Courses with Global Relevance

At CMRU, we offer several courses which have direct and indirect relevance towards global issues. We show some of the courses with global relevance in the following table.

#	Course Code	Course Title
1	4CSPL1011	Problem-Solving using Python
2	4CSPL2011	Web Development using PYTHON and DJANGO
3	7PSYC6171	Criminal Psychology
4	4CSPL2041	Introduction to Machine Learning
5	4CSGC2081	Software Engineering
6	4CSGC3131	System Security
7	4CSPL3131	Application Development using MERN Stack (P5)
8	4BCS702	Data Analysis using Python
9	5BAL721/ 5BBL721	Private International Law
10	5BAL603/ 5BBL603	Public International Law
11	7PSYC6161	Forensic Psychology

1. Course Name: **Problem-Solving using Python**

Course Code: **4CSPL1011**

On successful completion of the course, students will be able to do the following.

CO1: Understand the basis of algorithm problem solving using algorithms showing its global importance.

CO2: Read/Write simple Python programs.

CO3: Write Python programs with conditionals and loops.

CO4: Use Python functions and Python data structures.

CO5: Read and write data from/to files in Python programs.

2. Course Name: Web Development using PYTHON and DJANGO

Course code: 4CSPL2011

On successful completion of the course, students will be able to do the following.

CO1: Create the database using SQLite and show how it has relevance to solving common global problems.

CO2: Create web client programs using Python.

CO3: Create web server programs using Python.

CO4: Create a website using the Django framework.

CO5:Create to-do applications using Django and React JS.

3. Course Name: Criminal Psychology

Course Code: 7PSYC6171

On successful completion of the course, students will be able to do the following.

CO1: To describe the contribution of psychology at different levels of the criminal justice system.

CO2: To understand the relationship between human psychology, crime, and the justice system.

CO3: To conduct research in the field of criminal investigative analysis in India and abroad.

CO4: To apply the methods of criminal profiling to analyze crime scenes in different countries.

4. Course Name: Introduction to Machine Learning

Course Code: **4CSPL2041**

On successful completion of the course, students will be able to do the following.

CO1: Apply various classification and clustering techniques for solving problems using tools like R and Python

CO2: Implement solutions for various prediction problems using tools

CO3: Design and development of game and traffic control system using reinforcement learning.

CO4: Identify and apply the appropriate machine-learning techniques for classification, Pattern recognition, optimization, and decision problems.

CO5: Development of techniques in information science applications by applying Computational intelligence and appropriate machine learning techniques.

5. Course Name: **Software Engineering**

Course Code: **4CSGC2081**

On successful completion of the course, students will be able to do the following.

CO1: Explain the principles of the engineering processes in software development.

CO2: Develop the software projects through activities such as planning and scheduling.

CO3: Classify and specify the requirements for the software projects in different domains and countries.

CO4: Design the prototype of the software projects.

CO5: Implement the software development processes activities from requirements to validation and verification

6. Course Name: **System Security**

Course Code: **4CSGC3131**

On successful completion of the course, students will be able to do the following.

CO1: Describe the knowledge about secure software system assurance and evaluation.

CO2: To conduct a cyber security risk assessment.

CO3: To measure the performance and troubleshoot cyber security systems.

CO4: To implement cyber security solutions.

CO5: To analyze network security at a large scale including the networks spanning several countries.

7. Course Name: **Application Development using MERN Stack (P5)**

Course Code: **4CSPL3131**

On successful completion of the course, students will be able to do the following.

CO1: To Discover the details of HTML, CSS, and their properties and applications.

CO2: Use the tools required to build JavaScript-based SPAs.

CO3: Discover the details of React, the React Way, and how to get the maximum out of this library.

CO4: Discover the details of Nodejs and how to get the maximum out of this library.

CO5: To Discover the details of SQL, MongoDB, and Nosql.

8. Course Name: **Data Analysis using Python**

Course Code: **4BCS702**

On successful completion of the course, students will be able to do the following.

CO1: Explain Python Programs using core data structures.

CO2: Explain the basic process of data science for different problems in different countries.

CO3: Analyze how to manipulate the uncharted datasets.

CO4: Explain statistical analysis and machine learning methods.

CO5: Apply visualization techniques.

9. Course Name: **Capstone Project Design**

Course Code: **4BCS705**

On successful completion of the course, students will be able to do the following.

CO1: Demonstrate engineering knowledge and its framework for its implementation in the project design as well work in groups taking leadership role and communicate effectively.

CO2: Survey relevant literature in the chosen field of study that allows interrelation of design and research.

CO3: Model a prototype/ concept design that exhibits the feasibility of the solution from cost, engineering, and environmental aspects.

CO4: Justify the project design with a structured report that covers all the work carried out between framing the problem statement to the project design.

CO5: Design conceptual ideas that address the issues with respect to real-world problems.

10. Course Name: **System Security**

Course Code: **4CSGC3131**

CO1: Describe the knowledge about secure software system assurance and evaluation.

CO2: To conduct a cyber security risk assessment.

CO3: To measure the performance and troubleshoot cyber security systems.

CO4: To implement cyber security solutions.

CO5: To analyze network security.

11. Course Name: **Python for Networking**

Course Code: **4CSPL3081**

CO1: Demonstrate the basic elements of a relational database management system.

CO2: Identify the data models for relevant problems

CO3: Design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data into RDBMS and formulate SQL queries on the data.

CO4: Demonstrate their understanding of key notions of query evaluation and optimization techniques.

CO5: Extend normalization for the development of application software.

12. Course Name: **Machine Learning for Beginners**

Course Code: **4CSGC2101**

CO1: Explain the concepts of Machine Learning Categories.

CO2: Analyse the fundamentals of Machine Learning.

CO3: Analyse various models in Machine learning.

CO4: Illustrate the Text Mining and Recommender Systems.

CO5: Elucidate the Deep and Reinforcement Learning.

13. Course Name**:** Private International Law

Course Code**: 5BAL721/ 5BBL721**

CO1: Understand the conflict of laws under various legal systems pertaining to jurisdiction, marriage, divorce, adoption, maintenance, property.

CO2: Understand torts and contracts laws.

CO3: Understand the enforcement of foreign judgments and arbitral award

14. Course Name**: Public International Law**

Course Code**: 5BAL603/ 5BBL603**

On successful completion of the course, students will be able to do the following.

CO1: Comprehend how the global legal system works

CO2: Understand the principal treaties and case law within international law and to consider the context at hand and apply it in factual situations.

CO3: Identify the rights and obligations of States, International Organisations, NGOs, and individuals as subjects of International Law.

15. Course Name**: Forensic Psychology**

Course Code**: 7PSYC6161**

On successful completion of the course, students will be able to do the following.

CO1: To describe the contribution of psychology at different levels of the criminal justice system.

CO2: To understand the relationship between human psychology, crime, and the justice system.

CO3: To demonstrate an understanding of theories, research findings, and methods of investigation used in forensic psychology.

CO4: To differentiate the various perspectives of understanding criminal behavior.

CO5: To critically evaluate the interpretation of research and applications of forensic psychology in media, society, and practice.

16. Course Name: **Python for Data Science**

Course Code: **4CSPL3011**

On successful completion of the course, students will be able to do the following.

CO1: Analyze data science applications.

CO2: Apply data collection and wrangling techniques.

CO3: Analyze how to manipulate the uncharted datasets using Numpy.

CO4: Analyze how to manipulate the uncharted datasets using Pandas.

CO5: Apply visualization techniques and show how it has relevance to solve common global problems.

At CMRU, the curricula developed and implemented have relevance to the local, national, regional and global developmental needs, and they are broadly reflected in the Programme Outcomes (POs) of different programmes. In the following paragraphs, we have shown some of the PO samples, vision and mission of CMRU, where the reflection of the above points can be observed.

Vision of CMRU:

To nurture creative thinkers and doers who will drive positive global change.

Mission of CMRU:

1. To offer multi, inter and cross-disciplinary modular programmes with technology-enabled teaching-learning processes.
2. To focus on research-led teaching and learning in an innovative and interdisciplinary learning environment; to create critical thinkers.
3. To create leaders for a knowledge based economy, with ethical demands of a society base.

Sample POs:

Programme Outcomes (POs) of B. Tech. CSE

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and Computer Science and engineering to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex problems in Computer Science and Engineering reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design computer based solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern Engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the Engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.