s Traditional Commerce

E– Business & E– Commerce – History of E– Commerce

EDI – Importance, features & benefits of E– Commerce

Impacts, Challenges & Limitations of E– Commerce

**Unit-2:**

(12h)

Business models of E – Commerce: Business to Business

2.1.2 Business to customers

2.1.3 Customers to Customers

Business to Government

Business to Employee

Influencing factors of successful E– Commerce

Architectural framework of Electronic Commerce

Web based E Commerce Architecture.

Internet Commerce

**Unit-3:**

(12h)

Electronic data Interchange

EDI Technology

EDI- Communications

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EDI Agreements  
E- Commerce payment system.  
Digital Economy

**Unit -4:** (13h)

A Page on the web - HTML Basics  
Client Side scripting -JAVA SCRIPT basics  
Server side Scripting- PHP basics.

**Unit-5:** (13h)

Logging in to Your Word press Site  
word press dash board  
creating your first post  
adding photos and images  
creating hyper link  
adding categories and tags

**Textbooks:**

1. Turban, Rainer, and Potter, Introduction to E-Commerce, second edition, 2003
2. H. M. Deitel, P. J. Deitel and T. R. Nieto, E-Business and E-Commerce: How to Programe, Prentice hall, 2001
3. WordPress All-in-One For Dummies -written by Lisa Sabin Wilson with contributions by Michael Torbert, Andrea Rennick, Cory Miller, and Kevin Palmer

**Reference Books:**

1. Elias. M. Awad, "Electronic Commerce", Prentice-Hall of India Pvt Ltd.
2. Ravi Kalakota, Andrew B. Whinston, "Electronic Commerce-A Manager's guide", Addison-Wesley
3. <https://w3cschools.com>
4. David Whiteley, E-Commerce: Strategy, Technologies and Applications, Tata McGraw Hill.

**RECOMMENDED CO-CURRICULAR ACTIVITIES:** (Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

**A. Measurable**

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))

**B. General**

1. Group Discussion
2. Others

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**RECOMMENDED CONTINUOUS ASSESSMENT METHODS:**

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Efficient delivery using seminar presentations,
4. Computerized adaptive testing, literature surveys and evaluations,
5. Peers and self-assessment, outputs form individual and collaborative work

**Course-6C: E- Commerce Application Development; Lab (Practical) Syllabus (15 Hrs)**

*(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)*

Case study of e-commerce

1. Home page design of web site
2. Validation using PHP
3. Implement Catalogue design
4. Implement Access control mechanism( eg: username and password)
5. Case study on business model of online E-Commerce store

**Note:** The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.*

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ACHARYA NAGARJUNA UNIVERSITY

Semester-wise Revised Syllabus under CBCS,

2019-20

Four year B.A. /B.Com. (Hons) Semester –V (from 2022-23)

Domain Subject: **Computer Applications for Arts/Commerce**

Course Code:

Max Marks: 100

Course-7C: **REAL TIME GOVERNANCE SYSTEM (RTGS)**

(Skill Enhancement Course (Elective), 4 credits)

**COURSE OUTCOMES:**

Upon successful completion of this course, students will have the knowledge and skills to

1. Understand the terms regarding Governance, E-Governance and RTGS
2. Learn about E-Governance Infrastructure
3. Understand the E-Governance implementation in several countries
4. Understand the E-Governance implementation in several Indian states
5. Understand the applications of RTG

**Syllabus:** (Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

**UNIT 1: Introduction to E-Governance**

**12hrs**

- Government, Governance and Good Governance
- What is E-Governance or Electronic Governance?
- E-Government and E-Governance: A conceptual Analysis
  - ❖ Objectives
  - ❖ Components
  - ❖ application domains
  - ❖ four phase model
  - ❖ implementing E-Governance
  - ❖ issues while implementing E-Governance
  - ❖ Opportunities and challenges
- Types of E-Governance
- What is Real-Time Governance (RTG)
- Real Time Governance Society (RTGS)

**UNIT 2: E-Governance Infrastructure**

**14hrs**

- Data Systems infrastructure
  - ❖ Executive Information Systems
  - ❖ Management Information Systems
  - ❖ Knowledge Management Systems

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- ❖ Transaction Processing Systems
- Legal Infrastructural preparedness
  - ❖ IT Act 2000
  - ❖ Challenges to Indian law and cybercrime scenario in India
  - ❖ Amendments of the Indian IT Act
- Institutional Infrastructural preparedness
  - ❖ Internet
  - ❖ intranet
  - ❖ extranet
- Human Infrastructural preparedness
  - ❖ Top-level management
  - ❖ Middle-level management
  - ❖ Low-level management
- Technological Infrastructural preparedness
  - ❖ Information and communications technology
  - ❖ Data Warehousing
  - ❖ Cloud Computing

### UNIT 3: E-Governance: Country Experience

12hrs

- INDIA
- US
- UK
- AUSTRALIA
- DUBAI

### UNIT 4: E-Governance in India

12hrs

- Andhra Pradesh
- Karnataka
- Kerala
- Uttar Pradesh
- Madhya Pradesh
- West Bengal
- Gujarat

### UNIT 5: Latest Applications in Real Time Governance

10hrs

- Agriculture
- Rural Development
- Health care
- Education
- Tourism
- Commerce and Trade

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**Textbooks:**

1. E-Governance: concepts and case studies| CSR Prabhu| Prentice-Hall|
2. E-Governance| Niranjanpani, Sanhari Mishra | Himalaya Publishing House

**Website References:**

1. <http://www.egov4dev.org/success/case/>
2. <https://vikaspedia.in/e-governance/resources-for-vles>
3. <https://altametrics.com/en/information-systems/information-system-types.html>
4. <https://core.ap.gov.in/CMDashBoard/Index.aspx>

**Co-Curricular Activities:**

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

**A. Measurable**

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

**B. General**

1. Group Discussion
2. Try to solve MCQ's available online.

**RECOMMENDED CONTINUOUS ASSESSMENT METHODS:**

**Some of the following suggested assessment methodologies could be adopted;**

10. The oral and written examinations (Scheduled and surprise tests),
11. Closed-book and open-book tests,
12. Practical assignments and laboratory reports,
13. Observation of practical skills,
14. Individual and group project reports.
15. Efficient delivery using seminar presentations,
16. Viva-Voce interviews.
17. Computerized adaptive testing, literature surveys and evaluations,
18. Peers and self-assessment, outputs form individual and collaborative work

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## Course-7C: Real Time Governance System (RTGS); Lab (Practical) Syllabus (15 Hrs)

(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)

**Note:** Here the students have to gather the details in computer lab by surfing several websites & Google Search Engines and submit the report to the class/lab instructor before leaving the lab.

Week 1: Write a Report on the role of Nationwide Networking in E-Governance

Week 2: Write a Report on SETU: A Citizen Facilitation Centre in India, regarding it's successful or failure journey.

Week 3: Write a Report on National Cyber Security Policy, how it is useful to Indian citizens.

Week 4: Write a Report on mee-seva/Village Secretariat/Ward secretariat, a new paradigm in citizen services.

Week 5: Write a Report on how Andhra Pradesh is implementing RTGS in Agriculture.

Week 6: Write a Report on how Andhra Pradesh is implementing RTGS in social welfare schemes

Week 7: Write a Report on how Andhra Pradesh is implementing RTGS in waste lands, agricultural lands and house properties.

Week 8: Write a Report on Electronic Birth Registration in any one state of our country.

**Note:** The list of experiments need not be restricted to the above list. Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.

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ACHARYA NAGARJUNA UNIVERSITY

Semester-wise Revised Syllabus under CBCS, 2019-20

Four-year B.A. /B.Com. (Hons) Semester-V (from 2022-23)

Domain Subject: **Computer Applications for Arts/Commerce**

Course Code:

Max Marks: 100

**Course-6D: MULTIMEDIA TOOLS AND APPLICATIONS**

(Skill Enhancement Course (Elective), 4 credits)

**Learning Outcomes:**

Upon successful completion of the course, a student will be able to:

1. Gain knowledge on the concepts related to Multimedia.
2. Understand the concepts like image data representation and colour modes.
3. Understand the different types of video signals and digital audio.
4. Know about multimedia data compression types and audio compression standards
5. Know about basic video compression techniques.

**Syllabus:** (Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

**Unit-1: Introduction to multimedia:**

**12Hr**

1. What is Multimedia?
2. Components of Multimedia System
3. Multimedia and Hypermedia
4. Multimedia Authoring metaphors
5. Multimedia Production
6. Multimedia Presentation
7. Some Technical Design Issues
8. Automatic Authoring

**Unit-2: Image Data Representations and color models:**

**12Hr**

1. Color science Human vision Image data types:
2. 2.Black & white images  
1-bit images (Binary image)  
8-bit (Gray-level images)
3. Color images  
24-bit color images  
8-bit color images
4. Color models

**Unit-3: Fundamental concepts in video:**

**12Hr**

1. Types of Video Signals  
Analog Video  
Digital Video

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**Basics of Digital Audio:**

2. What is Sound?
  - Digitization of Sound
  - Quantization and Transmission of Audio
  - Pulse code modulation
  - Differential coding of audio
  - Predictive coding

**Unit-4:**

**Multimedia Data Compression:**

**13Hr**

1. Introduction
- Basics of Information Theory
  - Lossless Compression Algorithms
  - Fix-Length Coding
  - Run-length coding
- 1.2.4 Dictionary-based coding
  - Variable Length Coding
  - Huffman Coding Algorithm

**Audio Compression standards:**

2. Introduction
  - Psychoacoustics model
  - MPEG Audio

**Unit-5: Basic Video Compression Techniques:**

**11Hr**

1. Introduction to Video compression
2. Video compression standard H.261
3. Video compression standard MPEG-1

**Text Books:**

Fundamentals of Multimedia by Ze-Nian Li & Mark S. Drew. Publisher: Prentice Hall

**Reference Books:**

1. An introduction to digital multimedia by Savage, T. M. and Vogel, K. E. 2008.
2. Digital Multimedia by Nigel Chapman & Jenny Chapman. 2009.

**Online Resources:** <https://ksuit342.wordpress.com/lecturers/>  
<https://www.tutorialspoint.com/multimedia>

**Recommended Co-Curricular Activities (participation: total 15 weeks):**

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

**A. Measurable**

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))

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4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

**B. General**

1. Group Discussion
2. Others

**RECOMMENDED CONTINUOUS ASSESSMENT METHODS:**

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Programming exercises,
4. Observation of practical skills,
5. Efficient delivery using seminar presentations,
6. Viva voce interviews.
7. Computerized adaptive testing, literature surveys and evaluations,
8. Peers and self-assessment, outputs form individual and collaborative work

**Suggested Software**

- 1) Image Editing – GIMP
- 2) Audio Editing – Audacity
- 3) Video Editing – video pad
- 4) NCH software tools.

**Course-6D: Multimedia Tools and Applications; Lab (Practical) Syllabus (15 Hrs.)**

*(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)*

1. Editing images using GIMP
2. Improve the Quality of your Image in GIMP
3. Create an impressive background in GIMP
4. Applying Shadow & Highlight effects in images
5. Black& white and color photo conversion.

**Note:** The list of experiments need not be restricted to the above list. Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.

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ACHARYA NAGARJUNA UNIVERSITY  
Semester-wise Revised Syllabus under CBCS, 2019-20  
Four-year B.A./B.Com (Hons) Semester-V (from 2022-23)

Domain Subject: **Computer Applications for Arts/Commerce**

Course Code:

Max Marks: 100

**Course-7D: DIGITAL IMAGING**  
(Skill Enhancement Course (Elective), 4 credits)

**Learning Outcomes:**

Upon successful completion of the course, a student will be able to:

1. Gain knowledge about Types of Graphics, Types of Objects and Types of video editing tools
2. Show their skills in editing and altering photographs for through a basic understanding of the tool box.
3. Gain knowledge in using the layers.
4. Gain knowledge in using the selection tools, repair tools.
5. Gain knowledge in using selection tools, applying filters and can show their skills.

**Syllabus:** (Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

**UNIT-I**

**12 Hrs**

1. Types of Graphics  
Raster vs Vector Graphics
2. Types of Objects  
Audio formats  
Video formats  
Image formats  
Text document formats
3. Types of video editing
4. Different color modes.
5. Image Scanner  
Types of Image Scanners

**UNIT-II**

**12 Hrs**

1. What is GIMP?
2. GIMP tool box window
3. Layers Dialog
4. Tool Options Dialog
5. Image window
6. Image window menus

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### UNIT-III

12 Hrs

#### Improving Digital Photos

- Opening files
- Rescaling saving files
- Cropping
- Brightening & Darkening
- Rotating
- Sharpening

#### Introduction to layers

- 2. What is layer?
- Using layer to add text
- Using move tool
- Changing colors
- Simple effects on layers
- 2.5 Performing operations on layers
- 2.7 Using layers to copy and paste

### UNIT-IV

12 Hrs

#### Drawing:

- Drawing lines and curves
- Changing colors and brushes
- Erasing
- Drawing rectangles, Circles and other shapes
- Outlining and filling regions
- Filling with patterns and gradients

#### Selection:

- Working with selections
- Select by color and fuzzy
- Select Bezier paths
- 2.5 Modifying selections with selection modes

### UNIT-V

12 Hrs

#### Erasing and Touching Up:

- 1.1 Dodge and burn tool
- Clone tool
- Sharpening using convolve tool
- Correcting Color Balance

#### Filters:

- Filters
- Blur
- Enhance
- Noise Filters

#### References:

Textbook: Beginning GIMP from Novice to professional by Akkana Peck,  
Second Edition, Apress

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**Recommended Co-Curricular Activities (participation: total 15 weeks):**

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

**A. Measurable**

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

**B. General**

1. Group Discussion
2. Others

**RECOMMENDED CONTINUOUS ASSESSMENT METHODS:**

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Programming exercises,
4. Observation of practical skills,
5. Efficient delivery using seminar presentations,
6. Viva voce interviews.
7. Computerized adaptive testing, literature surveys and evaluations,
8. Peers and self-assessment, outputs form individual and collaborative work

**Course-7D: DIGITAL IMAGING; Lab (Practical) Syllabus (15 Hrs.)**

*(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)*

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1. Designing a Visiting card
2. Design Cover page of a book
3. Paper add for calling tenders
4. Design a Pamphlet
5. Brochure designing
6. Titles designing
7. Custom shapes creation
8. Image size modification
9. Background changes
10. Texture and patterns designing

**Note:** The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.*

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# ACHARYA NAGARJUNA UNIVERSITY-GUNTUR

Structure of Programme under Revised CBCS  
Semester-wise Syllabus under CBCS (w.e.f. 2020-21 Admitted Batch)  
Semester

## QUESTION PAPER PATTERN FOR END SEMESTER EXAM UG

### CBCS SEMESTER PATTERN

Time: 3 Hours

Max. Marks: 75

#### SECTION-A

Answer any FIVE of the following Questions:

(5 x 5 = 25

Marks) 1.

- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

#### SECTION - B

Answer any FIVE of the following Questions

(5 x 10 = 50

Marks) 11.

- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.
- 20.

Note: Paper Setter must select TWO Short Questions and TWO Essay Questions from Each Unit

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