

## Skill Enhancement Course: SEC for B.Sc. & other Subject Students

**Semester: III/IV**

Course Title: <b>Artificial Intelligence</b>	Course Credits: 2
Total Contact Hours: 13 hours of theory and 26 hours of practical	Duration of ESA: 01 Hour
Formative Assessment Marks: 20 marks	Summative Assessment Marks: 30 marks

### Course Outcomes (COs):

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

- Appraise the theory of Artificial intelligence and list the significance of AI.
- Discuss the various components that are involved in solving an AI problem.
- Illustrate the working of AI Algorithms in the given contrast.
- Analyze the various knowledge representation schemes, Reasoning and Learning techniques of AI.
- Apply the AI concepts to build an expert system to solve the real-world problems.

### Course Content (Artificial Intelligence)

	Details of topic	Duration
<b>Course – 1 - Azure AI Fundamentals (AI-900)</b>	AI-900 pathway consists of 5 courses and 2 reading material: <ul style="list-style-type: none"> <li>i. Introduction to AI on Azure</li> <li>ii. Use visual tools to create machine learning models with Azure Machine Learning</li> <li>iii. Explore computer vision in Microsoft Azure</li> <li>iv. Explore natural language processing</li> <li>v. Explore conversational AI</li> <li>vi. Tune Model Hyperparameters - Azure Machine Learning (Reading)</li> <li>vii. Neural Network Regression: Module Reference - Azure Machine Learning (Reading)</li> </ul>	05 hours
<b>Practical</b>	<ol style="list-style-type: none"> <li>1. Prepare the data</li> <li>2. Model the data</li> <li>3. Visualize the data</li> <li>4. Analyse the data</li> <li>5. Deploy and maintain deliverables</li> </ol>	13 hours

<b>Course – 2 - Data Analyst Associate (DA-100)</b>	DA-100 pathway consists of 5 courses and 2 reading material: 1. Get started with Microsoft data analytics 2. Prepare data for analysis 3. Model data in Power BI 4. Visualize data in Power BI 5. Data analysis in Power BI 6. Manage workspaces and datasets in Power BI 7. Key Influencers Visualizations Tutorial - Power BI 8. Smart Narratives Tutorial - Power BI   Microsoft Docs	08 hours
<b>Practical</b>	1. Describe Artificial Intelligence workloads and considerations 2. Describe fundamental principles of machine learning on Azure 3. Describe features of computer vision workloads on Azure 4. Describe features of Natural Language Processing (NLP) workloads on Azure	13 hours

#### References to learning resources:

1. The learning resources made available for the course titled “Azure AI Fundamentals (AI-900) and Data Analyst Associate (DA-100).” on Future Skills Prime Platform of NASSCOM.

#### Pedagogy

Flipped classroom pedagogy is recommended for the delivery of this course.

For every class:

1. All the faculty who takes this class should go for a Faculty Development Program on these before starting the session.
2. Faculty needs to introduce this course to the students then students need to start learning from Future Skills PRIME platform.
3. Faculty also needs to explain the course outcomes and needs of the course and why it is needed for the students.
4. Then students need to start learning online after registering on the platform.
5. Classroom activities are designed around the topic of the session towards developing better understanding, clearing doubts and discussions of high order thinking skills like application, analysis, evaluation, and design.
6. Every theory class ends with announcement of exercise for practical activity of the week.

#### Exercises:

Practical Exercises	Weightage in marks
After each chapter students' needs to complete exercises based on the learning in Azure environment.	No Weightage (But students need to complete it to move to next chapter) .



**Assessment:**

<b>Formative Assessment</b>	
<b>Assessment Occasion</b>	<b>Weightage in Marks</b>
1. Summative Assessment: After completion of both the courses, the student can optionally give Assessment for each of the courses on Future Skills Prime platform. Students will have two attempts and those who score at least 50% marks per course will get certificate from NASSCOM-MeitY.	This assessment may be given 50% weight in computing the final grade of the students.

## Bengaluru City University

Course Title: <b>Financial Education and Investment Awareness</b>	Course Credits: 2
Total Contact Hours: <b>30 Hours of Theory and 15 Hours of Practical Sessions</b>	Duration of ESA: <b>90 Minutes</b>
Formative Assessment Marks: <b>20</b>	Summative Assessment Marks: <b>30</b>
Model Syllabus Authors: <b>NSE Academy and Karnataka State Higher Education Council (through Model Curriculum Committee for Commerce and Management)</b>	

### Module 1: Foundations for Finance

**10 hours**

**Introduction to Basic Concepts of Finance:** Money and its need, Meaning and need for Financial Planning; Life goals and financial goals of an individual; Format of a sample financial plan for a young adult.

**Time value of Money:** Meaning, need, Concepts of Compounding – Simple and compound interest and Discounting- Present value of single cash inflow, series of cash inflow, annuity, perpetuity- *problems*.

**Valuation Of Securities:** Meaning, need for valuation of securities, Valuation of fixed income securities- debentures and preference shares, valuation of equity shares, dividend capitalization approach, earnings capitalization approach-*problems*.

### Module 2: Investment Avenues

**15 hours**

**Introduction to Investment:** Meaning, Need, Essentials of investment, Investment and speculation, Basic investment objectives, Diversification- Need for diversification,

**Investment Avenues for a Common Investor:** Bank deposits; Corporate Securities-Equity shares, Preference shares, debentures, bonds, company deposits; Post Office savings schemes, Government securities, Real Estate, Gold and Bullion, Chit and Nidhi Companies, Life Insurance, Retirement and Pension Plans - National Pension System, Atal Pension Yojana etc. (Features of all Investment Avenues with Income Tax benefits); Risk and return relationship (*Theory only*).

**Stock Markets:** Primary Market and Secondary Market, Stock Exchanges, Stock Exchange Operations – Trading and Settlement, DEMAT Account, Depository and Depository Participants; Investor Protection.

### Module 3: Mutual Funds

**5 Hours**

**Mutual Funds: Meaning and** Features of Mutual Funds, History of Mutual Funds in India, Benefits, and

drawbacks of investment in mutual fund; Major Fund Houses in India and Types of Mutual Fund Schemes and plans; SIP, STP, SWP of mutual fund; Net Asset Value- *simple problems*.

**Practical Lab Hours: 15 hours**

**Module 1: Foundations for Finance**

**Lab exercises 5 Hours**

- **Spreadsheet Modelling:**
  - IF Function
  - SUM Function
  - AVERAGE Function
  - INDEX, MATCH and VLOOKUP Function
  - RANK Function
  - SUM PRODUCT Function
  - MAX & MIN Function
  - PRESENT VALUE Functions
  - FUTURE VALUE Functions
  - ANNUITY Functions
  - PERPETUITY Functions
  - Statistical Functions in Excel- through data analysis
- **Preparation of Financial Plan**

**Module 2: Investment Avenues**

**Lab exercises 5 Hours**

- Group Presentations on Investment Avenues- (Advantages, Suitability and Limitations)
- Demonstration of Stock Trading
- Demonstration of Technical Analysis and Exercises (NSE –TAME)
- Spreadsheet Modelling for calculating Stock Returns and risk.

**Module 3: Mutual Funds**

**Lab exercises 5 Hours**

- Identification of Fund Houses in India, Schemes and Plans of each Mutual Fund House ([www.amfiindia.in](http://www.amfiindia.in) , [www.valueresearchonline.com](http://www.valueresearchonline.com))
- Exercises on Calculation of Net Asset Value
- Demonstration of Mutual Fund Fact Sheet

**Question Paper Pattern**

- 1. Internal Assessment – 20 marks (practical lab-based assignments with Lab records)**
- 2. End Semester Exam – 30 marks**

**Originally given by HEC and NSE**

**Section A:** 4 out of 5 questions (2 marks each) 4 X 2 = **8 Marks**

**Section B:** 2 out of 3 questions (6 marks each) 2 X 6 = **12 Marks**

**Section C:** (Compulsory): Analysis of One Case (or) Two Case-lets 1 X 10 = **10 Marks**



**Modified pattern by BCU- BOS**

**Section A:** 4 out of 5 questions (2 marks each) 4 X 2 = **8 Marks**

**Section B:** 2 out of 3 questions (6 marks each) 2 X 6 = **12 Marks**

**Section C:** (Compulsory): Descriptive question or problem 1 X 10 = **10 Marks**

**References:**

1. RBI Financial Education Handbook
2. NSE Knowledge Hub, AI-powered Learning Experience Platform for BFSI
3. NSE Academy Certification in Financial Markets (NCFM) Modules:
  - a. Macroeconomics for Financial Markets
  - b. Financial Markets (Beginners Module)
  - c. Mutual Funds (Beginners Module)
  - d. Technical Analysis

**Reference Books:**

S. No	Author/s	Title of the Book	Publisher
1	Prasanna Chandra	Financial Management	McGraw Hill Education
2	Aswath Damodaran	Corporate Finance	John Wiley & Sons Inc
3	Pitabas Mohanty	Spreadsheet Skills for Finance Professionals	Taxmann Publications
4	Fischer & Jordan	Security Analysis & Portfolio Management	Prentice Hall

**Websites:**

1. [www.sebi.gov.in](http://www.sebi.gov.in)
2. [www.nseindia.com](http://www.nseindia.com)
3. [www.amfiindia.com](http://www.amfiindia.com)

## SEC II: COMPUTER ASSEMBLY

1. Demonstration of Hardware peripherals: CPU, RAM, SMPS, Motherboard, NIC card, Processor, Processor cooling fan, PCI card, HDD.
2. Demonstration of various ports: CPU , VGA port, PS/2 (keyboard, mouse) ,USB, LAN, Speaker, Audio.
3. Identify the Computer Name and Hardware Specification (RAM capacity, Processor type, HDD, 32 bit/ 64 bit)
4. Identify and Troubleshoot the problems of RAM (beep sound with blue screen), SMPS and motherboard (CPU is not switched ON)
5. Configure BIOS settings- disable and enable USB and LAN.
6. Identify, how to recover the hidden files from corrupted pendrive using command.
7. Recover the contents from crashed Hard Disk using Disk Drill software.
8. Install Operating System – Windows family ( Windows 7/ Windows 10) and also make partitions.
9. Install Operating System - Unix family ( Linux/UBUNTU)
10. Install Application software – python 3.8, MS- Office 2010/2013, MySQL, TOAD, Openoffice, etc.,
11. Install any one of the antivirus software (Avast, Kaspersky, etc.,) and observe the variations before and after installation.
12. Add new Hardware device (keyboard, mouse, Speaker, Microphone)
13. Connect the LCD Projector with Laptop / CPU.
14. Adding additional RAM to the system.(expanding RAM size).
15. Graphic Card insertion.
16. Assemble and Disassemble Desktop System.

### References:

1. Dan Gookin ,Troubleshooting & Maintaining Your PC ALL-IN-ONE, 3rd Edition,2017, John Wiley & Sons.
2. Mike Meyers, Scott Jernigan, Dan Lachance, "CompTIA Fundamentals + Exam Guide (All-in-One), 2<sup>nd</sup> Edition, 2019, Mc Graw Hill Education.

### Web References:

1. [https://www.youtube.com/watch?v=ItxwyMR0SnY&list=PLeH4ngtDM7eE-1\\_mdWuXWyZrI\\_FMHnyJ0&index=5](https://www.youtube.com/watch?v=ItxwyMR0SnY&list=PLeH4ngtDM7eE-1_mdWuXWyZrI_FMHnyJ0&index=5)
2. <https://www.cleverfiles.com/howto/crashed-hard-drive-recovery.html>

## SEC II: UNIX PROGRAMMING

1. Write Shell programs to count the number of characters in a given string.
2. Write Shell programs to find whether the given year is leap year or not.
3. Write Shell programs to check whether a given number is even or odd.
4. Write Shell programs to find the factorial of a given number.
5. Write Shell programs to print a string in the reverse order.
6. Write Shell programs to count the number of vowels in a given string.
7. Write Shell programs to print all prime numbers between m and n ( $m < n$ ).
8. Write Shell programs to check whether a given string is a palindrome or not.
9. Write Shell programs to display all the files in the current directory.
10. To write a shell script that creates a file and compresses it.
11. Create a file containing the following fields : StudentNo, Student Name, age, sex, height and weight. Print all the details in a neat format.
12. Write Shell program to search a particular pattern using grep command.
13. Write Shell program to check for file existence.
14. Write menu based shell programs with at least 3 options for the following payroll system.
15. Write Shell program to demonstration of rm-r, uniq, tail, cmp.

### Text Books:

1. Forouzan: Unix and Shell Programming, 1st Edition, Cengage Learning India, 2003.
2. Raymond, The Art of Unix Programming, Pearson Education, Asia, 2003.
3. Kernighan B.W. & Robert B, The Unix programming environment, 1984.
4. UNIX and Shell Programming, Archana Verma, Firewall Media, 2006.

### Reference books:

1. Sobell G, A practical Guide to Unix System, 3/e, 1995.
2. Kochan & Wood, Unix Shell Programming, Pearson Education, 3/e, 2003.
3. Sumitabha Das – UNIX: Concepts and Applications 4/e, 2006.



**Digital Fluency (Skill Enhancement Course)**  
**Number of Credits: 2 (One hour of Theory, and Two hours of practicals)**

Unit I: [5 Hours]

Operating Systems, types of operating systems, major functions of the operating systems, types of user interface, examples of operating systems: MS-DOS, Windows, Mac OS, Linux, Solaris, Android. Office automation tools : word processor, power point, and spread sheet.

Unit II: [5 Hours]

Introduction to Computer Networks, Evolution of Networking, types of networks, Network devices - Modem, ethernet card, RJ45, Repeater, Hub, Switch, Router, and Gateways, Identification of Nodes in a Networked Communication, Internet, Web and the Internet of Things, Domain Name Systems. Security Aspects - Threats and Prevention, Malware - virus, Worms, Ransomware, Trojan, spyware, adware, key loggers, Modes of Malware distribution, Antivirus, HTTP vs HTTPS, Firewall, Cookies, Hackers and Crackers,

Unit III: [5 Hours]

Database Management Systems, Relational Data Model. Introduction to e-learning platforms such as Swayam, and MOOC. Virtual Meet: Technical Requirements, Scheduling a meeting, joining virtual meet, recording the meeting, Online Forms: Creating questionnaire, Publishing Questionnaire, conducting online responses, Analysing the responses, copying graphics into powerpoint, Downloading the response to spreadsheet. Introduction to societal impacts, Digital Foot prints, Digital Society and Netizen, Data Protection, E-waste, Impact on Health.

Laboratory Activities: [30 Hours]

Identifying the configuration of a computer system, laptop, and a mobile phone, Identifying the version and the configuration of the operating system of a computer, laptop, and a mobile phone, Identifying the network components like patch cord, switch, RJ 45 Jack, Socket, and wireless router, creating a hotspot from a mobile phone, and allowing others to use the hotspot, creating a Google form, and send it to five users, scheduling a virtual meet and invite three people to join the Google meet, record the virtual Meet, Creating an account in the railway reservation website, IRCTC, and finding trains from Tumkur to Hubli, creating a one minute video of your choice in your native tongue, and upload the video to YouTube, composing word document, creating tables, creating charts, preparing power point slides, simple computation using spread sheet.

**Web Resources:**

Operating Systems - [https://ftms.edu.my/v2/wp-content/uploads/2019/02/csca0101\\_ch06.pdf](https://ftms.edu.my/v2/wp-content/uploads/2019/02/csca0101_ch06.pdf)

Database Concepts - <https://ncert.nic.in/textbook/pdf/keip107.pdf>

Computer Networks - <https://ncert.nic.in/textbook/pdf/lacs110.pdf>

Security Aspects - <https://ncert.nic.in/textbook/pdf/lacs112.pdf>

Societal Impact - <https://ncert.nic.in/textbook/pdf/leip106.pdf>

Google Meet Tutorial - <https://edvance.hawaii.hawaii.edu/wp-content/uploads/Google-Meet-Tutorial-Getting-Started-and-Recording-a-Lecture.pdf>

Google Forms - [https://pdst.ic/sites/default/files/Google%20Drive\\_1.pdf](https://pdst.ic/sites/default/files/Google%20Drive_1.pdf)

**Teaching Modalities:** Faculty of Computer Science shall teach this course

**Evaluation Method**

1. The evaluation method is based on descriptive question paper.
2. The question paper will have equal weightage for all three units.
3. There shall not be any explicit practical examination. However, while evaluating students for continuous assessment, the practical component shall be considered with 50% weightage
4. The pattern of question paper is as decided by the Bangalore City University for 2 credit courses.

Program Name		Semester	<b>V</b>
Course Title	<b>Cyber Security (Theory)</b>		
Course Code:	<b>SEC-5</b>	No. of Credits	<b>03</b>
Contact hours	<b>45Hrs</b>	Duration of SEA/Exam	<b>03 hrs</b>
Formative Assessment Marks	<b>50</b>	Summative Assessment Marks	<b>50</b>

**Course Outcomes (COs):** After the successful completion of the course, the student will be able to:

CO1	After completion of this course, students would be able to understand the concept of Cyber security and issues and challenges associated with it.
CO2	Students, at the end of this course, should be able to understand the cyber crimes, their nature, legal remedies and as to how report the crimes through available platforms and procedures.
CO3	On completion of this course, students should be able to appreciate various privacy and security concerns on online Social media and understand the reporting procedure of inappropriate content, underlying legal aspects and best practices for the use of Social media platforms.
CO4	After the completion of this module, students would be able to understand the basic concepts related to E-Commerce and digital payments. They will become familiar with various digital payment modes and related cyber security aspects, RBI guidelines and preventive measures against digital payment frauds.
CO5	Students, after completion of this module will be able to understand the basic security aspects related to Computer and Mobiles. They will be able to use basic tools and technologies to protect their devices.

<b>Contents</b>		<b>45Hrs</b>
<b>Module-I.</b> Introduction to Cyber security: Defining Cyberspace and Overview of Computer and Web-technology, Architecture of cyberspace, Communication and web technology, Internet, World wide web, Advent of internet, Internet infrastructure for data transfer and governance, Internet society, Regulation of cyberspace, Concept of cyber security, Issues and challenges of cyber security.		09
<b>Module-II.</b> Cyber-crime and Cyber law: Classification of cybercrimes, Common cyber-crimes- cyber-crime targeting computers and mobiles, cyber crime against women and children, financial frauds, social engineering attacks, malware and ransomware attacks, zero day and zero click attacks, Cybercriminals modus-operandi, Reporting of cyber crimes, Remedial and mitigation measures, Legal perspective of cyber crime, IT Act 2000 and its amendments, Cyber-crime and offences, Organisations dealing with Cyber-crime and Cyber security in India, Case studies.		09
<b>Module III.</b> Social Media Overview and Security: Introduction to Social networks. Types of Social media, Social media platforms, Social media monitoring, Hashtag, Viral content, Social media marketing, Social media privacy, Challenges, opportunities and pitfalls in online social network, Security issues related to social media, Flagging and reporting of inappropriate content, Laws regarding posting of inappropriate content, Best practices for the use of Social media, Case studies.		08



<b>Module IV.</b> Definition of E- Commerce, Main components of E-Commerce, Elements of E-Commerce security, E-Commerce threats, E-Commerce security best practices, Advantage of e-commerce, Survey of popular e-commerce sites. Introduction to digital payments, Components of digital payment and stake holders, Modes of digital payments- Banking Cards, Unified Payment Interface (UPI), e-Wallets, Unstructured Supplementary Service Data (USSD), Aadhar enabled payments, Digital payments related common frauds and preventive measures. RBI guidelines on digital payments and customer protection in unauthorized banking transactions. Relevant provisions of Payment Settlement Act, 2007.	08
<b>Module V.</b> End Point device and Mobile phone security, Password policy, Security patch management, Data backup, Downloading and management of third-party software, Device security policy, Cyber Security best practices, Significance of host firewall and Ant-virus, Management of host firewall and Anti-virus, Wi-Fi security, Configuration of basic security policy and permissions.	11

**Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes**

Course Out comes(COs) /Program Outcomes (POs)	Program Outcomes (POs)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Quickly understand the given problem and come up with the correct answer															
Identify, construct and compute numerical situations by work with numbers															
Conceive and develop a methodology for analyzing data and solving a problem.															
Define, modify and apply critical thinking to real time situations.															

**Pedagogy:** Problem Solving

Formative Assessment for Theory	
Assessment Occasion/type	Marks
Internal Test I	30%
Assignment/Surprise Test	20%
<b>Total</b>	<b>50 Marks</b>
<i>Formative Assessment as per guidelines.</i>	

Text/References	
1	Cyber Crime Impact in the New Millennium, by R. C Mishra, Author Press. Edition 2010
2	Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. (First Edition, 2011)
3	Security in the Digital Age: Social Media Security Threats and Vulnerabilities by Henry A. Oliver, Create Space Independent Publishing Platform. (Pearson , 13 <sup>th</sup> November, 2001)
4	Cyber Laws: Intellectual Property & E-Commerce Security by Kumar K, Dominant Publishers.
5	Fundamentals of Network Security by E. Maiwald, McGraw Hill.
6	Network Security Bible, Eric Cole, Ronald Krutz, James W. Conley, 2nd Edition, Wiley India Pvt. Ltd.