SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Environmental Science
Course Code	BCA-104[T]
Course Outcomes & Bloom's Level	**CO1-** To remember various concept of environmental education and ecosystem and also about its functions and knowledge about the conservation of biodiversity and its importance.**(BL1-Remember)** **CO2-** To understand about natural resource, its importance and environmental impacts of human activities on natural resource.**(BL2-Understand)** **CO3-** To implement various concepts and methods from ecological and physical sciences and their application in environmental problem solving.**(BL3-Apply)** **CO4-** To gain the knowledge about the different types of pollutions and their control technologies.**(BL4-Analyze)** **CO5-** To Acquire values and attitudes towards understanding complex environmental-economic social challenges, and participating actively in solving current environmental problems and preventing the future ones.**(BL5-Evaluate)**

Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✓	**SDG (Goals)**	SDG4(Quality education) SDG6(Clean water and sanitation) SDG7(Affordable and clean energy) SDG10(Reduced inequalities) SDG12(Responsible consuption and production) SDG13(Climate action) SDG14(Life below water) SDG15(Life on land)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	2	2	-	-	-	2	-	-	1	-	1
CO2	2	2	1	2	2	2	-	-	-	2	-	-	1	-	3
CO3	2	1	1	-	1	-	-	-	-	2	-	-	3	2	3
CO4	3	2	-	2	1	-	-	-	-	2	-	-	2	3	3
CO5	3	2	-	2	1	-	-	-	-	2	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	General English
Course Code	BCA-105[T]
Course Outcomes & Bloom's Level	**CO1-** Comprehend and summarize characteristics & various structural principles prerequisite to Technical Communication**(BL1-Remember)** **CO2-** Classify and formulate the elementary intricacies of Scientific and Technical Writing using applicative grammar construct.**(BL2-Understand)** **CO3-** Create cohesive technical paragraphs & text.**(BL3-Apply)** **CO4-** Paraphrase text(s) and use appropriate referencing styles.**(BL4-Analyze)**
Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	SDG (Goals)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
CO2	2	3	-	-	-	-	-	-	-	-	-	-	-	3	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
CO4	3	-	2	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Discrete Mathematics
Course Code	BCA-106[T]
Course Outcomes & Bloom's Level	**CO1-** Understand Boolean algebra define on the sets and its application. **(BL1-Remember)** **CO2-** To learn the Switching theory.**(BL2-Understand)** **CO3-** Understand the basic ideas knowledge of determinant.**(BL3-Apply)** **CO4-** Understand the basic ideas knowledge of matrix.**(BL3-Apply)** **CO5-** To learn the application part of matrix**(BL5-Evaluate)**
Course Elements	Skill Development ✖ Entrepreneurship ✖ Employability ✖ Professional Ethics ✖ Gender ✖ Human Values ✖ Environment ✖
SDG (Goals)	

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	1	-	-	-	-	-	-	-	3	-	1	2	1
CO2	1	2	1	-	-	-	-	-	-	-	-	-	1	2	3
CO3	1	2	1	-	-	-	-	-	-	-	3	-	1	3	3
CO4	1	2	1	-	-	-	-	-	-	-	3	-	1	2	3
CO5	1	2	1	-	-	-	-	-	-	-	3	-	1	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Computer Fundamentals and Applications
Course Code	BCA101[T]
Course Outcomes & Bloom's Level	**CO1-** To remember various concept of Information Technology, Computer System, various peripherals, I/o devices, and storage devices.**(BL1-Remember)** **CO2-** To Understand the Basic concept of operating system, working of MS PowerPoint software and working of MS PowerPoint software .**(BL2-Understand)** **CO3-** To Apply concept to identify type of software, Create formula using MS Excel Tool**(BL3-Apply)** **CO4-** To Analyze Various softwares , Analyze the data by using statistical functions using MS- Excel tool and with absolute and relative cell references using MS-Excel tool**(BL4-Analyze)** **CO5-** To evaluate and summarize the performance of various operating system, graphs and tables created in Microsoft Excel , equations and sample calculations .**(BL5-Evaluate)** **CO6-** To Create various documents newsletters, brochures, making document using photographs, charts, presentation, documents, drawings and other graphic images. **(BL6-Create)**
Course Elements	Skill Development ✔ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	**SDG (Goals)**

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	-	-	-	-	-	-	-	-	1	1	2
CO2	1	2	-	-	-	-	-	-	-	-	-	-	3	2	1
CO3	-	1	-	-	-	-	-	-	-	-	-	-	3	2	-
CO4	-	-	-	2	-	-	-	-	-	-	-	-	2	2	-
CO5	-	-	-	-	-	-	-	-	-	-	1	-	2	2	-
CO6	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Programming in C
Course Code	BCA-103[P]
Course Outcomes & Bloom's Level	**CO1-** CO1: To understand the fundamentals of Big Data.**(BL1-Remember)** **CO2-** CO2:To understand various C programming Concepts, array and function handling, pointer and structure.**(BL2-Understand)** **CO3-** CO3: To implement Array, structure for data storage, modular programming concepts for solving a big problem into smaller parts.**(BL3-Apply)** **CO4-** CO4: To analyze various decision making and iteration techniques to learn how to improve the performance of the C programs.**(BL4-Analyze)** **CO5-** CO5: To evaluate and compare various data access techniques using pointers. **(BL5-Evaluate)** **CO6-** CO6: To develop solutionsfor realworld problems usingArray,Structure,function and pointers.**(BL6-Create)**

Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	SDG (Goals)	SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	2	-	-	-	-	-	-	-	2	3	1
CO2	1	2	1	2	2	1	-	-	-	-	-	-	1	-	-
CO3	2	-	1	-	-	2	-	-	-	-	-	-	3	2	2
CO4	2	1	-	2	-	-	-	-	-	-	-	-	3	2	2
CO5	2	1	-	2	1	-	-	-	-	-	-	-	3	3	2
CO6	2	2	-	2	1	-	-	-	-	-	-	-	2	2	3

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Office Management Tools
Course Code	BCA-107[P]
Course Outcomes & Bloom's Level	**CO1-** To remember various concept of Information Technology, Computer System, various peripherals, I/o devices, and storage devices.**(BL1-Remember)** **CO2-** To Understand the Basic concept of operating system, working of MS PowerPoint software and working of MS PowerPoint software .**(BL2-Understand)** **CO3-** To Apply concept to identify type of software, Create formula using MS Excel Tool .**(BL3-Apply)** **CO4-** To Analyze Various softwares , Analyze the data by using statistical functions using MS- Excel tool and with absolute and relative cell references using MS-Excel tool**(BL4-Analyze)** **CO5-** To evaluate and summarize the performance of various operating system, graphs and tables created in Microsoft Excel , equations and sample calculations .**(BL5-Evaluate)** **CO6-** To Create various documents newsletters, brochures, making document using photographs, charts, presentation, documents, drawings and other graphic images.**(BL6-Create)**
Course Elements	Skill Development ✔ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘

(SDG (Goals) column appears alongside Course Elements)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	-	-	-	-	-	-	-	-	-	1	2	1	1
CO2	2	3	-	-	2	-	-	-	-	1	-	1	-	2	1
CO3	2	2	3	1	3	-	-	-	-	-	1	2	2	-	3
CO4	2	3	2	3	3	-	-	-	-	2	-	2	-	1	2
CO5	2	3	2	3	3	1	1	2	1	2	2	2	1	2	2
CO6	2	2	3	2	3	-	-	-	-	3	2	3	3	-	1

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Web Technologies
Course Code	BCA102[P]
Course Outcomes & Bloom's Level	**CO1-** To remember various Web Development Strategies and syntax rules of web Programming**(BL1-Remember)** **CO2-** To understand the basics of web architecture, Types of architecture, knowledge about web protocols and web development tools.**(BL2-Understand)** **CO3-** To implement: HTML, CSS, Javascript and XML web designing language to create Web pages.**(BL3-Apply)** **CO4-** To analyze various Client-side programming techniques and introduction of CSS for styling of the web page.**(BL4-Analyze)** **CO5-** To evaluate the web pages and layout with the help of Advanced CSS Techniques**(BL5-Evaluate)**
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	SDG (Goals)	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG6(Clean water and sanitation) SDG7(Affordable and clean energy) SDG10(Reduced inequalities) SDG12(Responsible consuption and production) SDG13(Climate action) SDG14(Life below water) SDG15(Life on land)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	3	2	-	-	-	-	-	-	-	1	-	1
CO2	-	1	1	1	3	-	-	-	-	-	-	-	2	-	3
CO3	2	1	-	1	1	-	-	-	-	-	-	-	3	2	3
CO4	1	2	1	1	1	-	-	-	-	-	-	-	2	3	3
CO5	-	1	-	-	1	-	-	-	-	-	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	NCC
Course Code	NCC0101[P]
Course Outcomes & Bloom's Level	**CO1-** Perform foot drill and follow the different word of command. **(BL1-Remember)** **CO2-** Fire a weapon effectively with fair degree of marksmanship**(BL2-Understand)** **CO3-** Undertake point to point navigation and take part in route marches by day and night. **(BL4-Analyze)** **CO4-** Perform the social services on various occasions for better community & social life**(BL3-Apply)**

Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	**SDG (Goals)**	SDG3(Good health and well-being) SDG4(Quality education) SDG17(Partnerships for the goals)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	NCC
Course Code	NCC0101[T]
Course Outcomes & Bloom's Level	**CO1-** To Remember about the history of NCC, its organization, and incentives of NCC for their career prospects and the concept of national integration and its importance. **(BL1-Remember)** **CO2-** To Understand the concept of critical & creative thinking and the concept of self-awareness and emotional intelligence.**(BL2-Understand)** **CO3-** To Acquire knowledge of duties and conduct of NCC cadets.**(BL3-Apply)** **CO4-** To analyze the concept of team and its functioning.**(BL4-Analyze)** **CO5-** To Evaluate the process of decision making & problem solving.**(BL5-Evaluate)**

Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	SDG (Goals)	SDG1(No poverty) SDG6(Clean water and sanitation) SDG15(Life on land)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Object Oriented Programming with C++
Course Code	BCA -203(T)
Course Outcomes & Bloom's Level	**CO1-** Revised the basics of Programming concepts like structured, unstructured & Object Oriented programming concepts..**(BL1-Remember)** **CO2-** Understand the difference between C & C++ programming structure, logic with and without Object Oriented Programming.**(BL2-Understand)** **CO3-** Implement the OOP concepts as practical like Polymorphisms, Inheritance, and DMA.**(BL3-Apply)** **CO4-** Apply OOP concepts and their syntax like Class objects, Constructor, Polymorphism, inheritance and DMA.**(BL3-Apply)** **CO5-** Evaluating the performance and difference of various concepts and logics of OOP with respect to problem domain.**(BL5-Evaluate)**
Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	2	2	-	-	-	-	-	-	2	2	2
CO2	1	1	1	2	2	2	-	-	-	-	-	-	2	2	3
CO3	2	1	1	-	1	-	-	-	-	-	-	-	2	3	2
CO4	2	1	-	2	1	-	-	-	-	-	-	-	3	2	3
CO5	1	-	-	2	1	-	-	-	-	-	-	-	2	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Operating Systems
Course Code	BCA- 202
Course Outcomes & Bloom's Level	**CO1-** Remember the role of Operating System , basics of operating systems like kernel, shell, types and views of operating systems.**(BL1-Remember)** **CO2-** Understand CPU Scheduling, Synchronization, Deadlock Handling and Comparing CPU Scheduling Algorithms .**(BL2-Understand)** **CO3-** Apply the various CPU scheduling algorithms, remove deadlocks segmentation and paging techniques **(BL3-Apply)** **CO4-** Analyze theory and implementation of: processes, resource control (concurrency etc.), physical and virtual memory, scheduling, I/O and files.**(BL4-Analyze)** **CO5-** Evaluating the various characteristics of mutual exclusion, critical section, Peterson solution and other inter process communication techniques.**(BL5-Evaluate)**
Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	2	-	-	-	-	2	-	-	1	2	1
CO2	1	2	-	2	2	2	-	-	-	2	-	-	2	-	3
CO3	2	1	-	-	1	2	-	-	-	-	-	-	3	2	3
CO4	2	2	-	2	2	-	-	-	-	-	-	-	2	3	3
CO5	2	2	-	2	2	-	-	-	-	-	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Digital Computer Principles
Course Code	BCA- 204
Course Outcomes & Bloom's Level	**CO1-** the basic function and data flow in computers along with its major units participating in data transfers. Revisiting Decimal Number systems**(BL1-Remember)** **CO2-** Will be able to understand The basics of Number system, Number representation in computer, working of Digital Circuits with cloak signals and minimizing the digital circuits.**(BL1-Remember)** **CO3-** Will be able to apply the concepts to design the combinational and sequential circuits and minimizing the circuits.**(BL3-Apply)** **CO4-** Will be able to analyze the circuits designed with respect to input signals and outputs generated and studying the working and comparing the circuits.**(BL4-Analyze)** **CO5-** Will be able to Evaluate and investigate the performance of the digital circuits designed for different set of inputs**(BL5-Evaluate)** **CO6-** Will be able to Design and build digital circuits (Combinational and Sequential) on simulators (logisim) and testing their working.**(BL6-Create)**
Course Elements	Skill Development ✘ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	SDG (Goals)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	3	2	-	-	-	-	-	-	-	-	-	1
CO2	2	2	1	1	2	-	-	-	-	-	-	-	3	2	3
CO3	1	1	1	-	1	-	-	-	-	-	-	-	3	3	3
CO4	-	2	-	2	1	-	-	-	-	-	-	-	3	2	3
CO5	-	1	-	-	1	-	-	-	-	-	-	-	2	3	3
CO6	1	-	-	-	2	-	-	-	1	-	-	-	2	3	3

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Data Structure
Course Code	BCA-201(T)
Course Outcomes & Bloom's Level	**CO1-** Understanding: comprehensive knowledge of the data structures;**(BL1-Remember)** **CO2-** Applying: understand the importance of data and be able to identify the data requirements for an application;**(BL2-Understand)** **CO3-** Analyzing: have a practical experience of algorithmic design and implementation;**(BL3-Apply)** **CO4-** Evaluating: practical experience of developing applications that utilize data structures and evaluating the performances of applications;**(BL4-Analyze)** **CO5-** Creating: develop projects requiring the implementation of various data structures**(BL5-Evaluate)**

Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	-	-	-	-	-	-	-	-	3	2	2
CO2	2	3	1	-	-	-	-	-	-	-	-	2	2	2	1
CO3	2	3	1	-	-	-	-	-	-	-	-	2	2	3	1
CO4	3	3	1	-	-	-	-	-	-	-	-	2	2	3	1
CO5	2	1	-	-	-	-	-	-	2	-	-	2	3	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Making of Modern India
Course Code	BCA-205
Course Outcomes & Bloom's Level	**CO1-** 1. : Students will gain a comprehensive understanding of India's historical evolution, including its cultural diversity, unity in diversity, accommodations, conflicts, and the role of the Indian intelligentsia. They will grasp how these factors shaped the idea of India, particularly in the context of British rule.**(BL2-Understand)** **CO2-** 2. : Students will critically analyze the development of Indian nationalism, exploring its anti-colonial basis, economic nationalism, communalism, revivalism, and the influences of Enlightenment values and European nationalism. They will understand the complex factors contributing to the emergence and growth of Indian nationalism.**(BL4-Analyze)** **CO3-** 3. Students will appreciate the significance of social reform movements in 19th-century India, understanding the contributions of key figures such as Raja Rammohan Roy and Swami Vivekananda. They will recognize the importance of addressing issues like women's rights and the caste system within the context of British rule and Indian introspection.**(BL5-Evaluate)** **CO4-** 4. : Students will understand the dynamics of the Indian National Movement, including early revolts, the 1857 revolt, the role of early nationalists, Gandhi-led mass movements, socialist and left trends, and the integration of princely states. They will comprehend the complexities and strategies involved in India's journey to independence.**(BL2-Understand)** **CO5-** 5. Students will analyze the trajectory of India after independence, examining the making of the Indian Constitution, the post-independent Nehru era, India's experiences facing wars, and its economic transition. They will evaluate India's achievements and challenges in the 21st century, gaining insights into its socio-economic and political landscape.**(BL3-Apply)**
Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth) SDG10(Reduced inequalities)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	1	-	2	-	-	-	-	-	-	-	1	2	3
CO2	-	-	1	2	3	-	-	-	-	-	-	-	-	-	-
CO3	1	-	-	-	-	-	-	-	-	-	-	-	3	2	-
CO4	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-
CO5	-	-	2	-	-	-	-	-	-	-	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Computer Assembling and Repair
Course Code	BCA -206
Course Outcomes & Bloom's Level	**CO1-** To remember various concept of Information Technology, Computer System, various peripherals, I/o devices, and storage devices.**(BL1-Remember)** **CO2-** To Understand the Basic concept of operating system, working of MS PowerPoint software and working of MS PowerPoint software .**(BL2-Understand)** **CO3-** To Apply concept to identify type of software, Create formula using MS Excel Tool**(BL3-Apply)** **CO4-** To Analyze Various softwares , Analyze the data by using statistical functions using MS- Excel tool and with absolute and relative cell references using MS-Excel tool**(BL4-Analyze)** **CO5-** To evaluate and summarize the performance of various operating system, graphs and tables created in Microsoft Excel , equations and sample calculations .**(BL5-Evaluate)** **CO6-** To Create various documents newsletters, brochures, making document using photographs, charts, presentation, documents, drawings and other graphic images. **(BL6-Create)**
Course Elements	Skill Development ✔ Entrepreneurship ✘ Employability ✔ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	SDG (Goals)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	1	-	-	-	-	-	-	1	2	3	2
CO2	2	3	-	-	2	-	-	-	-	1	-	1	2	1	2
CO3	2	2	3	1	3	-	-	-	-	-	1	2	2	2	1
CO4	2	3	2	3	3	-	-	-	-	2	-	2	3	2	2
CO5	2	3	2	3	3	2	-	-	1	2	2	2	3	2	2
CO6	2	2	3	2	3	-	-	-	-	3	2	3	2	1	3

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Health and Wellness
Course Code	BCA 207
Course Outcomes & Bloom's Level	**CO1-** Know the concept of health &Wellness**()** **CO2-** Discuss the mind –body relationship**()** **CO3-** Understand the global health issues & Illustrate the Health beliefs in your country .**()** **CO4-** Analyze the sanitation services in your locality**()** **CO5-** Evaluate a mass media program of health awareness**()**
Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	SDG (Goals)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	1	-	-	-	-	2	-	-	3	-	-
CO2	-	-	-	-	-	-	1	-	-	-	2	-	-	3	-
CO3	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-
CO4	-	1	2	-	-	-	-	-	-	-	-	-	1	3	-
CO5	-	1	-	2	-	-	-	-	-	-	-	-	-	2	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	NCC
Course Code	NCC -0202 (T)
Course Outcomes & Bloom's Level	**CO1-** Define thinking, reasoning, critical thinking and creative thinking.**(BL1-Remember)** **CO2-** To think critically about different life related issues.**(BL2-Understand)** **CO3-** Think divergently and will try to break functional fixedness.**(BL3-Apply)** **CO4-** Creatively in their real-life problems.**(BL4-Analyze)**

Course Elements	Skill Development ✘ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✓ Environment ✘	SDG (Goals)	SDG3(Good health and well-being) SDG4(Quality education) SDG5(Gender equality) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	COMPUTER SYSTEM ORGANIZATION
Course Code	BCA-301
Course Outcomes & Bloom's Level	**CO1-** Remembering : Basic computer architecture (Von Neumann Model) and functions of its various units**(BL1-Remember)** **CO2-** Understanding: Understand the basic operations of digital computer system, its microoperations .**(BL2-Understand)** **CO3-** Applying: Identify, compare and assess to Bus and memory, Register transfer logic and arithmetic operations, Summarize the types of micro operations.**(BL3-Apply)** **CO4-** Analyzing: different types of addressing modes, various types of IO mapping techniques .**(BL4-Analyze)** **CO5-** Evaluating: the performance issues of cache memory and virtual memory**(BL5-Evaluate)** **CO6-** Create and design various hardware and software logics to make a computer system like ALU, Memory, Bus, etc.(Design)**(BL6-Create)**
Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	SDG (Goals)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	2	-	2
CO2	1	2	-	-	2	-	-	-	-	-	-	-	2	3	3
CO3	3	1	-	-	2	-	-	-	-	-	-	-	3	3	3
CO4	-	1	1	2	1	-	-	-	-	-	-	-	2	2	3
CO5	-	1	-	-	1	-	-	-	-	-	-	-	2	2	2
CO6	3	1	-	-	-	-	-	-	-	-	-	-	2	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Data Base Management System
Course Code	BCA-302(T)
Course Outcomes & Bloom's Level	**CO1-** Relational database management system, database modeling, normalization, transaction management, SQL queries and PLSQL operation**(BL1-Remember)** **CO2-** Understand the need of DBMS and basic concepts of DBMS, various models and techniques of designing DBMS , Database languages (Knowledge, Understand)**(BL2-Understand)** **CO3-** Apply: Apply the principles of designing DBMS and apply it to design data bases for real time applications. (Apply).**(BL3-Apply)** **CO4-** Analyze: Analyze the quality of database using normalization techniques, conflict scenarios using concurrent processing techniques, analyze various transaction serialization scenario (Analyze)**(BL4-Analyze)** **CO5-** Evaluating: Evaluation of the performance of a database created for deadlocks and concurrency control. (Investigate).**(BL5-Evaluate)**
Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1				2					2		-	1	-	1
CO2	3	3	1	2	2	-	-	-	-	3	-	-	2	-	3
CO3	2	2	1	-	2	-	-	-	-	-	-	-	3	2	3
CO4	2	2	-	1	1	-	-	-	-	-	-	-	3	3	3
CO5	1	2	-	1	1	-	-	-	-	-	-	-	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Java Programming
Course Code	BCA-303(T)
Course Outcomes & Bloom's Level	**CO1-** To remember various syntax rules of java programming**(BL1-Remember)** **CO2-** To understand various Object-Oriented Concepts, Exception handling, Multithreading, networking and database connectivity techniques**(BL2-Understand)** **CO3-** To implement java AWT and Swing and for GUI Programming and Event handling, java IO for Input and output handling, jdbc for database connectivity**(BL3-Apply)** **CO4-** To analyze various Error ,and Database Handling techniques to learn how to improve the performance of the java application**(BL4-Analyze)** **CO5-** To evaluate and compare various application Development techniques**(BL5-Evaluate)**

Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	3	2	-	-	-	-	-	-	-	-	-	1
CO2	2	2	1	1	2	-	-	-	-	-	-	-	3	-	3
CO3	1	1	1	-	1	-	-	-	-	-	-	-	3	2	3
CO4	-	2	-	2	1	-	-	-	-	-	-	-	3	3	3
CO5	-	1	-	-	1	-	-	-	-	-	-	-	2	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Numerical Methods
Course Code	BCA-304
Course Outcomes & Bloom's Level	**CO1-** To remeber the various numerical techniques **(BL1-Remember)** **CO2-** To understand different methods of interpolation as well as extrapolation**(BL2-Understand)** **CO3-** To apply the various numerical techniques for solving real-life problems. **(BL3-Apply)** **CO4-** To analyze The problems which cannot be solved by usual formulae and methods can be solved approximately by using numerical techniques. **(BL4-Analyze)**
Course Elements	Skill Development ✘ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘

Course Elements — **SDG (Goals)**

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	2	-	-	-	-	3	-	-	-	-	-	-	-
CO2	2	-	2	-	-	1	-	-	-	-	-	-	-	-	-
CO3	2	-	1	-	-	-	1	-	-	-	-	-	-	-	-
CO4	1	-	-	-	-	3	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Entrepreneurship Development
Course Code	BCA-305
Course Outcomes & Bloom's Level	**CO1-** Students will recall the meaning, definition, and types of entrepreneurs. Students will be able to remember the functions and skills/traits required to be an entrepreneur. **(BL1-Remember)** **CO2-** Students will be in a position to explain the relationship between entrepreneurs and economic development and will understand the process of creating a business plan and conducting a feasibility study. They can explain the relevance of location, environmental regulatory requirements, and pricing strategies for new businesses**(BL2-Understand)** **CO3-** Students will be able to apply effective communication, leadership, marketing, and negotiation skills in entrepreneurial contexts. They will also apply time management skills to prioritize tasks and manage resources effectively. (BL3)**(BL3-Apply)** **CO4-** Students will be able to conduct the cost benefit analysis. They will be able to assess different sources of finance for entrepreneurial ventures and the support provided by government programs, grants, and schemes for entrepreneurs. **(BL4-Analyze)** **CO5-** Students will be able to evaluate the effectiveness of entrepreneurship development programs (EDPs) and assess the impact of government initiatives such as Make in India and Startup India on entrepreneurship. They will be able to evaluate the challenges faced by women entrepreneurs and propose strategies to overcome them.**(BL5-Evaluate)**
Course Elements	Skill Development ✘ Entrepreneurship ✓ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	**SDG (Goals)**	SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	2	-	-	-	-	-	-	-	-	1	2	3
CO2	-	-	-	-	-	1	-	-	2	-	-	-	2	3	3
CO3	1	-	-	-	-	-	-	-	-	-	-	-	1	3	-
CO4	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
CO5	1	-	-	2	-	-	-	-	-	-	-	-	2	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Soft Skills
Course Code	BCA-306
Course Outcomes & Bloom's Level	**CO1-** Determine interpersonal skills and be an effective goal-oriented team player. **(BL1-Remember)** **CO2-** Elaborate creativity and lateral thinking.**(BL2-Understand)** **CO3-** Examine attitudes, emotional intelligence and understand its influence on behavior.**(BL3-Apply)** **CO4-** Justify approaches to conflict resolution**(BL4-Analyze)** **CO5-** Evaluate goal setting, management, decision-making skills.**(BL5-Evaluate)**

Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	3	-	-	-	2	-	3	-	-	3	2	-
CO2	2	3	-	-	-	-	-	2	-	-	-	-	-	3	-
CO3	-	-	-	-	-	1	-	-	-	-	-	-	2	-	-
CO4	-	2	-	2	-	-	-	3	-	-	-	-	-	3	-
CO5	3	-	3	3	-	3	-	-	-	3	-	-	3	-	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Indian Constitution
Course Code	BCA-307
Course Outcomes & Bloom's Level	**CO1-** To familiarize the students with the key elements of the Indian constitution.**(BL4-Analyze)** **CO2-** To enable students to grasp the constitutional provisions and values.**(BL1-Remember)** **CO3-** To acquaint the students with the powers and functions of various constitutional offices and institutions.**(BL3-Apply)** **CO4-** To make students understand the basic premises of Indian politics and role of constitution and citizen-oriented measures in a democracy.**(BL2-Understand)**
Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	SDG (Goals)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	-	1	-	-	-	2	2
CO2	-	1	-	3	-	-	-	-	-	-	-	1	-	-	-
CO3	-	-	-	2	-	-	-	1	-	-	-	-	1	-	-
CO4	-	-	-	-	4	-	-	-	2	-	-	2	-	3	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	NCC
Course Code	NCC-0303(T)
Course Outcomes & Bloom's Level	**CO1-** Define thinking, reasoning, critical thinking and creative thinking.**()** **CO2-** To think critically about different life related issues.**()** **CO3-** Think divergently and will try to break functional fixedness.**()** **CO4-** Creatively in their real-life problems**()** **CO5-** Understand the organizations related to disaster management and Their functioning.**()** **CO6-** Appreciate the role of NCC cadets in disaster management.**()**

Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	SDG (Goals)	SDG4(Quality education) SDG6(Clean water and sanitation) SDG13(Climate action) SDG15(Life on land)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Software Engineering
Course Code	BCA 402
Course Outcomes & Bloom's Level	**CO1-** To remember the basics of software engineering**(BL1-Remember)** **CO2-** To understand the basics characteristic's & crisis of software and process of software engineering systems**(BL2-Understand)** **CO3-** To implement various SDLC, ER, DFD models, to collect SRS, And understand the software.**(BL3-Apply)** **CO4-** To Analyze various various testing techniques and the concept of testing strategies**(BL4-Analyze)** **CO5-** To evaluate the the need of Software Maintenance and Software Project Management Software **(BL5-Evaluate)** **CO6-** To create the various Design Strategies, Architectural Design concept for better development of software.**(BL6-Create)**

Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	1	-	-	-	-	-	-	-	1	-	2
CO2	1	-	-	-	1	2	-	-	-	-	-	-	1	2	3
CO3	2	1	-	-	1	-	-	-	-	-	-	-	3	2	3
CO4	2	2	-	3	1	-	-	-	-	-	-	-	3	2	3
CO5	2	2	-	2	1	-	-	-	-	-	-	-	3	2	3
CO6	1	1	2	3	2	2	-	-	-	2	-	-	3	3	3

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Python Programming
Course Code	BCA-403(T)
Course Outcomes & Bloom's Level	**CO1-** To remember the basic programming concept.**(BL1-Remember)** **CO2-** Understand the basics of Python like python origin downloading and installing and basic concepts of python.**(BL2-Understand)** **CO3-** Apply the various conditional and looping statement and functional programming.**(BL3-Apply)** **CO4-** Explain various objects numbers and sequence in python Analyze the concept of regular expression**(BL4-Analyze)** **CO5-** Evaluate the concept of object-oriented programming for better utilization of language**(BL5-Evaluate)**
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	SDG (Goals)	SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	-	-	2	2	-	-	-	-	1	-	1	-	1
CO2	1	1	-	2	2	2	-	-	-	2	-	-	1	2	3
CO3	-	2	-	-	-	-	-	-	-	-	-	-	3	2	3
CO4	-	2	-	2	1	-	-	-	-	-	-	-	3	2	3
CO5	-	2	-	2	1	-	-	-	-	-	-	-	3	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Computer Oriented Statistical Methods
Course Code	BCA-404
Course Outcomes & Bloom's Level	**CO1-** To remember design data collection plans and basic tools of descriptive statistics **(BL1-Remember)** **CO2-** To Understand the concept of sampling distribution of a statistic and its properties, difference between parameter and statistic **(BL2-Understand)** **CO3-** TO apply the properties of unbiasedness and null hypothesis, alternative hypothesis and test statistic **(BL3-Apply)** **CO4-** To analyze the relationship between two variables using scatter plot and Interpret a simple correlation**(BL4-Analyze)**

Course Elements	Skill Development ✘ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	**SDG (Goals)**	SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	2	-	2	-	-	1	-	-	-	-	-	-	-	-
CO2	2	-	1	-	-	3	-	-	-	-	-	-	-	-	-
CO3	2	-	-	-	1	-	-	3	-	-	-	-	-	-	-
CO4	2	-	-	1	-	-	-	-	-	-	2	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Mathematical Reasoning and Aptitude
Course Code	BCA-406
Course Outcomes & Bloom's Level	**CO1-** To get insight the basic concepts of quantitative ability and logical reasoning Skills.**(BL1-Remember)** **CO2-** To understand various techniques to solve real life problems through concepts of logical reasoning.**(BL2-Understand)** **CO3-** To apply reasoning tools for solving various problems like; distance height, calendar, clock, time, work, age and permutation.**(BL3-Apply)** **CO4-** To analyze and solve campus placements aptitude papers covering Quantitative Ability and Logical Reasoning Ability.**(BL4-Analyze)** **CO5-** To evaluate many short tricks for helping to compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc.**(BL5-Evaluate)**

Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	2	2	-	1	-	-	-	-	1	-	1
CO2	-	3	-	-	3	-	-	1	-	-	-	-	1	-	3
CO3	3	-	-	1	-	-	-	-	-	-	-	-	3	-	3
CO4	3	-	-	2	1	-	-	-	-	-	-	-	2	-	3
CO5	2	2	-	1	-	-	-	-	-	-	-	-	2	2	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Universal Human Values
Course Code	BCA-407
Course Outcomes & Bloom's Level	**CO1-** To help the students appreciate the essential complimentarily between "VALUES" and "SKILLS" to ensure sustained happiness and prosperity which are the core aspirations of all human beings.**(BL2-Understand)** **CO2-** To facilitate the development of a holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the human reality and the rest of existence. **(BL2-Understand)** **CO3-** To highlight plausible implications of such a holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and enriching interactions with nature. **(BL3-Apply)** **CO4-** To provide a much-needed orientation input in value education to the young enquiring minds.**(BL4-Analyze)**
Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✓ Human Values ✓ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG3(Good health and well-being) SDG4(Quality education) SDG5(Gender equality) SDG10(Reduced inequalities)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	2	-	-	1	1	1	2
CO2	-	2	-	-	-	-	-	-	-	-	2	2	1	2	-
CO3	1	-	-	-	-	-	-	-	2	-	-	1	-	1	1
CO4	-	2	-	-	-	-	-	-	-	-	2	2	1	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Web Designing with PHP
Course Code	BCA-401(P)
Course Outcomes & Bloom's Level	**CO1-** To remember various Web Development Strategies using PHP and syntax rules of web Programming**(BL1-Remember)** **CO2-** To understand the basics of web architecture, Development techniques, knowledge about file system.**(BL2-Understand)** **CO3-** To implement: HTML, JavaScript and Arry, strings, database connectivity to create Web applications.**(BL3-Apply)** **CO4-** To analyze various Server-side programming techniques and OOPS Techniques**(BL4-Analyze)** **CO5-** To evaluate and improve the performance of the web application with the help of session handling Techniques**(BL5-Evaluate)**
Course Elements	Skill Development ✔ Entrepreneurship ✔ Employability ✔ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG5(Gender equality) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	1	2	-	-	-	-	-	-	-	1	2	1
CO2	2	2	3	2	1	-	-	-	-	-	-	-	2	2	2
CO3	2	1	1	1	3	-	-	-	-	-	-	-	1	2	1
CO4	1	2	1	2	2	-	-	-	-	-	-	-	2	2	1
CO5	2	2	2	1	2	-	-	-	-	-	-	-	1	2	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Minor Project
Course Code	BCA-405
Course Outcomes & Bloom's Level	**CO1-** Understand the project Develpoment Life Cycle **(BL2-Understand)** **CO2-** Apply the core discipline knowledge and develop a complete system for the given / chosen task**(BL3-Apply)** **CO3-** Analize the performance of the system develpoed using standard techniques for testing **(BL4-Analyze)** **CO4-** Evaluate the performacne of the system develpoed against the performance of similar tools./ systems **(BL5-Evaluate)**
Course Elements	Skill Development ✔ Entrepreneurship ✘ Employability ✔ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘

SDG (Goals)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	2	-	-	2	-	-	1	-	-	2	1	2
CO2	-	-	-	2	-	-	2	-	-	2	-	-	1	2	1
CO3	-	-	-	-	-	-	1	-	-	-	-	-	2	2	1
CO4	-	-	-	1	-	-	-	-	-	2	-	-	1	1	3
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	NCC
Course Code	NCC-0404 (T)
Course Outcomes & Bloom's Level	**CO1-** Develop the qualities of social skills.**()** **CO2-** Imbibe leadership qualities. **()** **CO3-** Be motivated to serve the nation by joining Armed forces. **()** **CO4-** Contribute in environmental awareness and conservation activities**()** **CO5-** Keep abreast of current affairs & general awareness.**()** **CO6-** Effectively contribute in managing disaster relief tasks**()**

Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	**SDG (Goals)**	SDG3(Good health and well-being) SDG4(Quality education) SDG6(Clean water and sanitation) SDG13(Climate action) SDG15(Life on land)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	NCC
Course Code	NCC-404 (P)
Course Outcomes & Bloom's Level	**CO1-** Appreciate grace and dignity in the performance of foot drill. **()** **CO2-** Apply signals in there day to day functioning. **()** **CO3-** Provide first aid during the emergencies. **()** **CO4-** Navigate to the given location on ground using compass and GPS. **()** **CO5-** Practice healthy practices for the personal sanitation and hygiene. **()**

Course Elements	Skill Development ✘ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✓ Environment ✘	SDG (Goals)	SDG3(Good health and well-being) SDG4(Quality education) SDG11(Sustainable cities and economies) SDG13(Climate action)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Netwrok Security
Course Code	BCA 501 (T)
Course Outcomes & Bloom's Level	**CO1-** • Undertake routine tasks to secure a network. **(BL1-Remember)** **CO2-** • Understand the factors that place an internet-based information system at risk and apply this knowledge to simple case studies. **(BL2-Understand)** **CO3-** • Evaluate procedures to secure a system against failure, theft, invasion and sabotage. **(BL3-Apply)** **CO4-** • Understand and apply the concepts for administrating a small company's network.**(BL4-Analyze)** **CO5-** Design the security framework using multiple Cryptography techniques**(BL5-Evaluate)**

Course Elements	Skill Development ✘ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	-	-	-	-	-	-	-	-	-	2	2
CO2	1	-	-	3	2	2	-	2	-	-	-	-	2	3	2
CO3	1	2	-	3	2	2	3	2	-	1	-	-	3	3	2
CO4	-	2	-	2	1	-	-	-	-	-	-	-	1	-	3
CO5	-	2	1	-	-	-	-	-	-	-	-	-	3	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Data Communication and Networks
Course Code	BCA 504
Course Outcomes & Bloom's Level	**CO1-** Remembering the concepts of computer networks, their types.**(BL1-Remember)** **CO2-** Understand to the concept of Classfull and Classless addressing Network address Translation, Mobile IP.**(BL2-Understand)** **CO3-** Apply to Unicast and Multicast Routing and Next Generation IP for networking.**(BL3-Apply)** **CO4-** e the applications to address the issues of Networking Technologies.**(BL4-Analyze)** **CO5-** Evaluating to investigate routers, IP and Routing Algorithms in Network Layer**(BL5-Evaluate)**
Course Elements	Skill Development ✔ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	SDG (Goals)	SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	1	1	2
CO2	1	-	-	-	2	-	-	-	-	-	-	-	3	2	2
CO3	2	-	-	-	1	-	-	2	-	-	-	-	3	2	2
CO4	-	-	-	2	2	2	-	2	-	-	1	1	2	2	2
CO5	-	-	-	1	-	-	2	-	1	-	-	-	2	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Enterprice Resource Planning
Course Code	BCA 506
Course Outcomes & Bloom's Level	**CO1-** Understand- Comprehensive knowledge of the introduction of different applications of ERP systems**(BL2-Understand)** **CO2-** Applying: understand the importance of erp and be able to identify and describe typical functional modules in ERP system.**(BL3-Apply)** **CO3-** Analyzing: have a case study of erp design and implementation and describe the basic concepts and technologies used in ERP.**(BL4-Analyze)** **CO4-** Creating: develop projects requiring the implementation of various data structures. Students are able to understand the future scope of ERP.**(BL6-Create)**
Course Elements	Skill Development ✔ Entrepreneurship ✔ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	**SDG (Goals)**

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	2	-	-	-	-	-	-	1	2	1	3
CO2	3	3	2	-	2	-	-	-	-	-	-	2	3	1	2
CO3	2	3	-	3	2	-	-	-	-	-	-	2	1	3	2
CO4	2	2	3	2	3	-	-	-	2	2	3	3	3	2	1
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Democracy and Good Governance
Course Code	BCA 507
Course Outcomes & Bloom's Level	**CO1-** Understand the foundational ideas of democracy by exploring various theories and theorists.**(BL2-Understand)** **CO2-** Analyze the significance of decentralization in fostering grassroots level democracy in India.**(BL4-Analyze)** **CO3-** Evaluate the challenges faced by democracy in India, particularly focusing on the issues concerning minority communities in society.**(BL5-Evaluate)**

Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	SDG (Goals)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	-	-	-	2	2	3	-	2	-	2	1	-	-
CO2	2	3	2	3	2	3	3	3	-	2	2	3	-	2	-
CO3	2	3	2	3	2	3	3	3	2	3	3	3	-	2	1
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	NCC
Course Code	NCC 0505(T)
Course Outcomes & Bloom's Level	**CO1-** Participate in team building exercise and value team work.**()** **CO2-** Improve communication skills by public speaking activities. **()** **CO3-** Understand the security mechanism and management of Border/Coastal areas. **()** **CO4-** Get motivated to join armed forces.**()**

Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	SDG (Goals)	SDG3(Good health and well-being) SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Seminar
Course Code	BCA 505
Course Outcomes & Bloom's Level	**CO1-** Co1 :To understand the importance of presentation skill **(BL2-Understand)** **CO2-** CO2 : To be able to apply written presentation skills b preparing ppt **(BL3-Apply)** **CO3-** CO3 : To apply oral presentation skills by presenting seminat in front of the class**(BL3-Apply)** **CO4-** CO4 : To evaluate the presentation skills of other students**(BL5-Evaluate)**

Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	1	-	-	-	-	-	2	-	3	-	-	-
CO2	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-
CO3	-	-	-	2	-	-	-	-	-	2	-	2	-	-	-
CO4	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	NCC
Course Code	NCC 0505(P)
Course Outcomes & Bloom's Level	**CO1-** Participate in team building exercise and value team work.**()** **CO2-** Improve communication skills by public speaking activities. **()** **CO3-** Understand the security mechanism and management of Border/Coastal areas. **()** **CO4-** Get motivated to join armed forces.**()**
Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	SDG (Goals)	SDG3(Good health and well-being) SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Mobile Application Development
Course Code	BCA 503-A(T)
Course Outcomes & Bloom's Level	**CO1-** To remember various syntax rules of the programming language such as java and XML**(BL1-Remember)** **CO2-** CO2: To understand Object Oriented concepts for Android and various mobile application development concepts including interface designing, handling multiple activities.**(BL2-Understand)** **CO3-** To implement XML, Java and mysql for database connectivity and file system.**(BL3-Apply)** **CO4-** To analyze various widgets and learn to use them as per the problem.**(BL4-Analyze)** **CO5-** To develop solutions for real world problems using android application development.**(BL5-Evaluate)**
Course Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗

	SDG (Goals)	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth) SDG11(Sustainable cities and economies)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	1	1	2
CO2	1	-	-	-	2	-	-	-	-	-	-	-	3	2	2
CO3	2	-	-	-	1	-	2	-	-	-	-	-	3	2	2
CO4	-	-	-	2	2	2	-	2	-	-	1	1	2	2	2
CO5	-	-	1	-	-	2	-	1	-	-	-	-	2	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Data Analytics
Course Code	BCA 503-B(T)
Course Outcomes & Bloom's Level	CO1- To understand the fundamentals of Big Data. **(BL1-Remember)** CO2- To know about the different tools for Big Data and Visualization.**(BL2-Understand)** CO3- To explore tools and practices for big data and Visualization.**(BL3-Apply)** CO4- To recognize the role of business intelligence and visualization in decision making. **(BL4-Analyze)** CO5- To analyze data using Power BI, Tableau etc. **(BL5-Evaluate)** CO6- To prepare design dashboard for presenting analytics from data. **(BL6-Create)**

Course Elements	Skill Development ✔ Entrepreneurship ✘ Employability ✔ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	SDG (Goals)	SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	1	2	2	-	-	-	-	-	-	2	3	3
CO2	3	-	1	1	2	3	-	-	-	-	-	-	2	3	2
CO3	3	2	2	1	2	2	-	-	-	-	-	-	2	3	3
CO4	3	3	1	2	2	-	-	-	-	-	-	-	2	3	3
CO5	2	2	2	2	2	-	-	-	-	-	-	-	2	3	2
CO6	2	3	2	2	2	-	-	-	-	-	-	-	2	3	3

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Ethical Hacking Fundamentals
Course Code	BCA 503-C(T)
Course Outcomes & Bloom's Level	**CO1-** An attendee will be able to remember the basics of computer networks, Network security, Threats in a network, social networks, attack domains and will be able to remember the defense mechanisms against all attacks. **(BL1-Remember)** **CO2-** An attendee will understand the risks of being on network and possible attacks that can be done on a machine over internet gaining access on devices over network, social networks IOT Devices and methods to secure them.**(BL2-Understand)** **CO3-** An attendee will be able to Apply the concepts learnt to identify the hardware and software vulnerabilities in sandbox environment, deploy an attack and will be able to develop countermeasures against attack vectors identified.**(BL3-Apply)** **CO4-** An attendee will be able to analyze the methods used to deploy an attack and design preventive measures for network devices against various attacks and learn about their functionalities.**(BL4-Analyze)** **CO5-** An attendee will be able to evaluate the methods used to exploit the attack vectors open for attacks over the network and record their performance in all possible domains.**(BL5-Evaluate)** **CO6-** An attendee will be able to Create / design systems/algorithms for identifying attacks, reporting them and preventing them over the communication network.**(BL6-Create)**

Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	SDG (Goals)	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth) SDG11(Sustainable cities and economies)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	1	-	-	-	-	-	-	-	-	-	3	2	1
CO2	1	1	1	2	1	-	-	-	-	-	-	-	2	3	1
CO3	2	1	1	2	2	-	-	-	-	-	-	-	3	2	1
CO4	1	1	1	2	3	-	-	-	-	-	-	-	1	3	1
CO5	2	2	2	-	-	-	-	-	-	-	-	-	3	2	1
CO6	-	2	1	-	-	-	-	-	-	-	-	-	1	2	1

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	AI and its Applications
Course Code	BCA 502 A
Course Outcomes & Bloom's Level	**CO1-** Remember**(BL1-Remember)** **CO2-** Understand**(BL2-Understand)** **CO3-** Analyze**(BL3-Apply)** **CO4-** Apply**(BL4-Analyze)** **CO5-** Create**(BL6-Create)**

Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	SDG (Goals)	SDG1(No poverty) SDG2(Zero hunger) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3	1	2	1	2	-	-	-	1	-	-	-
CO2	-	3	3	2	3	-	-	-	1	-	-	1	-	-	-
CO3	-	3	3	2	3	2	2	1	1	-	-	1	-	-	-
CO4	-	3	2	2	3	-	-	-	2	-	-	1	-	-	-
CO5	-	1	2	1	2	1	1	1	1	-	-	1	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Cloud Computing
Course Code	BCA 502(B)
Course Outcomes & Bloom's Level	**CO1-** To remember the various technologies for information storage and management. **(BL1-Remember)** **CO2-** To understand the storage techniques, concepts of data center, data center infrastructure management and services. **(BL2-Understand)** **CO3-** To implement the setup of storage techniques such as RAID, LUN Masking at data center. Create the virtual server and virtualize the resources as on demand.**(BL3-Apply)** **CO4-** To analyze the functionality of data center or storage infrastructure as per policies. **(BL4-Analyze)** **CO5-** To evaluate the performance of data center or storage infrastructure on various performance parameters. **(BL5-Evaluate)**
Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth) SDG10(Reduced inequalities)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	-	-	-	-	-	-	-	-	1	2	1
CO2	1	1	-	-	1	-	3	-	-	-	-	2	2	2	1
CO3	1	2	2	2	2	-	3	-	-	-	-	2	3	3	2
CO4	1	3	2	2	2	-	2	-	-	-	-	2	3	2	2
CO5	-	3	2	2	2	-	2	-	2	-	-	2	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Information Retrieval
Course Code	BCA 502(C) (T)
Course Outcomes & Bloom's Level	**CO1-** Illustrate the different query properties **(BL1-Remember)** **CO2-** Compare different search engine ranking techniques.**(BL2-Understand)** **CO3-** Analyze the different retrieval metrics for retrieval evaluation. **(BL3-Apply)** **CO4-** Construct a search engine.**(BL4-Analyze)** **CO5-** Describe different ontology and taxonomy architectures and processes.**(BL5-Evaluate)**

Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth) SDG10(Reduced inequalities)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-	2	-	-	-	-	-
CO3	3	3	-	-	-	-	-	-	-	2	-	-	-	-	-
CO4	3	3	-	-	-	-	-	-	-	2	-	2	-	-	-
CO5	3	3	-	-	-	-	-	-	-	2	-	2	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Data Ware housing and mining
Course Code	BCA 601
Course Outcomes & Bloom's Level	**CO1-** To remember the Data mining techniques that help extract meaningful data.**(BL1-Remember)** **CO2-** To understand the basics of Data warehouse, Data marts, data preprocessing and techniques of data mining.**(BL2-Understand)** **CO3-** To implement the various methods of data mining for data clustering, classification: K-means, K- Medoids etc.**(BL3-Apply)** **CO4-** To analyze the concepts of data Preprocessing, Association Rule Mining, classification, clustering.**(BL4-Analyze)** **CO5-** To evaluate the data mining models that run efficiently.**(BL5-Evaluate)**
Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth) SDG10(Reduced inequalities)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	2	2	-	-	-	2	-	-	-	-	1
CO2	-	1	1	2	2	2	-	-	-	2	-	-	1	-	3
CO3	2	-	-	-	-	-	-	-	-	-	-	-	3	2	3
CO4	2	1	-	2	1	-	-	-	-	-	-	-	2	3	3
CO5	2	1	-	2	1	-	-	-	-	-	-	-	2	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Mobile Computing
Course Code	BCA 604
Course Outcomes & Bloom's Level	**CO1-** Understand and identify the GSM, GPRS and Bluetooth software model for mobile computing.**(BL1-Remember)** **CO2-** The ability to develop applications that are mobile-device specific and demonstrate current practice in mobile computing contexts.**(BL2-Understand)** **CO3-** Understanding of the characteristics and limitations of mobile hardware devices including their user-interface modalities**(BL3-Apply)** **CO4-** Analyze QoS over wire and wireless channels**(BL4-Analyze)** **CO5-** Able to promote the awareness of the life-long learning,business ethics, professional ethics and currentmarketing scenarios.Able to promote the awareness of the life-long learning,business ethics, professional ethics and currentmarketing scenarios.**(BL5-Evaluate)**
Course Elements	Skill Development ✘ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	SDG (Goals)	SDG1(No poverty) SDG4(Quality education) SDG8(Decent work and economic growth) SDG10(Reduced inequalities) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	-	2	1	-	-	-	-	-	-	-	2	2	2
CO2	2	3	1	2	2	-	-	-	-	-	-	-	3	3	2
CO3	2	3	1	2	2	-	-	-	-	-	-	-	3	3	3
CO4	2	3	2	2	2	-	-	-	-	-	-	-	3	3	3
CO5	1	2	-	2	-	-	-	-	-	-	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Physical Education
Course Code	BCA 605 (T)
Course Outcomes & Bloom's Level	**CO1-** Recall the rules and terminology of various sports and physical activities.**(BL1-Remember)** **CO2-** Explain the benefits of regular physical activity and a healthy lifestyle.**(BL2-Understand)** **CO3-** Demonstrate proper techniques for basic skills in multiple sports.**(BL3-Apply)** **CO4-** Compare and contrast different training methods and their effectiveness for specific fitness goals.**(BL4-Analyze)** **CO5-** Assess personal fitness levels and set realistic improvement goals.**(BL5-Evaluate)** **CO6-** Design a comprehensive workout plan tailored to individual fitness needs and goals.**(BL6-Create)**
Course Elements	Skill Development ✘ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	**SDG (Goals)**	SDG3(Good health and well-being)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	1	-	-	-	-	-	-	-	-	-	1	2	-	-
CO2	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-
CO3	-	-	1	-	-	-	-	2	-	-	-	-	2	-	-
CO4	-	-	-	-	1	-	-	-	-	-	-	-	1	2	-
CO5	-	-	-	1	-	-	-	1	-	-	-	-	1	2	-
CO6	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Human Resource Management
Course Code	BCA 607
Course Outcomes & Bloom's Level	**CO1-** CO1: Develop the understanding of the concept, functions and processes of human resource management and to understand its relevance in organizations.**()** **CO2-** CO2: Integrate perspective on role of HRM in modern business. Ability to plan human resources, forecasting & strategies.**()** **CO3-** CO3: Measure- Employee Involvement, Diversity, competencies, Absenteeism, Employee Turnover, Employee Retention, Job Satisfaction, Employee Loyalty, Employee Commitment, Stress and Performance.**()** **CO4-** CO4: Develop and use of Performance Management System, Write a job advertisement.**()** **CO5-** CO5: Design and formulate various HRM processes such as Recruitment, Selection, Training, Salary and Reward Administration, Compensation, Retention, Separation etc.**()**
Course Elements	Skill Development ✘ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✓ Human Values ✓ Environment ✘	**SDG (Goals)**	SDG4(Quality education) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	1	-	-	1	-	-	2	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	1	-	-	2	-	-	-	-	-	-	-	-	1	2	3
CO4	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	3	-	-	1	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Major Project
Course Code	BCA 606
Course Outcomes & Bloom's Level	**CO1-** CO1 : Understand the project Develpoment Life Cycle **()** **CO2-** CO2 : Aplly the core discipline knowledge and develop a complete system for the given / chosen task**()** **CO3-** CO3 : Analize the performance of the system develpoed using standard techniques for testing **()** **CO4-** CO4 : Evaluate the performacne of the system develpoed against the performance of similar tools./ systems **()**

Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	SDG (Goals)	SDG4(Quality education) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	2	-	-	2	-	-	1	-	-	2	1	2
CO2	-	-	-	2	-	-	2	-	-	2	-	-	1	2	1
CO3	-	-	-	-	-	-	1	-	-	-	-	-	2	2	1
CO4	-	-	-	1	-	-	-	-	-	2	-	-	1	1	3
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Cyber Laws
Course Code	BCA 603-A
Course Outcomes & Bloom's Level	**CO1-** Understand the structure of cyber space and network, Information Technology and law in general.**()** **CO2-** Apply IT act on Pseudo case studies.**()** **CO3-** Analyze the type of a digital crime with reference to the provisions in IT Act 200 and 2008.**()** **CO4-** Understand IT Act 2000 of India along with some other countries.**()** **CO5-** Evaluate the impact of a digital crime on the victim and the provision punishment to the accused.**()**
Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	SDG (Goals)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	1	1	2
CO2	1	-	-	-	2	-	-	-	-	-	-	-	3	2	2
CO3	2	-	-	-	1	-	2	-	-	-	-	-	3	2	2
CO4	-	-	-	2	2	2	-	2	-	-	1	1	2	2	2
CO5	-	-	1	-	2	-	1	-	-	-	-	-	2	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Computer GRaphics and Multimedia
Course Code	BCA 603-C
Course Outcomes & Bloom's Level	**CO1-** Toremember variousconceptsofcomputerfundamentals**()** **CO2-** TounderstandtheBasicconceptofComputerGraphicsandMultimediaSystem.**()** **CO3-** ToimplementvariousalgorithmsinC/C++likeDDA,Circledrawing etc.**()** **CO4-** To analyze functioning of differentcomputer graphicsalgorithms andvarious transformation techniques.**()** **CO5-** Toevaluatetheperformancecharacteristicsofvariouscomputergraphics algorithms. **()**
Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	2	-	-	2	2	-	-	-	2	-	-	1	-	1
CO2	1	3	1	2	2	2	-	-	-	2	-	-	1	-	3
CO3	2	2	1	-	1	-	-	-	-	-	-	-	3	2	3
CO4	-	-	-	2	1	-	-	-	-	-	-	-	2	3	3
CO5	-	1	-	2	-	-	-	-	-	-	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Image Processing
Course Code	BCA 602 (A)(T)
Course Outcomes & Bloom's Level	**CO1-** To remember various concept of digital image processing.**()** **CO2-** To understand the fundamental concepts of a digital image processing system.**()** **CO3-** Apply the concepts learnt in to design and implement with Matlab algorithms for digital image processing operations such as histogram equalization, enhancement, restoration and filtering.**()** **CO4-** Analyze the concept of designing after applying these techniques in various applications.**()** **CO5-** Evaluate the theoretical knowledge and practical skills on digital image processing.**()**

Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth) SDG11(Sustainable cities and economies)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	1	2	-	-	-	2	-	-	2	2	1
CO2	1	-	-	-	1	2	-	-	-	-	-	-	2	2	3
CO3	2	2	-	2	-	-	-	-	-	-	-	-	1	-	2
CO4	1	2	-	1	-	-	-	-	-	-	-	-	1	2	2
CO5	1	2	-	1	-	-	-	-	-	-	-	-	1	-	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Machine Learning
Course Code	BCA 602(B) (T)
Course Outcomes & Bloom's Level	**CO1-** To remember various concept of data science.**()** **CO2-** To understand various Performance evaluation techniques of Machine Learning models. **()** **CO3-** To implement various supervised, unsupervised and reinforcement machine Learning Models **()** **CO4-** To train & test various machine Learning models using different domains of dataset. **()** **CO5-** To evaluate and summarize the performance of various machine learning models using statistical & visualization tools**()** **CO6-** To create machine learning models to solve real world problems.**()**
Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth) SDG10(Reduced inequalities) SDG11(Sustainable cities and economies)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	2	2	-	-	-	2	-	-	1	-	1
CO2	1	2	1	2	2	2	-	-	-	2	-	-	1	-	3
CO3	2	1	1	-	1	-	-	-	-	-	-	-	3	2	3
CO4	2	2	-	2	1	-	-	-	-	-	-	-	2	3	3
CO5	2	2	-	2	1	-	-	-	-	-	-	-	2	2	3
CO6	2	1	1	2	2	-	-	-	-	2	-	-	2	2	3

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Digital Forensic Essentials
Course Code	BCA 602(C)-T
Course Outcomes & Bloom's Level	**CO1-** Remembering Computer Network basics and Network Defense Essentials**()** **CO2-** Understand the concepts of Digital Forensics Digital investigation, Digital crime scene Evaluation process**()** **CO3-** Apply to the identification of crime and investigate (apply).**()** **CO4-** Analyze the data from digital devices for forensic analysis and finalize the audit report(Analyse)**()** **CO5-** Evaluating Evaluation of various crimes and the techniques applied to perform the crimes in digital world.(Investigate)**()**

Course Elements	Skill Development ✔ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth) SDG10(Reduced inequalities)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	1	2	-	-	-	-	-	-	-	-	2	1	1
CO2	-	1	1	1	2	-	-	-	-	-	-	-	1	2	1
CO3	2	2	1	1	2	-	-	-	-	-	-	-	3	2	3
CO4	-	2	1	2	-	-	-	-	-	-	-	-	2	1	3
CO5	2	2	1	-	1	-	-	-	-	-	-	-	1	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	NCC
Course Code	NCC 606(P)
Course Outcomes & Bloom's Level	**CO1-** Perform foot drill and follow the different word of command. **()** **CO2-** Aiming range and figure targets. **()** **CO3-** Use the different knots and lashing in day-to-day life for different purposes. **()** **CO4-** Develop the feeling of altruism. **()**

Course Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	SDG (Goals)	SDG3(Good health and well-being) SDG4(Quality education) SDG6(Clean water and sanitation)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	NCC
Course Code	NCC0606 (T)
Course Outcomes & Bloom's Level	**CO1-** Understand individaul responsibilities & role in meetings the security challenges on Border/Coastal areas. **()** **CO2-** Write their CV effective and appealing. **()** **CO3-** Imbibe the feeling of patriotism. **()** **CO4-** Communicate more effectively.**()** **CO5-** Face SSB interview effectively in their future. **()**

Course Elements	Skill Development ✘ Entrepreneurship ✘ Employability ✘ Professional Ethics ✘ Gender ✘ Human Values ✓ Environment ✘	SDG (Goals)	SDG3(Good health and well-being) SDG4(Quality education) SDG6(Clean water and sanitation)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Research Methodology
Course Code	BCA 701
Course Outcomes & Bloom's Level	**CO1-** Scholars will recall and identify various research methodologies, distinguishing between quantitative and qualitative approaches. **()** **CO2-** Scholars will analyze and evaluate principles of research design, critically assessing the appropriateness of different methodologies for specific research questions. **()** **CO3-** Scholars will apply research methods to formulate hypotheses and research questions, integrating theoretical frameworks and empirical evidence. **()** **CO4-** Scholars will critically assess different techniques of data collection, selecting and justifying appropriate methods for their research projects. **()** **CO5-** Scholars will interpret and analyze research findings using appropriate statistical and qualitative analysis techniques, drawing meaningful conclusions from the data. **()** **CO6-** Scholars will communicate research results effectively through written reports, presentations, and other dissemination methods, demonstrating clarity, coherence, and professionalism. **()**
Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	SDG (Goals)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	2	-	-	-	-	-	-	2	-	-
CO2	-	2	-	-	-	-	-	-	-	-	-	-	3	-	-
CO3	2	-	3	-	-	-	-	-	-	-	-	-	3	-	-
CO4	-	3	3	3	2	2	-	-	-	-	-	-	3	2	-
CO5	-	-	2	2	3	-	-	-	-	-	-	-	3	2	-
CO6	3	3	-	3	2	2	-	-	-	-	-	-	3	3	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Research Publication Ethics
Course Code	BCA 702
Course Outcomes & Bloom's Level	**CO1-** CO1 : Research design, writing formats, graph plotting, presentation of research and IPR Plagiarism**()** **CO2-** CO2 : locate research problem areas & identify problem & plan, organize design **()** **CO3-** CO3 : Analyze research gaps **()** **CO4-** CO4 : Develop competency to write and present research reports.**()**
Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	3	2	2	2	3	2	3	2	3	2	1	-
CO2	3	3	3	3	3	2	2	3	2	2	2	3	1	-	-
CO3	3	3	2	3	2	2	2	3	2	2	2	3	2	3	2
CO4	2	3	3	3	3	3	2	3	3	3	3	3	3	2	2
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Deep Learning
Course Code	BCA 703-A(T)
Course Outcomes & Bloom's Level	**CO1-** Describe in-depth about theories, fundamentals, and techniques in Deep learnin**()** **CO2-** Identify the on-going research in computer vision and multimedia field.**()** **CO3-** Evaluate various deep networks using performance parameters.**()** **CO4-** Design and validate deep neural network as per requirements.**()** **CO5-** To evaluate the testing performance of deep Learning models on real world dataset**()**
Course Elements	Skill Development ✖ Entrepreneurship ✖ Employability ✓ Professional Ethics ✖ Gender ✖ Human Values ✖ Environment ✖	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) SDG8(Decent work and economic growth) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	2	2	-	-	-	2	-	-	1	2	3
CO2	3	1	-	2	2	2	-	-	-	2	-	-	1	2	3
CO3	2	2	1	-	1	-	-	-	-	-	-	-	3	2	3
CO4	2	2	-	2	1	-	-	-	-	-	-	-	3	2	3
CO5	1	2	-	2	1	-	-	-	-	-	-	-	3	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Big Data Analytics
Course Code	BCA 703- B(T)
Course Outcomes & Bloom's Level	**CO1-** CO1: To understand the fundamentals of Big Data.**()** **CO2-** CO2: To know about the different tools for Big Data and Visualization.**()** **CO3-** CO3: To explore tools and practices for big data and Visualization. **()** **CO4-** CO4: To recognize the role of business intelligence and visualization in decision making.**()** **CO5-** CO5: To analyze data using Power BI, Tableau etc.**()** **CO6-** CO6: To prepare design dashboard for presenting analytics from data. **()**
Course Elements	Skill Development ✔ Entrepreneurship ✘ Employability ✔ Professional Ethics ✘ Gender ✘ Human Values ✘ Environment ✘	**SDG (Goals)**	SDG1(No poverty) SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	-	-	2	-	1	-	-	1	-	2	2	1	2
CO2	3	3	-	-	3	-	1	-	-	1	-	2	2	1	3
CO3	3	3	3	2	3	-	2	-	2	2	1	2	2	1	2
CO4	3	3	2	3	3	2	3	-	2	3	2	3	3	3	2
CO5	3	3	2	3	3	-	2	-	2	3	2	3	2	3	3
CO6	3	3	3	3	3	-	2	-	3	3	3	3	2	3	3

SOET-BCA

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Dissertation
Course Code	BCA 801
Course Outcomes & Bloom's Level	**CO1-** CO1: Conduct in-depth research and critically analyze existing solutions in the chosen project area within computer science or information technology. (Evaluate) **()** **CO2-** CO2: Design a novel and comprehensive software solution using appropriate programming languages, frameworks, and tools. (Design) **()** **CO3-** CO3: Implement the designed solution effectively, demonstrating core functionalities and addressing potential limitations. (Develop) **()** **CO4-** CO4: Apply project management principles to plan, schedule, track progress, manage resources, and mitigate potential risks throughout the project lifecycle. (Plan and Organize) **()** **CO5-** CO5: Effectively document the project, including system design, implementation details, user manuals, deployment procedures, and future enhancements. (Communicate) **()**

Course Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG8(Decent work and economic growth)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	-	1	-	-	-	-	-	-	-	2	2	2
CO2	1	-	2	-	2	-	-	-	-	-	-	-	1	2	1
CO3	1	2	-	2	1	-	-	-	-	-	-	-	2	2	1
CO4	1	1	-	2	-	-	-	-	1	-	-	-	2	2	1
CO5	-	-	-	-	1	-	-	-	1	-	-	-	2	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-