DSC

1. ESSENTIALS OF COMPUTER SCIENCE

Discipline	COMPUTER SCIENCE
Course Code	UK1DSCCSC100
Course Title	ESSENTIALS OF COMPUTER SCIENCE
Type of Course	**DSC**
Semester	I
Academic Level	1

Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5 hours

Pre-requisites	Basic knowledge of computers is desirable
Course Summary	This course provides an introduction to key concepts in computer science, covering topics such as fundamentals, internet technologies, emerging trends and Artificial Intelligence. Students will gain a foundational understanding of how computers work and current trends of computer science

Detailed Syllabus:

Module	Unit	Content	Hrs (L+P)
I		**Introduction to Computer**	**15**
	1	Introduction, Characteristics of a computer, Stored Programme Concept	
	2	Inside a computer: SMPS, Motherboard, BIOS, CMOS, Ports and Interfaces, Expansion Cards, Ribbon Cables	
	3	Memory: Cache, RAM, ROM, Secondary Memory, Memory hierarchy	
	4	Computer Software and categories: System software, Application software	

	5	Terminology software: Firmware, Liveware, Public-domain software, Freeware, Shareware, Commercial software, Proprietary software, Semi-free software	
II		**Internet Basics and Tools**	**15**
	6	Internet Basics: WWW, URL, Electronic mail, Search Engines, Chatting and Instant Messaging, Video conferencing	
	7	User Generated Content: Blogs and Wikis	
	8	Online Data Acquisition Tools: Form creation, customization, data validation, response management, collaboration features	
	9	Learning Management System, e-library, and Google Scholar	
III		**Emerging technologies**	**15**
	10	Cloud computing: Definition, Types of cloud computing (Public, Private, Hybrid), Types of cloud services (SaaS, PaaS, IaaS)	
	11	E-Commerce	
	12	Virtual /Augmented Reality	
	13	Crypto Currency	
IV		**Introduction to AI tools**	**15**
	14	Artificial Intelligence, History of AI, Types of AI: Narrow AI, General AI, Strong AI, Applications	
	15	Tools for Machine translation, Speech recognition and image recognition	
	16	Introduction to Generative AI, How Generative AI works, Generative AI tools: Chat GPT, GitHub Copilot, Geminy, SciSpace	
	17	Recommendation systems: Definition, Advantages, Challenges, Applications	
V		**Flexi Module- (Not included for End Semester Examination)**	**15**
	18	Digital Society, Digital Divide, Social Network- Services, Issues, Popular networks	
	19	Cybercrime, Cyber Security, Cyber Addiction, e-waste, e-waste Management	
	20	IPR, Copyrights, Patents, Plagiarism	

References

Core Book

1. Reema Thareja. Fundamentals of Computers. Oxford University Press, 2019.
2. Introduction to Information Technology, 2nd Edition, ITL Education Solutions Limited, Pearson, 2012.
3. Akshay Kulkarni, Adarsha Shivananda , Anoosh Kulkarni , Dilip Gudivada. "Applied Generative AI for Beginners- Practical Knowledge on Diffusion Models, ChatGPT, and Other LLMs", APress, 2023.

Additional References

4. Vijayakumaran Nair K, Vinod Chandra S S, "Informatics", PHI 2014.
5. Rajaraman, "Introduction to Information Technology", PHI, Third Edition, 2018.
6. Pradeep.K.Sinha, Priti Sinha, "Information Technology: Theory and Practices", PHI Learning, 2016.
7. Balaguruswamy, "Fundamentals of Computers", Second Edition,2009.

Lab Exercises

PART A

1. Familiarisation of components of a computer.
2. Create a resume using a document editor.
3. Create a student rank list using spreadsheet.
4. Create a presentation.
5. Create blog sites.
6. Edit Wikipedia.
7. Create a data form to capture data for student feedback/satisfaction survey on a course and analyse it.
8. Identify the features of a sample Learning Management System.
9. Familiarise with a sample e-library.
10. Familiarise with Google Scholar.

PART B

11. Scheduling tasks in Google Calendar.
12. Create/Upload documents / spreadsheets and presentations online.
13. Share and collaborate in real time.
14. Safely store and organize your work in an online storage system.
15. Create brochures.
16. Create videos.
17. Create posters.
18. Familiarise Tools for Machine translation, Speech recognition and image recognition
19. Develop Contents using AI tools.
20. Create Presentation using AI tool

Course Outcomes

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
CO1	Summarise the basic concepts about computer	U	PSO-1, 3
CO2	Illustrate internet basics and tools usage	Ap	PSO-1, 3
CO3	Make use of emerging technologies in Computer Science	Ap	PSO- 1, 3
CO4	Identify some foundation level tools used in Artificial Intelligence	U	PSO- 1

R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create

Note: 1 or 2 COs/module

Name of the Course: ESSENTIALS OF COMPUTER SCIENCE

Credits: 3:0:1 (Lecture: Tutorial: Practical)

CO No.	CO	PO/PSO	Cognitive Level	Knowledge Category	Lecture (L)/Tutorial (T)	Practical (P)
CO1	Summarise the basic concepts about computer	PO- 6,7 PSO-1, 3	U	F, C	L	P
CO2	Illustrate internet basics and tools usage	PO-6, 7 PSO-1, 3	Ap	F, C, P	L	P
CO3	Make use of emerging technologies in Computer	PO-6, 7 PSO-1, 3	Ap	F, C, P	L	P

	Science					
CO4	Identify some foundation level tools used in Artificial Intelligence	PO-6, 7 PSO-1	U	F, C	L	-

F-Factual, C- Conceptual, P-Procedural, M-Metacognitive

Mapping of COs with PSOs and POs :

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO 1	-	-	-	-	-	2	2	-	2	-	1	-
CO 2	-	-	-	-	-	2	3	-	2	-	2	-
CO 3	-	-	-	-	-	2	3	-	2	-	2	-
CO 4	-	-	-	-	-	2	3	-	2	-	-	-

Correlation Levels:

Level	Correlation
-	Nil
1	Slightly / Low
2	Moderate / Medium
3	Substantial / High