

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

| Title of the Course | Computer Oriented Mathematics | Computer Oriented Mathematics | | | | | | | | | | | |
|------------------------------------|---|---|--|--|--|--|--|--|--|--|--|--|--|
| Course Code | MCA-101[T] | | | | | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- Understand Relation and Fu CO2- Familiarize direct products, f Understand) CO3- Understand group action on CO4- To learn to find Eigen values study of vibrations, chemical reacti CO5- Understand the basic ideas of and spanning(BL5-Evaluate) CO6- To learn the importance of lir sciences and various branches of | nction on the sets.(initely generated Ab sets isotropy subgr and Eigen vectors ons and geometry.(of vector algebra: lin near transformation Mathematics.(BL6 - | BL1-Remember) belian groups, factor groups.(BL2- oups.(BL3-Apply) of a matrix which is used in the (BL4-Analyze) hear dependence and independence in Physics, Engineering, Social Create) | | | | | | | | | | |
| Course Elements | Skill Development × Entrepreneurship × Employability × Professional Ethics × Gender × Human Values × | | | | | | | | | | | | |

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



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

| Title of the Course | Object Oriented Programmin | bject Oriented Programming With Java | | | | | | | | | | | |
|------------------------------------|---|---|---|--|--|--|--|--|--|--|--|--|--|
| Course Code | MCA-102[T] | | | | | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- To remember various sy CO2- To understand various of Multithreading, networking an CO3- To implement java AWT java IO for Input and output h CO4- To analyze various Error improve the performance of th CO5- To evaluate and compa Evaluate) | yntax rules of jay Object-Oriented Id database coni and Swing and andling, jdbc for or ,and Database he java application re various applic | va programming (BL1-Remember) Concepts, Exception handling, nectivity techniques (BL2-Understand) for GUI Programming and Event handling, database connectivity (BL3-Apply) e Handling techniques to learn how to on. (BL4-Analyze) cation Development techniques (BL5- | | | | | | | | | | |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) | SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) SDG8(Decent work and economic growth) | | | | | | | | | | |

| 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 | Artificial Intelligence | | |
|------------------------------------|--|--|---|
| Course Code | MCA-103[T] | | |
| Course Outcomes & Bloom's Level | CO1- Remember: To remember Remember) CO2- Introduce: To introduce Artificial Language.(BL2-Und CO3- Implement: To Implement FOPC, NLP Deep Learning to Searching Techniques, Types CO4- Analyze: To analyze the Analyze) CO5- Evaluate: To evaluate t | ber various cond the basics cond lerstand) entation, apply v echniques, Robe s of agents. (BL3 e performance conducted he performance | cept of Artificial Intelligence. (BL1- cept of automation with the concept of arious Reinforcement Learning Model, otic Model, Problem Solving Techniques, B-Apply) of various Tools of Artificial Intelligence (BL4- of Efficient AI enabled model; (BL5-Evaluate) |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) | SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) SDG8(Decent work and economic growth) SDG11(Sustainable cities and economies) |

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



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

| Title of the Course | Computer Networks | omputer Networks | | | | | | | | | | | |
|------------------------------------|---|--|---|--|--|--|--|--|--|--|--|--|--|
| Course Code | MCA-104[T] | | | | | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- Remembering the con CO2- Understand to the con Translation, Mobile IP.(BL2-I CO3- Apply to Unicast and M Apply) CO4- Analyze the application Analyze) CO5- Evaluating to investiga Evaluate) | cepts of comput cept of Classfull Understand) Multicast Routing ns to address the ate routers, IP an | er networks, their types.(BL1-Remember) and Classless addressing Network address g and Next Generation IP for networking.(BL3- e issues of Networking Technologies.(BL4- nd Routing Algorithms in Network Layer(BL5- | | | | | | | | | | |
| 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) | | | | | | | | | | |

| 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 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



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

| Title of the Course | Data Structures and applications | |
|------------------------------------|---|---|
| Course Code | MCA-105[T] | |
| Course Outcomes & Bloom's Level | CO1- Understanding: comprehensive knowledge of the or CO2- Applying: understand the importance of data and k requirements for an application; (BL3-Apply) CO3- Analyzing: have a practical experience of algorithm (BL4-Analyze) CO4- Evaluating: practical experience of developing application constructures and evaluating the performances of application co5- Creating: develop projects requiring the implement structures (BL6-Create) | data structures;(BL2-Understand) be able to identify the data nic design and implementation; plications that utilize data ns;(BL5-Evaluate) tation of various data |
| Course Elements | Skill Development ✓ Entrepreneurship × Employability × Professional Ethics × Gender × Human Values × Environment × | SDG (Goals) |

| COs | P01 | PO2 | PO3 | PO4 | PO5 | P06 | 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 | 2 | 3 | 1 | - | - | - | - | - | - | - | - | 2 | 2 | 3 | 1 |
| CO5 | 2 | 1 | - | - | - | - | - | - | - | - | - | 2 | 3 | 2 | 2 |
| CO6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



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

| Title of the Course | PHP | | |
|------------------------------------|---|--|---|
| Course Code | MCA-106[P] | | |
| Course Outcomes & Bloom's Level | CO1- To remember various syntax (BL1-Remember) CO2- To understand Object Oriente concepts including design a web, E and response. Generation.(BL2-Ur CO3- To implement Html, PHP and connectivity and file system.(BL3-A CO4- To analyze various Database performance of the PHP application CO5- To evaluate and compare var PHP concepts.(BL5-Evaluate) CO6- To develop solutions for real (BL6-Create) | rules of any of prog ed concepts of PHP Execution of web pa Inderstand) Java script for Prog Apply) error Handling tech In (BL4-Analyze) Fious web applicatio world problems usir | ramming language such as c/C++ and various web development ges on server and request handling ramming and mysql for database nniques to learn how to improve the n Development techniques using ng php and mysql programming. |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) | SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) |

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



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

| Title of the Course | Android based Application De | droid based Application Development | | | | | | | | | | | | |
|------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Course Code | MCA 106-B(P) | | | | | | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- To remember various sy XML(BL1-Remember) CO2- To understand Object O development concepts includi Understand) CO3- To implement XML, Jav Apply) CO4- To analyze various widg CO5- To develop solutions for development(BL5-Evaluate) | vntax rules of the riented concepts ng interface des a and mysql for jets and learn to real world probl | e programming language such as java and s for Android and various mobile application igning, handling multiple activities(BL2 - database connectivity and file system(BL3 - use them as per the problem(BL4-Analyze) ems using android application | | | | | | | | | | | |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) | SDG1(No poverty) SDG4(Quality education) SDG8(Decent work and economic growth) | | | | | | | | | | | |

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



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

| Title of the Course | Programming with Python | gramming with Python | | | | | | | | | | | |
|------------------------------------|--|--|---|--|--|--|--|--|--|--|--|--|--|
| Course Code | MCA 106-B(P) | | | | | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- To remember the basic CO2- Understand the basics basic concepts of python.(Bl CO3- Apply the various cond (BL3-Apply) CO4- Explain various objects regular expression(BL4-Ana CO5- Evaluate the concept of language(BL5-Evaluate) | c programming c of Python like p L 2-Understand) ditional and loopi s numbers and s Ilyze) of object-oriented | concept. (BL1-Remember) ython origin downloading and installing and ing statement and functional programming. equence in python Analyze the concept of d programming for better utilization of | | | | | | | | | | |
| 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) | | | | | | | | | | |

| 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 | 2 | 3 |
| CO3 | 2 | 2 | 1 | - | 1 | - | - | - | - | - | - | - | 3 | 3 | 3 |
| CO4 | 2 | 2 | - | 3 | 1 | - | - | - | - | - | - | - | 3 | 2 | 3 |
| CO5 | 2 | 2 | - | 2 | 1 | - | - | - | - | - | - | - | 2 | - | 3 |
| CO6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



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

| Title of the Course | Software Engineering | | |
|------------------------------------|---|---|---|
| Course Code | MCA 204 | | |
| Course Outcomes & Bloom's Level | CO1- To remember the basics CO2- Tounderstandthe basics of engineering systems(BL2-Und CO3- To implement various SD software.(BL3-Apply) CO4- ToAnalyze various various strategies(BL4-Analyze) CO5- Toevaluatethe the need of Management Software, Need for Cost of Maintenance, Software process communication tech An (COCOMO), Software Risk Ana | of software engin characterstics&co erstand) LC, ER, DFD mo s testing techniq of Software Maint or Maintenance , Re- Engineering n Overview of CA alysis and Manag | neering (BL1-Remember) risis of software and process of software odels, to collect SRS, And understand the uesand the concept of testing tenance and Software Project Corrective and Perfective Maintenance, g, Reverse Engineering and other inter ASE Tools, Constructive Cost Models gement . (BL5-Evaluate) |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) | SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) SDG8(Decent work and economic growth) |

| COs | P01 | PO2 | PO3 | PO4 | PO5 | P06 | P07 | 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 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



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

| Title of the Course | Database Management Sys | tabase Management System | | | | | | | | | | | |
|------------------------------------|--|--|---|--|--|--|--|--|--|--|--|--|--|
| Course Code | MCA-201 (T) | | | | | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- Understand the data W characteristics.(BL1)(BL1-R CO2Understand the data Understand) CO3- Analyze the frequent p growth. (BL3-Apply) CO4- Understand the conce Analyze) CO5- Understand the conce | Warehouses, Op emember) mining concept, patterns using as pt of classification pt of clustering a | erational Data Stores (ODS) and OLAP application and their usage .(BL2) (BL2- ssociation analysis algorithms like apriori, FP- on, different classification algorithms (BL4- and different cluster analysis (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) | | | | | | | | | | |

| 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 | - | - | - | - | 2 | 2 | 2 |
| CO5 | - | - | 1 | - | - | 2 | - | 1 | - | - | 1 | 1 | 2 | 2 | 2 |
| CO6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



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

| Title of the Course | Computer Graphics | omputer Graphics | | | | | | | | | | | |
|------------------------------------|---|---|---|--|--|--|--|--|--|--|--|--|--|
| Course Code | MCA-202(T) | | | | | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- To remember the varie CO2- To understand the Bas System(BL2-Understand) CO3- To implement various CO4- : To analyze functionin transformation techniques(B CO5- To evaluate the perfor algorithms.(BL5-Evaluate) | bus concepts of sic concept of Co algorithms in C/ g of different co BL4-Analyze) mance characte | computer fundamentals. (BL1-Remember) omputer Graphics and Multimedia C++ like DDA, Circle drawing etc. (BL3-Apply) mputer graphics algorithms and various ristics of various computer graphics | | | | | | | | | | |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability X Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) | SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) SDG8(Decent work and economic growth) | | | | | | | | | | |

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



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

| Title of the Course | Design and Analysis of Algorithms | |
|------------------------------------|--|--|
| Course Code | MCA-203 | |
| Course Outcomes & Bloom's Level | CO1- To remember various concepts of data structures a CO2- To understand Basic concepts of algorithm represe Pseudo codes and Flowcharts and analysis of the algorit CO3- To Solve various problems based on the Divide an approach, Backtracking, and Dynamic programming app CO4- To illustrate various types of algorithmic approaches such as Strassen's matrix multiplication, Multistage graph spanning tree problem, etc.(BL4-Analyze) CO5- To describe the performance of various algorithms measuring techniques.(BL5-Evaluate) | and algorithms.(BL1-Remember) entation techniques such as thm.(BL2-Understand) d Conquer approach, Greedy roach.(BL3-Apply) es and problems based on them h, n- queens problem, minimum using various complexity |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability X Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) |

| COs | PO1 | PO2 | PO3 | PO4 | PO5 | P06 | P07 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 1 | - | - | 2 | 2 | - | - | - | - | - | - | - | 2 | 2 | 2 |
| CO2 | 2 | 2 | 1 | 3 | 2 | - | - | - | - | - | - | - | 2 | 3 | 2 |
| CO3 | 2 | 2 | 2 | 2 | 1 | - | - | - | - | - | - | - | 3 | 3 | 3 |
| CO4 | 1 | 2 | 1 | 2 | 1 | - | - | - | - | - | - | - | 2 | 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 | Minor Project I | |
|------------------------------------|---|--|
| Course Code | MCA 206 | |
| Course Outcomes & Bloom's Level | CO1- CO1 : Understand the project Develpoment Life C CO2- CO2 : Aplly the core discipline knowledge and dev given / chosen task(BL3-Apply) CO3- CO3 : Analize the performance of the system deve for testing (BL4-Analyze) CO4- CO4 : Evaluate the performacne of the system deve of similar tools./ systems (BL5-Evaluate) | ycle (BL2-Understand) velop a complete system for the elpoed using standard techniques velpoed against the performance |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) |

| | | | - | - | | | | | - | | | - | 1 | 1 | 1 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| 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 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



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

| Title of the Course | Data Science with Python | ata Science with Python | | | | | | | | | | | |
|------------------------------------|---|---|---|--|--|--|--|--|--|--|--|--|--|
| Course Code | MCA 205 (A) (T) | | | | | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- To remember the bas CO2- To understand the Ba data science(BL2-Underst CO3- To implement Numpy basic and advanced visuali CO4- To analyze the different preprocessing tasks on the CO5- To evaluate and sum Evaluate) | sic programming asic concept of and) for handling nu zation techniquent domains of data. (BL4-An marize the data | g concept. (BL1-Remember) Data science, application areas and tools for umerical data, pandas for handling data and les to visualize the data. (BL3-Apply) data, and perform cleaning and other alyze) a using statistical & visualization tools; (BL5- | | | | | | | | | | |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) | SDG1(No poverty) SDG12(Responsible consuption and production) | | | | | | | | | | |

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



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

| Title of the Course | Cryptography and Network Secur | ryptography and Network Security | | | | | | | | | | | |
|------------------------------------|--|---|--|--|--|--|--|--|--|--|--|--|--|
| Course Code | MCA 205 (B) (T) | | | | | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- Remembering/Revising the network security(BL1-Remember) CO2- Understand the Cryptograph Hashing (BL2-Understand) CO3- Apply the various Symmetric Apply) CO4- Explain the various Encrypti Digital Signatures, IP Security(BL4 CO5- Evaluating the various methor Transposition techniques(BL5-Eva | basics of computer y and Encryption te c and Asymmetric K on and Hashing tec 1-Analyze) ods of Cryptography aluate) | system, Computer networks and echniques and the concepts of ey Encryption algorithms (BL3- hniques and analyze the concept of y, Hash functions, Substitution and | | | | | | | | | | |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability X Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) | SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) | | | | | | | | | | |

| COs | P01 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | - | 1 | - | 1 | 1 | - | - | - | - | - | - | - | 1 | - | 1 |
| CO2 | - | 1 | 2 | - | 3 | - | - | 1 | - | - | - | - | 1 | - | 2 |
| CO3 | - | 1 | - | - | 1 | - | - | 1 | - | - | - | - | 3 | - | 3 |
| CO4 | - | - | - | - | 1 | - | 1 | - | - | - | - | - | 2 | 1 | 2 |
| CO5 | - | 1 | - | - | 2 | 2 | 1 | - | - | - | - | - | 2 | 2 | 2 |
| CO6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



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

| Title of the Course | Big Data | | |
|------------------------------------|---|---|---|
| Course Code | MCA 205- C(T) | | |
| Course Outcomes & Bloom's Level | CO1- CO1: To understand the fun CO2- CO2: To know about the diff Understand) CO3- CO3: To explore tools and p CO4- CO4: To recognize the role making.(BL4-Analyze) CO5- CO5: To analyze data using CO6- CO6: To prepare design data | damentals of Big Da ferent tools for Big D practices for big data of business intellige Power BI, Tableau shboard for presenti | ata. (BL2-Understand) Data and Visualization. (BL2- a and Visualization. (BL3-Apply) nce and visualization in decision etc. (BL5-Evaluate) ng analytics from data. (BL6-Create) |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) | SDG1(No poverty) SDG4(Quality education) |

| 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 | - | - | - | - | - | - | - | - | - | - | - |
| CO3 | 2 | - | - | - | 1 | - | - | - | - | - | - | - | 1 | - | - |
| CO4 | 2 | 1 | - | 2 | - | - | - | - | - | - | - | - | 1 | 2 | - |
| CO5 | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 3 | - |
| CO6 | 1 | - | 1 | - | - | - | - | - | - | - | - | - | 2 | 2 | - |



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

| Title of the Course | Data WArehousing and Min | ata WArehousing and Mining | | | | | | | | | | | |
|------------------------------------|--|--|---|--|--|--|--|--|--|--|--|--|--|
| Course Code | MCA 301(T) | | | | | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- Understand the data V characteristics.(BL1)(BL1-R CO2Understand the data Understand) CO3- Analyze the frequent p growth. (BL3-Apply) CO4- Understand the conce Analyze) CO5- Understand the conce | Warehouses, Op e emember) mining concept, patterns using as ept of classification ept of clustering as | erational Data Stores (ODS) and OLAP application and their usage .(BL2)(BL2 - ssociation analysis algorithms like apriori, FP- on, different classification algorithms (BL4 - and different cluster analysis(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) | | | | | | | | | | |

| 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 | - | - | - | - | 2 | 2 | 2 |
| CO5 | - | - | 1 | - | - | 2 | - | 1 | - | - | 1 | 1 | 2 | 2 | 2 |
| CO6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



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

| Title of the Course | Cloud Computing | | |
|------------------------------------|---|--|--|
| Course Code | MCA 302 | | |
| Course Outcomes & Bloom's Level | CO1- To remember the conce cloud computing(BL1-Remer CO2- To understand the Basi and various Cloud Web Servi CO3- To apply various virtual CO4- To analyze the current and data handling for differen CO5- To evaluate and deploy solve real-world problems.(B | epts of Cloud Co mber) ic concept of Co ices for different ization tools in c issues in cloud o it business areas various applica L5-Evaluate) | mputing, Virtualization, and data-intensive mputer networks, Cloud Computing, big data, applications.(BL2-Understand) cloud computing.(BL3-Apply) computing like its security, energy efficiency, s.(BL4-Analyze) tions in a Cloud Computing environment to |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability X Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) | SDG1(No poverty) SDG2(Zero hunger) SDG4(Quality education) SDG8(Decent work and economic growth) SDG13(Climate action) |

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



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

| Title of the Course | Web Technologies | |
|------------------------------------|--|--|
| Course Code | MCA 303 (T) | |
| Course Outcomes & Bloom's Level | CO1- To remember various Web Development Strategie Programming and PHP(BL1-Remember) CO2- To understand the basics of web architecture, Type about web protocols and web development concepts of CO3- To implement: HTML, CSS, JavaScript and XML, create static and dynamic web pages and interactive we CO4- To analyze various Client-side programming techn CO5- To evaluate the web pages and layout with the hel (BL5-Evaluate) | s and syntax rules of web es of architecture, knowledge PHP (BL2-Understand) PHP and mysql language to b applications. (BL3-Apply) iques (BL4-Analyze) p of Advanced CSS Techniques |
| Course Elements | Skill Development ✓ Entrepreneurship × Employability ✓ Professional Ethics × Gender × Human Values × Environment × | SDG (Goals) |

| 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 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



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

| Title of the Course | Minor PRoject | nor PRoject | | | | | | | | | |
|------------------------------------|---|--|--|--|--|--|--|--|--|--|--|
| Course Code | MCA 306 | | | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- CO1 : Understand the project Develpoment Life C CO2- CO2 : Aplly the core discipline knowledge and dev given / chosen task(BL3-Apply) CO3- CO3 : Analize the performance of the system deve for testing (BL4-Analyze) CO4- CO4 : Evaluate the performacne of the system deve of similar tools./ systems (BL5-Evaluate) | ycle (BL2-Understand) velop a complete system for the elpoed using standard techniques velpoed against the performance | | | | | | | | | |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) | | | | | | | | | |

| | | | - | - | | | | | - | | | - | 1 | 1 | 1 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| 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 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



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

| Title of the Course | Data WArehousing and Mining | 9 | |
|------------------------------------|---|---|---|
| Course Code | MCA301 (P) | | |
| Course Outcomes & Bloom's Level | CO1- To remember the technic data.(BL1-Remember) CO2- To understand the basics techniques of data mining.(BL CO3- To implement the various K-means, K- Medoids etc.(BL CO4- To analyze the concepts classification, clustering.(BL4- CO5- To evaluate the data min CO6- To create the dominant of importance of paradigms from data mining; explore the develo | ques of Data min s of Data wareho 2-Understand) s methods of dat 3-Apply) of data Preproce Analyze) ing models that i data mining algor the fields of Artif oping areas - we | ing which help to extract the meaningful buse, Data marts, data Preprocessing and a mining for data clustering, classification: essing, Association Rule Mining, run efficiently. (BL5-Evaluate) ithms; demonstrate an appreciation of the icial Intelligence and Machine Learning to b mining, text mining etc (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) SDG8(Decent work and economic growth) |

| COs | PO1 | PO2 | PO3 | PO4 | PO5 | P06 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 1 | - | - | - | 2 | 2 | - | - | - | 2 | - | - | 1 | 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 | 2 | - | 2 | 1 | - | - | - | - | - | - | - | - | 1 | 1 |
| CO6 | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 1 | - | 1 |



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

| Title of the Course | Data Analytics | |
|------------------------------------|--|---|
| Course Code | MCA 305(A) (T) | |
| Course Outcomes & Bloom's Level | CO1- To understand the fundamentals of Big Data.(BL1 CO2- To know about the different tools for Big Data and CO3- To explore tools and practices for big data and Vis CO4- To recognize the role of business intelligence and (BL4-Analyze) CO5- To analyze data using Power BI, Tableau etc.(BL5 CO6- To prepare design dashboard for presenting analy | -Remember) Visualization.(BL2-Understand) sualization.(BL3-Apply) visualization in decision making. 5-Evaluate) trics from data.(BL6-Create) |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) |

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



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

| Title of the Course | Data Analytics | |
|------------------------------------|--|---|
| Course Code | MCA305 (P) | |
| Course Outcomes & Bloom's Level | CO1- To understand the fundamentals of Big Data.(BL1 CO2- To know about the different tools for Big Data and CO3- To explore tools and practices for big data and Vis CO4- To recognize the role of business intelligence and (BL4-Analyze) CO5- To analyze data using Power BI, Tableau etc.(BL5 CO6- To prepare design dashboard for presenting analy | -Remember) Visualization.(BL2-Understand) sualization.(BL3-Apply) visualization in decision making. 5-Evaluate) trics from data.(BL6-Create) |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | SDG (Goals) |

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



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

| Title of the Course | Digital Forensic and Analytic | cs | | | | | | | | |
|------------------------------------|--|---|--|--|--|--|--|--|--|--|
| Course Code | MCA 305(B) (T) | | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- Remembering Compu Remember) CO2- Understand the conce scene Evaluation process(B CO3- Apply to the identificat CO4- Analyze the data from report(Analyse)(BL4-Analyz CO5- Evaluating Evaluation crimes in digital world.(Invest | Remember) CO2- Understand the concepts of Digital Forensics Digital investigation, Digital crime scene Evaluation process(BL2-Understand) CO3- Apply to the identification of crime and investigate (apply).(BL3-Apply) CO4- Analyze the data from digital devices for forensic analysis and finalize the audit report(Analyse)(BL4-Analyze) CO5- Evaluating Evaluation of various crimes and the techniques applied to perform the crimes in digital world.(Investigate)(BL5-Evaluate) | | | | | | | | |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | 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) | | | | | | | |

| 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 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



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

| Title of the Course | Full Stack Development | | |
|------------------------------------|---|---|---|
| Course Code | MCA 305- C(T) | | |
| Course Outcomes & Bloom's Level | CO1- To remember about the CO2- To understand the batheir documentation to proce CO3- Implementation of we Apply) CO4- Create web pages the Analyze) CO5- To develop a fully fund | he front end an sics of web arc luce working re b application e at function usin ctioning websit | id back end Tools. (BL1-Remember) chitecture, find and use code packages based on esults in a project (BL2-Understand) employing efficient database access. (BL3- ing external data and analyze them. (BL4- te and deploy on a web server. (BL5-Evaluate) |
| Course Elements | Skill Development ✓ Entrepreneurship X Employability ✓ Professional Ethics X Gender X Human Values X Environment X | 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) SDG12(Responsible consuption and production) |

| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | 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 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



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

| Title of the Course | Machine Learning | | |
|------------------------------------|---|---|---|
| Course Code | MCA304A(T) | | |
| Course Outcomes & Bloom's Level | CO1- To understand Basic of models(BL1-Remember) CO2- To understand various models. (BL2-Understand) CO3- To implement various s Learning Models (BL3-Apply CO4- To train & test various (BL4-Analyze) CO5- To evaluate and summ using statistical & visualizatio CO6- To create machine lear | oncept of machin Performance ev supervised, unsu y) machine Learnin parize the perforr on tools (BL5-Ev rning models to s | ne learning, various machine learning valuation techniques of Machine Learning upervised and reinforcement machine ng models using different domains of dataset. mance of various machine learning models aluate) solve real world problems.(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) SDG8(Decent work and economic growth) |

| 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 th | e Course | Block Chain | | | | | | | | |
|---|---|---|---|---|--|--|--|--|--|--|
| Course | e Code | MCA 304 -C (T) | | | | | | | | |
| Course Outcomes & Bloom's Level | CO1- To re CO2- To ur cryptocurre CO3- To im security.(B CO4- To ar areasandhe Analyze) CO5- To ex comparisor CO6- To pr contempora | member Cryptograph derstand the concep ncy, digital ledger etc plement the cryptogr _3-Apply) nalyze the role of min- pwitprovidessuchane raluate the performan ntoavailabletechnolog epare a scenario to c ary technologies and | ny Techniques, Data t and working of blo c. And role of crypto raphy and mining to er sin blockchain. A ffectivesecuremecha nce characteristics of jiesandwhatfeatures observe the performa- to observe the pote | Structures and Algorithms(BL1-Remember) ckchain technology, various application areas like graphy in blockchain.(BL2-Understand) implement blockchain ledger and to implement oplication of blockchain in multiple anismofhandlingandmaintainingdataorrecords(BL4 - f blockchain in cofblockchainmakeitsoeffective.(BL5-Evaluate) ance evaluation of blockchain in comparison to ntial application areas(BL6-Create) | | | | | | |
| Course Elements | Skill Development V Entrepreneurship X Employability √ Professional Ethics X Gender X Human Values X Environment X SDG (Goals) SDG (Goals) SDG (Quality education) | | | | | | | | | |

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



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

| Title of the Course | Cyber Security fundamentals and | Cyber Audit Essent | tials |
|------------------------------------|---|--|--|
| Course Code | MCA 304(B) (T) | | |
| Course Outcomes & Bloom's Level | CO1- Understand the cybercrimes of auditing the digital devices (BL² CO2- Apply the principles of identi report. (BL2-Understand) CO3- Analyze the data from digita report (BL4-Analyze) CO4- Evaluation of various crimes digital world. (BL5-Evaluate) CO5- Create automated application | s, Various attacks pe I -Remember) fication of crimes ar I devices for forensi s and the techniques ons for detection of c | erformed on network and technique nd apply it to prepare the audit c analysis and finalize the audit s applied to perform the crimes in crimes (BL6-Create) |
| Course Elements | Skill Development ✓ Entrepreneurship × Employability × Professional Ethics × Gender × Human Values × Environment × | SDG (Goals) | SDG4(Quality education) |

| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 2 | - | - | 2 | 2 | 3 | 2 | 1 | - | 2 | - | - | - | 2 | 2 |
| CO2 | 1 | - | - | 3 | 3 | 2 | - | 2 | - | 1 | - | - | 2 | 3 | 2 |
| CO3 | 1 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | - | 3 | - | 1 | 3 | 3 | 2 |
| CO4 | - | 2 | 2 | 3 | 2 | - | - | - | - | - | - | 1 | 1 | - | 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 | Dissertation / Industrial Train | ning/ | |
|------------------------------------|---|--|--|
| Course Code | MCA 401 | | |
| Course Outcomes & Bloom's Level | CO1- CO1 : Understand the CO2- CO2 : Aplly the core di given / chosen task(BL3-Ap CO3- CO3 : Analize the perfor for testing (BL4-Analyze) CO4- CO4 : Evaluate the pe of similar tools./ systems (BL | project Develpo iscipline knowled ply) ormance of the s rformance of the _5-Evaluate) | ment Life Cycle (BL2-Understand) dge and develop a complete system for the system developed using standard techniques system developed against the performance |
| Course Elements | Skill Development ✓ Entrepreneurship × Employability ✓ Professional Ethics × Gender × Human Values × Environment × | SDG (Goals) | SDG4(Quality education) SDG8(Decent work and economic growth) |

| r | | | - | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| 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 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |