RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Programme Specifications

Bachelor of Science (Hons.) in Computational Social Sciences

Programme Code: 445

Batch 2025 Onwards

Department of Sociology
School of Social Sciences
M.S. Ramaiah University of Applied Sciences
University House, New BEL Road, MSR Nagar, Bangalore - 560054

Ramanath K.V.
Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Director
School of Social Sciences & School of Law
M S Ramaiah University of Applied Sciences
Bengaluru – 560054

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

University's Vision, Mission and Objectives

The M. S. Ramaiah University of Applied Sciences (MSRUAS) will focus on student-centric professional education and motivates its staff and students to contribute significantly to the growth of technology, science, economy and society through their imaginative, creative and innovative pursuits. Hence, the University has articulated the following vision and objectives.

Vision

MSRUAS aspires to be the premier university of choice in Asia for student centric professional education and services with a strong focus on applied research whilst maintaining the highest academic and ethical standards in a creative and innovative environment

Mission

Our purpose is the creation and dissemination of knowledge. We are committed to creativity, innovation and excellence in our teaching and research. We value integrity, quality and teamwork in all our endeavors. We inspire critical thinking, personal development and a passion for lifelong learning. We serve the technical, scientific and economic needs of our Society.

Objectives

1. To disseminate knowledge and skills through instructions, teaching, training, seminars, workshops and symposia in Arts, Humanities and Social Sciences, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences to equip students and scholars to meet the needs of industries, business and society
2. To generate knowledge through research in Arts, Humanities and Social Sciences, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences to meet the challenges that arise in industry, business and society
3. To promote systematic understanding of the social life, develop analytical thinking and solving issues, and Social Wellbeing
4. To provide logical and rational solutions to real life problems posed by individuals and groups in organizations, associations, institutions in society as well as to understand the industry and business in Engineering and Technology, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences, Arts, Humanities and Social Sciences
5. To instill the spirit of enquiry in our youth to promote reasoning to decide upon an extensive career opportunities in various field in society
6. To identify and nurture leadership skills in students and help in the development of our future leaders to enrich the society we live in.

Dean-Academics
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

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School of Social Sciences
M.S. Ramaiah University of Applied Sciences
Bangalore-54

Director
School of Social Sciences & School of Law
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7. To develop partnership with universities, industries, businesses, research establishments, NGOs, international organizations, governmental organizations in India and abroad to enrich the experiences of faculties and students through research and developmental programmes

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Faculty	School of Social Sciences
Department	Sociology
Programme Code	445
Programme Name	B.Sc. (Hons.) Computational Social Sciences
Director of the Faculty	Sri Gurucharan Gollerkeri
Head of the Department	Dr. Sakshi Shukla
Coordinator of the Programme	Dr. Sakshi Shukla
Total Course Credit	160

1. **Title of the Award:** B.Sc. (Hons.) in Computational Social Sciences
2. **Mode of Study:** Full-Time
3. **Awarding Institution /Body:** M. S. Ramaiah University of Applied Sciences, Bengaluru
4. **Joint Award:** Not Applicable
5. **Teaching Institution:** School of Social Sciences, M. S. Ramaiah University of Applied Sciences, Bengaluru
6. **Date of Programme Specifications:** July 2024
7. **Date of Programme Approval by the Academic Council of MSRUAS:**
8. **Next Review Date:**
9. **Programme Approving Regulating Body and Date of Approval:**
10. **Programme Accredited Body and Date of Accreditation:**
11. **Grade Awarded by the Accreditation Body:**
12. **Programme Accreditation Validity:**
13. **Programme Benchmark:**
14. **Rationale for the Programme:** The Bachelor of Science (B.Sc.) Honors in Computational Social Sciences program is designed to address the growing need for individuals who can bridge the gap between traditional social sciences and the ever-expanding world of data-driven analysis and technology. This program is a response to the evolving landscape of social research and problem-solving, which increasingly relies on computational

Ramanath K.V.
Dean / Academics
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

Director
School of Social Sciences & School of La...
M S Ramaiah University of Applied Scien...
Bengaluru – 560054

methods, data analysis, and interdisciplinary approaches. In today's data-driven society, technology and data analytics have become integral to understanding social phenomena. The B.Sc. in Computational Social Sciences program recognizes the importance of equipping students with the skills to collect, analyze, and interpret data in the context of societal issues.

Many contemporary societal challenges are complex and interconnected, requiring interdisciplinary solutions. This program fosters a multidisciplinary approach by combining elements of computer science, mathematics, social sciences, and data analysis to address real-world problems effectively. There is a growing demand for professionals who can apply computational techniques to sociological questions in various sectors. Graduates of this program will be well-prepared to work in government agencies, research organizations, non-profits, private industry, and other sectors where data-driven insights are crucial. Computational methods allow for the analysis of large datasets, enabling researchers to gain deeper insights into social phenomena. This program empowers students with the tools and methodologies to conduct rigorous social research, contributing to advancements in the field.

The B.Sc. (Hons.) in Computational Social Sciences program places a strong emphasis on critical thinking and problem-solving. Students will learn to approach complex social issues analytically and develop data-driven solutions. The curriculum is designed to provide practical skills that are directly applicable to real-world scenarios. Students will gain hands-on experience with data analysis tools, programming languages, and computational techniques, preparing them for a seamless transition into the workforce. The program offers internship opportunities, both domestically and internationally, to allow students to apply their skills in real-world settings. This practical experience will enhance their understanding of how computational methods can address social challenges.

The B.Sc. (Hons.) in Computational Social Sciences program is designed to meet the evolving needs of society by equipping students with the skills and knowledge required to address complex social issues using cutting-edge computational tools and interdisciplinary approaches. This program is aimed at producing graduates who are not only well-versed in social sciences but also proficient in harnessing the power of data and technology to drive positive societal change.

15. Programme Mission

The mission of the B.Sc. (Hons.) in Computational Social Sciences program is to cultivate a cadre of adept professionals who possess a distinctive amalgamation of computational acumen and social science acuity. Our overarching objective is to equip graduates with the requisite skills to thrive across a spectrum of career trajectories while upholding rigorous ethical standards, catalyzing innovation, and effecting meaningful societal transformations.

16. Graduate Attributes (GAs)

GA-1. Computational Proficiency: Graduates will demonstrate a deep understanding of computational tools and techniques, enabling them to apply these skills effectively in analyzing complex social phenomena and addressing real-world societal challenges.

GA-2. Data-Driven Problem Analysis: Graduates will possess the capability to rigorously analyze diverse societal issues through the lens of data science and computational methodologies, enabling them to uncover valuable insights and make informed sociological interpretations.

GA-3. Research Design and Sociotechnical Solutions: Graduates will be equipped to design and execute research methodologies that incorporate sociotechnical considerations, allowing them to identify and develop innovative solutions aligned with societal, economic, political, cultural, and

Dean - Academics
M.S. Ramaiah University of Applied Sciences
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Head
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Director
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M S Ramaiah University of Applied Sciences
Bengaluru - 560054

environmental factors, while maintaining objectivity in their assessments.

GA-4. Complex Problem Investigations: Graduates will have the ability to delve into intricate sociological and societal problems, conducting in-depth exploratory studies and investigations that lead to well-informed solutions and actionable recommendations.

GA-5. Advanced Technology Utilization: Graduates will proficiently employ modern tools and technologies, including data visualization, information and communication technology (ICT), to tackle complex public policy challenges and address sociotechnical issues effectively.

GA-6. Technology and Societal Impact: Graduates will comprehend the multifaceted impact of technological solutions on legal, cultural, social, political, and public health aspects, allowing them to assess and navigate the sociotechnical landscape responsibly.

GA-7. Environmental Sustainability: Graduates will be equipped to develop sustainable solutions that consider the societal and environmental implications, promoting responsible practices that contribute to long-term societal well-being and ecological preservation.

GA-8. Ethical Considerations: Graduates will apply ethical principles rigorously throughout the entire lifecycle of computational social sciences research, investigations, and professional engagements, ensuring ethical conduct and social responsibility.

GA-9. Collaboration and Leadership: Graduates will possess the capacity to collaborate effectively within interdisciplinary teams, integrating knowledge from various domains, and demonstrate leadership skills when required, fostering innovation in multidisciplinary settings.

GA-10. Effective Communication: Graduates will excel in conveying complex technical ideas to diverse audiences through both written and oral means, facilitating effective knowledge dissemination and societal engagement.

GA-11. Project Management and Financial Acumen: Graduates will exhibit proficiency in leading and managing multidisciplinary teams while applying public policy concepts and theories to ensure the successful execution of sociotechnical projects.

GA-12. Lifelong Learning and Adaptation: Graduates will demonstrate a commitment to lifelong learning, continually adapting to evolving socio-technological advancements and engaging in independent learning to remain at the forefront of their field.

17. Programme Outcomes (POs)

B.Sc. (Hons.) in Computational Social Sciences will be able to:

PO-1. Apply Multidisciplinary Knowledge: Graduates will have the ability to apply a diverse range of knowledge, including computational, social sciences, data sciences, and technological expertise, to address intricate societal challenges and devise innovative solutions.

PO-2. Critical Thinking and Problem Identification: Graduates will demonstrate keen critical thinking skills, allowing them to analyze complex sociotechnical situations, identify problems, and envision holistic approaches to solving these issues. They will also excel in comprehending scientific texts, contextualizing statements, and evaluating them within the framework of disciplinary.

Head
Department of Sociology
School of Social Sciences

Dean
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Director
School of Social Sciences & School of Law
M S Ramaiah University of Applied Sciences
Bangaluru – 560054

conventions.

PO-3. Effective Communication: Graduates will effectively communicate their ideas, opinions, and complex concepts, both in written and oral forms, within group settings. They will possess the ability to articulate thoughts and concepts clearly and concisely, employing appropriate media and interactive skills to engage with a global audience effectively.

PO-4. Research and Inquiry Skills: Graduates will exhibit a strong aptitude for scientific inquiry, demonstrating the ability to formulate, test, analyze, interpret, and establish hypotheses and research questions. They will proficiently identify and consult pertinent sources to seek answers and enhance their understanding.

PO-5. Innovation and trans-disciplinary thinking: Graduates will be capable of generating novel conceptual, theoretical, and methodological innovations that transcend disciplinary boundaries to address complex sociotechnical problems, fostering interdisciplinary collaboration.

PO-6. Collaborative and Ethical Engagement: Graduates will adeptly work both independently and collaboratively within interdisciplinary teams to achieve defined objectives. They will excel in interpersonal relationships, exhibit self-motivation, adaptability, and unwavering commitment to professional ethics.

PO-7. Social Responsibility and Ethical Awareness: Graduates will demonstrate a strong sense of social concern and an unwavering commitment to equity-centered national development. They will act with informed awareness of moral and ethical issues, adhering to professional ethics and taking responsibility for their actions.

PO-8. Societal and Environmental Impact Assessment: Graduates will be proficient in evaluating the societal and environmental ramifications of scientific solutions, emphasizing sustainable development principles and contributing to the broader context of socio-technological advancements.

PO-9. Lifelong Learning Orientation: Graduates will exhibit an enduring commitment to lifelong learning, passionately pursuing self-determined goals within the ever-evolving landscape of socio-technological changes, remaining adaptable and responsive to emerging challenges and opportunities.

18. Programme Goal

The B.Sc. (Hons.) Computational Social Sciences program aims to equip students with advanced computational and social science knowledge, fostering their development into critical and analytical thinkers capable of addressing complex societal challenges through innovative technological and sociological solutions. This program seeks to provide students with a comprehensive understanding of computational concepts, sociotechnical mechanisms, and data-driven methodologies, enabling them to explore and analyze social processes, institutions, and relationships effectively. The overarching goal is to produce graduates with exceptional critical, analytical, and problem-solving skills, empowering them to think independently and pursue rewarding careers in the dynamic field of computing and social sciences.

19. Programme Educational Objectives (PEOs)

The objectives of the B.Sc. (Hons.) in Computational Social Sciences Program, the undergraduate will be able to:

Dean-Academics
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Head
Department of Sociology
School of Social Sciences
M.S. Ramaiah University of Applied Sciences
Bengaluru

Director
School of Social Sciences & School
M S Ramaiah University of Applied Sciences
Bengaluru – 560054

PEO-1. Foster a Community of Informed Scholar actively contributing to a community of informed practitioners dedicated to academic excellence, continuously expanding their knowledge base and refining their skills to enhance their professional competence in the rapidly evolving field of computational social sciences.

PEO-2. Cultivate a Culture of Innovation and Research to pursue innovation and research endeavors, nurturing an ethos of independent and critical thinking by developing a keen sensitivity to societal needs, enabling them to address complex sociotechnical challenges through cutting-edge solutions.

PEO-3. Inculcate strong human values and cultivate essential social, interpersonal, and leadership skills necessary for professional success in today's dynamic global professional environments. They will not only excel in their technical expertise but also demonstrate ethical and responsible conduct in their sociotechnical engagements.

20. Programme Specific Outcomes (PSOs)

At the end of the Bachelor of Sciences (Hons.), the undergraduate will be able to:

PSO-1. Apply Computational and Sociological Expertise: Graduates will effectively apply computational and sociological knowledge to address real-world sociotechnical challenges.

PSO-2. Critical Analysis and Communication: Graduates will excel in critical analysis and communication, conveying complex sociotechnical concepts clearly within interdisciplinary contexts.

PSO-3. Lifelong Learning and Leadership: Graduates will demonstrate a commitment to lifelong learning, developing leadership qualities to contribute to organizations, environmental sustainability, and societal progress in the field of computational social sciences.

Programme Specifications: B. Sc. in Computational Social Sciences.

21. Programme Structure:

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Semester 1						
Sl. No.	**Course Code (10 digit)**	**Course Title**	**Theory (h/W/S)**	**Tutorials (h/W/S)**	**Total Credits**	**Max. Marks**
1	**SSF101A**	Introduction to Maths (CFC1)	3	1	4	100
2	**SSF102A**	Introduction to Statistics (CFC2)	3	1	4	100
3	**SCC101A**	Introduction to Computational Social Sciences (CC1)	3	1	4	100
4	**SCC102A**	Programming in R (CC2)	3	1	4	100
5	**SCB103A**	Intersectionality between Computational Sciences and Social Science: Introductory	1	1	2	100

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		Lectures (FC1)				
6	**TSM101A**	English for Communication I (AECC1)	t	1	2	100
		Total	14	6	20	600
Total number of contact hours per week – 20						

Semester 2						
Sl. No.	**Course Code (10 digit)**	**Course Title**	**Theory (h/W/S)**	**Tutorials (h/W/S)**	**Total Credits**	**Max. Marks**
1	**SSF103A**	Introduction to Computer Sciences (CFC3)	3	1	4	100
2	**SSF104A**	Introduction to Data Sciences (CFC4)	3	1	4	100
3	**SCC103A**	Research Methodology in Social Sciences (CC3)	3	1	4	100
4	**SCB101A**	Introduction to Sociology (FC 2)	2	1	3	100
5	**SCC105A**	Python for Social Sciences (CC4)	3	1	4	100
6	**SCM101A**	Computer-Assisted Qualitative Data Analysis (CAQDAS1) (SECC1)	1	1	2	100
		Total	**15**	6	**21**	**600**
		Total number of contact hours per week	**21**			

Semester 3						
Sl. No.	**Course Code (10 digit)**	**Course Title**	**Theory (h/W/S)**	**Tutorials (h/W/S)**	**Total Credits**	**Max. Marks**
1	**SCC201A**	Graph Theory for Social Networks (CC5)	3	1	4	100
2	**SCC202A**	Science, Technology and Society (CC6)	3	1	4	100
3	**SCB201A**	Introduction to Public Policy (FC3)	2	1	3	100
4	**SCB202A**	Introduction to Economics (FC4)	2	1	3	100
5		Open Elective (OE1)	2	1	3	100
6	**TSM102A**	English for Communication II (AECC2)	1	1	2	100
Total			**13**	6	19	600
Total number of contact hours per week			**19**			

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Head
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Semester 4						
Sl. No.	Course Code (10 digit)	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Total Credits	Max Marks
1	SCC203A	Gender and Society (CC7)	3	1	4	100
2	SCC204A	Social and Cultural Anthropology (CC8)	3	1	4	100
3	SCD201A	Social Computing and Data Mining* (DSE1)	3*	1*	4*	100*
4	SCD202A	Community Dynamics: Decision-Making & Conflict Resolution* (DSE2)	3*	1*	4*	100*
5	SCD203A	Decision Making in Social and Information Sciences * (DSE3)	3*	1*	4*	100*
6	SCM201A	Computer-Assisted Quantitative Data Analysis (CAQDAS2)- (SECC2)	1	1	2	100
7		Open Elective (OE2)	2	1	3	100
Total			**15**	**6**	**21**	**600**
Total number of contact hours per week			**21**			

***Students to opt any TWO out of Discipline Specific Electives streams from DSE1, DSE2 and DSE3**

Semester 5						
Sl. No.	Course Code (10 digit)	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Total Credits	Max. Marks
1	SCC301A	Introduction to Artificial Intelligence and Machine Learning (CC9)	3	1	4	100
2	SCC302A	Database Management Concepts and applications (CC10)	3	1	4	100
3	SCC303A	Identity and Sexuality in Digital Era (CC11)	3	1	4	100
4	SCD301A	Governance: Digital and Computing*(DSE4)	3*	1*	4*	100*
5	SCD302A	Diversity and Inclusion in Social Sciences *(DSE5)	3*	1*	4*	100*
6	SCD303A	Human Centred Systems (DSE6)*	3*	1*	4*	100*
7		Open Elective (OE3)	2	1	3	
Total			**17**	6	**23**	**600**
Total number of contact hours per week			**23**			

***Students to opt any Two out of Discipline Specific Elective streams from DSE4, DSE5 and DSE6.**

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Department of Sociology
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Dean-Academics
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

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M S Ramaiah University of Applied Sciences
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Choose Track 1 or Track 2 from Semester 6

Semester 6 (Track 1) – Computational Sociology						
Sl. No.	**Course Code 2 (10 digit)**	**Course Title**	**Theor y (H/W/S)**	**Tutorials (H/W/S)**	**Total Credits**	**Max. Marks**
1	**SCC304A**	Sociology of Health and Well-Being (CC12)	4	1	5	100
2	**SCC305A**	Mobility and Migration (CC13)	4	1	5	100
3	**SCC306A**	Culture Modelling I (CC14)	3	1	4	100
4	**SCC307A**	Policy craft: Navigating the Nexus of Law and Governance (CC15)	4	1	5	100
5	**SCI301A**	Summer Internship (Mandatory)			3	100
		Total	**15**	**4**	**22**	**500**
Total number of contact hours per week			**22**			

Semester 7 (Track 1)- Computational Sociology						
Sl. No.	**Course Code 2 (10 digit)**	**Course Title**	**Theory (H/W/S)**	**Tutorials (H/W/S)**	**Total Credits**	**Max. Marks**
1	**SCC401A**	Computational Explorations in Health and Well-Being (CC16)	4	1	5	100
2	**SCC402A**	Computational Explorations in Mobility and Migration in India (CC17)	4	1	5	100
3	**SCC403A**	Culture Modelling II (CC18)	3	1	4	100
4	**SCC404A**	Social Implications of Computing Technology (CC19)	4	1	5	100
		Open Elective (OE4)	2	1	3	100
Total			**17**	**5**	**22**	**500**
Total number of contact hours per week			**22**			

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School of Social Sciences
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Track 2: Computational Economics

Semester 6 (Track 2)- Computational Economics						
Sl. No.	**Course Code (10 digit)**	**Course Title**	**Theory (h/W/S)**	**Tutorials/Practical (h/W/S)**	**Total Credits**	**Max. Marks**
1	**SCC308A**	Advanced Microeconomics (CC12)	4	1	5	100
2	**SCC309A**	Political Economy of Development- Skills, Livelihood and Entrepreneurship I (CC13)	4	1	5	100
3	**SCC310A**	Applied Econometrics I (CC14)	3	1	4	100
4	**SCC307A**	Policy craft: Navigating the Nexus of Law and Governance (CC15)	4	1	5	100
5	**SCI301A**	Summer Internship (Mandatory)			3	100
		Total	**15**	**4**	**22**	**500**
		Total number of contact hours per week	**22**			

Semester 7 (Track 2)- Computational Economics						
Sl. No.	**Course Code (10 digit)**	**Course Title**	**Theory (h/W/S)**	**Tutorials (h/W/S)**	**Total Credits**	**Max. Marks**
1	**SCC405A**	Advanced Macro Economics (CC16)	4	1	5	100
2	**SCC406A**	Political Economy of Development- Skills, Livelihood and Entrepreneurship II (CC17)	4	1	5	100
3	**SCC407A**	Applied Econometrics II (CC18)	3	1	4	100
4	**SCC408A**	International Monetary Economics (CC19)	4	1	5	100
		Open Elective (OE4)	2	1	3	100
		Total	**17**	**5**	**22**	**500**
		Total number of contact hours per week	**22**			

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Department of Sociology
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Both Track 1 & Track 2

Semester 8				
Sl. No.	**Course Code 2 (10-digit)**	**Course Title**	**Total Credits**	**Max. Marks**
1	**SCP401A**	Capstone Project/Dissertation	12	100
Total			**12**	**100**
Total number of contact hours per week				

22. Open Elective Courses

A number of Open Elective Courses from Faculties of engineering, management and commerce, art and design, hospitality management and catering technology, pharmacy, dental sciences are offered as mentioned in the University's website. Students can choose the Open Electives of their own choice.

23. Course Delivery: As per the Timetable

24. Teaching and Learning Methods

- Face to Face Lectures using Audio-Visuals
- Workshops, Group Discussions, Debates, Presentations
- Demonstrations
- Guest Lectures
- Field work/Workshop
- Industry Visit
- Seminars
- Group Exercises
- Projects

25. Assessment and Grading

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25.1. Components of Grading

There shall be **two components** of grading in the assessment of each course:

Component 1, Continuous Evaluation (CE): This component involves multiple subcomponents (SC1, SC2, etc.) of learning assessment. The assessment of the subcomponents of CE is conducted during the semester at regular intervals. This subcomponent represents the formative assessment of students' learning.

Component 2, Semester-end Examination (SEE): This component represents the

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru-54

Director
School of Social Sciences & School of LSW
M.S. Ramaiah University of Applied Sciences
Bengaluru – 560054

summative assessment carried out in the form an examination conducted at the end of the semester.

Marks obtained CE and SEE components have a weightage of 60:40 (CE: 60% and SEE: 40%) in determining the final marks obtained by a student in a Course.

The complete details of Grading are given in the Academic Regulations.

25.2. Continuous Evaluation Policies

Continuous evaluation depends on the type of the course as discussed below:

25.3. Theory Courses

For Theory Courses Only			
Focus of COs on each Component or Subcomponent of Evaluation			
	Component 1: CE (60% Weightage)		**Component 2: SEE (40% Weightage)**
Subcomponent Type ▶	**Mid Term**	**Assignments**	
CO-1			
CO-2			
CO-3			
CO-4			
CO-5			
CO-6			
The details of number of tests and assignments to be conducted are presented in the Academic Regulations and Programme Specifications Document.			

- CE components should have a mix of term tests, quiz and assignments
- Two Tests (15 each), Two Assignments (20 marks). (One written and another to be MCQs)
- Course leaders to declare the assessment components before the commencement of the session and get approval from HoD and Dean
- Exam Duration 2 Hours.

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Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Director
School of Social Sciences & School of Law
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25.3.1 Course Having a Combination of Theory and Laboratory

For a course that contains the combination of theory and laboratory sessions, the scheme for determining the CE marks is as under:

For Combined Courses (Theory + Laboratory)					
Focus of COs on each Component or Subcomponent of Evaluation					
Course Outcome	**CE (Weightage: 60 %) Four components including one Lab component**			**SEE (Weightage: 25 %)**	**Lab (Weightage: 15 %)**
	Tests (30 %)	**Written Assignments+ Lab (20 %)**	**Assignment +Lab CE (10%)**	**Written exam**	**LSE E: SEE**
CO-1					
CO-2					
CO-3					
CO-4					
CO-5					
CO-6					
The details of number of tests and assignments to be conducted are presented in the Academic Regulations and Programme Specifications Document.					

- CE components should have a mix of term tests, quiz and assignments
- In case of courses where laboratory is combined with theory, laboratory components to be assessed in both CE and SEE
- Course leaders to declare the assessment components before the commencement of the session and get approval from HoD and Dean

26. Student Support for Learning

- Course Notes
- Reference Books in the Library
- Magazines and Journals
- Internet Facility
- Computing Facility
- Laboratory Facility
- Workshop Facility
- Staff Support
- Lounges for Discussions
- Any other support that enhances their learning

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27. Quality Control Measures

- Review of Course Notes
- Review of Question Papers and Assignment Questions
- Student Feedback
- Moderation of Assessed Work
- Opportunities for students to see their assessed work
- Review by external examiners and external examiners reports
- Staff Student Consultative Committee meetings
- Student exit feedback
- Subject Assessment Board (SAB)
- Programme Assessment Board (PAB)

28. Programme Map (Course-PO-PSO Map)

Semester	Course Title	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PSO-1	PSO-2	PSO-3
1	Compulsory Foundation Course 1 (CFC 1)		2							1	1	1	1
1	Compulsory Foundation Course 1 (CFC 2)		2							1	1	1	1
1	Introduction to Computational Social Sciences (CC1)	2				2					2	1	3
1	Programming in R (CC2)		3							2	2	3	1
1	Intersectionality between Computational Sciences and Social Science: Introductory Lectures (FC1)		2	1			2	2			1	2	2
1	Ability Enhancement Course 1		2	2				3		1	1	3	1
2	Compulsory Foundation Course 3 (CFC 3)		3			2				1	2	2	1
2	Compulsory Foundation Course 4 (CFC 4)		1			1				1	2	2	1
2	Research Methodology in Social Sciences (CC3)	3	3		3	2		1			3	2	1
2	Introduction to Sociology (FC 2)						2	2	2		2	3	2
2	Python for Social Sciences (CC4)		1				3	2	1		1	2	1
2	Computer-Assisted Qualitative Data Analysis (CAQDAS1) (SECC1)	2			3	1					2	2	1
3	Graph Theory for Social Networks (CC5)	3	2		2	3					3	2	1
3	Science, Technology and Society (CC6)	3	2		2	3					3	2	1
3	Introduction to Public Policy (FC3)	3		2					1	3	2	3	2
3	Introduction to Economics (FC4)		2	1			2	2			1	2	2

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3	Open Elective (OE1)	3	2		2	3					3	2	1
3	English for Communication II (AECC2)	2	1				3	2	2		1	1	1
4	Gender and Society (CC7)		2	1	1	2	2	3	2		2	2	2
4	Social and Cultural Anthropology (CC8)	3	2		2	3					3	2	1
4	Social Computing and Data Mining* (DSE1)	1	2			2	2	2	1		2	1	1
4	Community Dynamics: Decision-Making & Conflict Resolution* (DSE2)	3	2		2	1	3	3			1	2	1
4	Decision Making in Social and Information Sciences * (DSE3)		3		3	2				2	2	2	2
4	Computer-Assisted Quantitative Data Analysis (CAQDAS2)- (SECC2)	2			1	2			3		2	1	3
4	Open Elective (OE2)	2				1					2	1	
5	Introduction to Artificial Intelligence and Machine Learning (CC9)	2	1		1	2	3	2			2	1	1
5	Database Management Concepts and applications (CC10)		2		1	1					2	2	1
5	Identity and Sexuality in Digital Era (CC11)	1	2	2			2	2		1	2	2	1
5	Governance: Digital and Computing*(DSE4)	2	2		2	2	2	2			2	2	1
5	Diversity and Inclusion in Social Sciences *(DSE5)	1	2	3		2	1	2			3	1	2
5	Human Centred Systems (DSE6)*		2	1	1	2	2	3	2		2		
5.	Open Elective (OE3)	2				1						2	1
Track 1: 6	Sociology of Health and Well-Being (CC12)			2	1		1	2	1			1	1
Track 1: 6	Mobility and Migration (CC13)		1				2	2	3		1	1	
Track 1: 6	Culture Modelling I (CC14)	3	2	1	2			1		1	3	2	1
Track 1: 6	Policy craft: Navigating the Nexus of Law and Governance (CC15)	3		1		2	2	2		1		1	1
Track 1: 6	Summer Internship (Mandatory)												
Track 1: 7	Computational Explorations in Health and Well-Being (CC16)	2		2	1	2	1	2	1			1	1
Track 1: 7	Computational Explorations in Mobility and Migration in India (CC17)	2	1			2	2	2	3		1	1	
Track 1: 7	Culture Modelling II (CC18)	3	2	1	2			1		1	3	2	1
Track 1: 7	Social Implications of Computing Technology (CC19)												
Track 1: 7	Open Elective (OE4)	2	3		1	2	2	2			2	2	
Track 2: 6	Advanced Micro Economics (CC23)		3	1			2				3	2	1

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Track 2: 6	Political Economy of Development-Skills, Livelihood and Entrepreneurship I (CC24)	2	1			2	1	2		1	1		1
Track 2: 6	Applied Econometrics I (CC14)		3	2			1				3	2	1
Track 2: 6	Policy craft: Navigating the Nexus of Law and Governance (CC15)	2	3		1						2	3	1
Track 2: 6	Summer Internship (Mandatory)												
Track 2: 7	Advanced Macro Economics (CC16)		3	1			2				3	2	1
Track 2: 7	Political Economy of Development-Skills, Livelihood and Entrepreneurship II (CC17)		3	2			1				3	2	1
Track 2: 7	Applied Econometrics II (CC18)	2	1			2	1	2		1	1		1
Track 2: 7	International Monetary Economics (CC19)		3	1			2				3	2	1
Track 2: 7	Open Elective (OE4)		2		1							1	2
8	Capstone Project/Dissertation	3			3	3			2		3	1	2
3: Very Strong, 2: Strong Contribution, 1: Moderate Contribution													

29. **Co-curricular Activities:** Students are encouraged to take part in co-curricular activities like seminars, conferences, symposia, paper writing, attending industry exhibitions, project competitions and related activities for enhancing their knowledge and networking.

30. **Cultural and Literary Activities:** Annual cultural festivals are held to showcase the creative talents in students. They are involved in planning and organizing the activities.

31. **Sports and Athletics:** Students are encouraged to take part in sports and athletic events regularly. Annual sports meet will be held to demonstrate sportsmanship and competitive spirit.

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Course Specifications

Bachelor of Science (Hons.) in Computational Social Sciences

Programme Code: 445

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Semester 1

Course Specifications, B.Sc. (Hons.) in Computational Social Sciences

Introduction to Mathematics

Course Title	Introduction to Mathematics
Course Code	SSF101A
Course Type	CFC1
Department	Data Sciences and Analytics
Faculty	School of Social Sciences

1. *Course Summary*

This course provides a comprehensive introduction to fundamental mathematical concepts and techniques essential for building a strong mathematical foundation. Students will explore topics such as logic, set theory, matrices, calculus, and permutations. The course aims to develop problem-solving skills, critical thinking, and mathematical reasoning.

2. *Course Size and Credits:*

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	3:1:0
Number of Weeks in a Semester	15
Department Responsible	Data Sciences and Analytics
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. *Course Outcomes (COs)*

After the successful completion of this course, the student will be able to:

CO-1. demonstrate the ability to apply propositional and predicate logic to analyze and solve complex problems, making sound, logically sound arguments.
CO-2. employ set theory concepts, operations, and principles to model and solve real-world problems
CO-3. apply mathematical principles to analyze and model dynamic systems

4. *Course Contents*

Unit 1. Logic:
Propositions and truth values; Tautologies and Contradictions; Deduction and Induction; Different proof techniques.

Unit 2. Set Theory:
Definition of a set and discussion of related concepts; Set types; Complement of a set; Operations on sets; Nested sets; Cartesian product; Concept of Euclidean Space.

Unit 3. Relations and Functions:
Definitions; Concepts of 'range', 'domain' and 'mapping'; Relations; Types of

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Relations; Explicit and implicit functions; Types of functions - polynomial, exponential, logarithmic, power etc.

Unit 4. Matrices and Determinants:
Concept of a matrix; Types of matrices; Operations on matrices; Transpose of a matrix; Symmetric and skew-symmetric matrices; Concept of Determinants; Adjoint and inverse of a matrix; Cramer's rule

Unit 5. Introduction to Differential Calculus:
Discussion of concepts of limits and continuity, derivative, partial derivative, total differential and integral; Derivative of basic functions; Chain rule; Applications of differential and integral calculus to the study of functions: slope and curvature of functions, distinction between concave and convex functions; maxima and minima.

Unit 6. Permutations and Combinations:
Introduction to factorial notation; Permutations and Combinations : Concepts and Applications.

5. *References*

1. Mathematics NCERT Class XI & XII
2. Harcourt Mathematics 11: Functions/Relations
3. Calculus, H. Anton, I. Birens, S. Davis. John Wiley and Sons Inc., 2002
4. Schaum's Outline of Calculus, F. Ayres, E. Mendelson
5. An Introduction to Determinants and Matrices, Frank Bowman
6. Discrete Mathematics : An Open Introduction, Oscar Levin

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Introduction to Statistics

Course Title	Introduction to Statistics
Course Code	SSF102A
Course Type	CFC2
Department	Data Sciences and Analytics
Faculty	School of Social Sciences

1. *Course Summary*

This course offers a comprehensive introduction to the fundamental principles and techniques of statistics. Students will learn about the collection, organization, and presentation of data, frequency distributions, and measures of central tendency, measures of dispersion, and the basics of probability. The course is designed to equip students with essential statistical knowledge and skills, which are applicable in various fields, including business, social sciences, and natural sciences.

2. *Course Size and Credits:*

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	3:1:0
Number of Weeks in a Semester	15
Department Responsible	Data Sciences and Analytics
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. *Course Outcomes (COs)*

After the successful completion of this course, the student will be able to:

CO-1. develop the skills to create and analyze data of different types.
CO-2. demonstrate a strong understanding of statistical measures.
CO-3. grasp the fundamental principles of probability which will be helpful in developing complex predictive and classification models on various forms of data.

4. *Course Contents*

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1. Introduction
Statistics as a Subject; Importance, Limitations and Misuse of Statistics ; Descriptive and Inferential Statistics; Qualitative and Quantitative data ; Types of variables - ordinal/nominal/ratio/interval; Descriptive vs. Inferential Statistics.

2. Collection, Organisation and Presentation of Data:
Primary and Secondary Data ; Methods of Collection ; Scrutiny of Data ; Presentation of Data: Textual and Tabular Presentations; Diagrammatic Representation of Data: Line

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Diagrams, Ratio Chart, Bar Diagrams, Pie Charts and Divided-Bar Diagrams.

3. **Frequency Distributions:**
Variables and Attributes; Frequency Distribution of An Attribute ; Discrete and Continuous Variables; Frequency Distributions of Discrete and Continuous Variables ; Diagrammatic Representation of a Frequency Distribution: Case of An Attribute, Case of a Discrete Variable: Column Diagram, Frequency Polygon and Step Diagram, Case of a Continuous Variable: Histogram and Ogive, Frequency Polygon.

4. **Measures of Central Tendency:**
Definition and Utility ; Characteristics of Average ; Different Measures of Average : Arithmetic Mean, Median, Mode ; Partitioned Values: Quartile, Percentile and Deciles ; Geometric and Harmonic Mean ; Choice of a Suitable Measure of Central Tendency.

5. **Measures of Dispersion:**
Meaning and Objective of Dispersion ; Characteristics of a Good Measure of dispersion ; Different measures of dispersion – Range, Quartile deviation, Mean deviation, Mean Absolute Deviation, Standard Deviation ; Comparison of the Different Measures of Dispersion ; Measures of Relative Dispersion: Coefficient of Variation ; Moments ; Skewness ; Kurtosis.

6. **Basics of Probability**
Probability as a Concept ; Some Important Terminology (random experiment, sample space, etc.) ; Mutually Exclusive Events and Independent Events ; Basic Probability Rules ; Addition and Multiplication Theorem of Probability ; Applications ; Conditional Probability: Basic formula and Applications ; Bayes' Theorem : Statement, Applications.

References

- Fundamentals of Mathematics and Statistics, SC Gupta and VK Kapoor
- An Introduction to Probability and Statistics, VK Rohatgi and E Saleh
- Applied General Statistics, Croxton and Cowden

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Course Specifications, B.Sc. (Hons.) in Computational Social Sciences

Introduction to Computational Social Sciences

Course Title	Introduction to Computational Social Sciences
Course Code	SCC101A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

This course provides a foundational introduction to the field of Computational Social Sciences (CSS). It explores how computational methods and techniques can be applied to analyze and model social phenomena. Students will learn the basics of programming, data collection and analysis, network analysis, and agent-based modeling, all within the context of social science research. Through hands-on exercises and projects, students will gain practical skills to investigate complex social systems computationally.

2. Course Size and Credits:

Number of Credits	**4**
Credit Structure (Lecture: Tutorial)	**3:1**
Number of Weeks in a Semester	**15**
Total Hours of Interaction	**60**
Total Course Marks	**100**
Pass Criterion	**As per the Academic Regulations**
Attendance Requirement	**As per the Academic Regulations**

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

1. **CO1.** Understand the fundamental concepts of Computational Social Sciences and its role in analyzing and modeling social phenomena.
2. **CO2.** Develop programming skills in a language such as Python or R for data manipulation and analysis.
3. **CO3.** Collect, clean, and preprocess social data from various sources.
4. **CO4.** Analyze and visualize social networks to study the structure and dynamics of social relationships.
5. **CO5.** Create and simulate agent-based models to understand emergent social behaviors.

4. Course Contents:

Unit 1: Introduction to Computational Social Sciences

- Overview of CSS and its interdisciplinary nature.
- Historical context and key milestones.
- Ethical considerations in CSS research.

Unit 2: Data Collection and Preprocessing

- Data sources in social sciences.
- Web scraping and APIs for data collection.

Ramyath K.V.
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- Data cleaning and preprocessing techniques.
- Data ethics and privacy concerns.
- Natural Language Processing (NLP) in Social Sciences and Machine Learning for Social Data.

Unit 3: Social Network Analysis

- Fundamentals of social networks.
- Network data representation and visualization.
- Centrality measures and community detection.
- Dynamic network analysis.

Unit 4: Agent-Based Modeling

- Introduction to agent-based modeling (ABM).
- Building, simulating, and analyzing ABMs.
- Applications of ABM in social sciences.
- Validation and calibration of ABMs.

Unit 5: Applications and Case Studies

- CSS applications in sociology, economics, and political science.
- Case studies showcasing CSS research.
- Group projects applying CSS methods to real-world problems.

Suggested Readings:

1. "Computational Social Science: Principles and Applications" by David Lazer et al.
2. "Networks, Crowds, and Markets: Reasoning About a Highly Connected World" by David Easley and Jon Kleinberg.
3. Watts, D. J., & Strogatz, S. H. (1998). "Collective dynamics of 'small-world' networks." Nature, 393(6684), 440-442.
4. Epstein, J. M. (2006). "Generative social science: Studies in agent-based computational modeling." Princeton University Press.
5. Gonzalez-Bailon, S., Borge-Holthoefer, J., Rivero, A., & Moreno, Y. (2011). "The dynamics of protest recruitment through an online network." Scientific Reports, 1, 197.

Lazer, D., Pentland, A. S., Adamic, L., Aral, S., Barabasi, A. L., Brewer, D., ... & Van Alstyne, M. (2009). "Life in the network: the coming age of computational social science." Science, 323(5915), 721-723.

Head
Department of Sociology
School of Social Sciences
M.S. Ramaiah University of Applied Sciences

Director
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Programing in R

Course Title	**Programing in R**
Course Code	SCC102A
Course Type	Core Course
Department	Data Sciences and Analytics
Faculty	School of Social Sciences

1. *Course Summary*

The goal of the course is to give the students an introduction to programming through R and teach them how to conduct data analysis through R. After this course, the students will be familiar with basic components of programming such as loops, conditions and functions, and have a working knowledge data wrangling and visualization using the tidyverse ecosystem.

2. *Course Size and Credits:*

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	3:1:0
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	Data Sciences and Analytics
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. *Course Outcomes (COs)*

After the successful completion of this course, the student will be able to:

CO-1. Understand the fundamental syntax, variety of data formats of R through demonstrations, exercises and writing R script in R Studio
CO-2. Get familiarize with the concepts data types, data structures, iteration, control flow structures, functions, and operators by writing R programs and through examples
CO-3. Use R to read files of different formats, prepare or clean data for analysis, Learn to perform descriptive statistics in R
CO-4. Learn data visualization through ggplot2 package

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4. *Course Contents*

Unit 1: Introduction
Introduction to R studio and R, Working directories, Variables, Atomic data types, Conditions and Loops, Functions, Default arguments, Packages in R, Basics of R Markdown

Unit 2: Data Structures

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Vectors, Matrices, Lists, Data Frames, Dimensionality of data, indexing data structures, String operations using stringr package

Unit 3: Data Analysis
Tidyverse Package, Delimited files, reading and writing delimited files, Data transformation using dplyr verbs, frequency tables

Unit 4: Data Visualization in R
Scatter Plots, Box Plots, bar plot, Histograms, Use of different aesthetics and geometries in ggplot2 library, improve data visualizations using theme, scale and facets, Create reference variables using appropriate scope.

References:

1. Venables W.N., Smith D.M. et al. (2022), An Introduction to R. CRAN
2. Wickham, H. & Grolemund, G. (2018). R for Data Science. O'Reilly
3. Peng R.D. (2022), R Programming for Data Science. Leanpub

Required software

1. R: http://www.r-project.org/
2. RStudio (additional libraries required): http://www.rstudio.com/

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Intersectionality between Computational Sciences and Social Science: Introductory Lectures

Course Title	**Intersectionality between Computational Sciences and Social Science: Introductory Lectures**
Course Code	SCB103A
Course Type	Foundation Course
Department	Sociology
Faculty	School of Social Sciences

- **Course Summary**

The course introduces students to the concept of intersectionality and how it has to be applied to gain a clear understanding of the essence of the computational social sciences programme. It also creates a context for appreciating the need to keep oneself informed about the socio-historical trajectory of Indian society , the challenges that contemporary times are facing, and how data could be used to enhance the quality of human lives by adopting the intersectionality framework. The course also sets the tone for understanding the themes of courses being offered in the subsequent semesters by emphasising on problem solving through the use of data. The course pedagogy involves lectures delivered by senior scholars in different social science domains and exposure to field realities.

2. Course Size and Credits:

Number of Credits	2
Credit Structure (Lectures: Tutorials)	2:0
Number of Weeks in a Semester	15
Total Hours of Interaction	30
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, need students will be able to:

CO1: Realise the need and relevance of a multi-disciplinary approach for understanding their course objectives and content.

CO2: Understand the importance of traversing beyond quantitative data and asking critical questions about the 'why' and 'how' of numbers.

CO3: Comprehend the necessity of achieving a convergence between digital and social skills.

CO4: Gain insights into real world experiences of different social groups and develop a sensitivity to the multiple challenges facing Indian society.

4. Course Contents:

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Unit 1: Introduction to Intersectionality- Concept and Practice

- Understanding Intersectionality: Meaning, Origin and Development of the Concept
- Practical applications in analysing contemporary Socio- Economic- Political conditions and emerging transformations

Unit 2: Historical Overview of Sociological, Economic and Political Thought: Global and National Perspectives

- Growth of sociological thought: Key perspectives
- Sociology of India: Exploring the diversities of Indian society

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- Main currents in economic thought: A historical perspective
- The changing nature of economic institution in India
- A historical overview of political thought-Understanding the relation between governance, power and society
- Seeing the inter-connection between sociology, economics and politics: Appreciating the role of multi-disciplinary approaches

Unit 3: Issues India has grappled with since Independence - Sociological, Economic and Political Perspectives

- The emergence and growth of independent India: Obtaining a sociological view of the dynamics of caste, class, gender and increasing urban-ward migration of population in contemporary times
- Management of Indian economy: Transformation from a state-initiated development model to the increasing role of private players
- The changing face of Indian democracy: Emergence of multiple power centres and the role of electoral politics in the current age

Unit 4: Current Challenges facing Indian Society - Socio-Economic- Political Context

- Comprehending the real-life situations of different groups in Indian society and the existing and new challenges that these groups are facing in a changing socio-economic-political setting
- Role of public policy, civil society and the corporate sector in addressing these challenges

Unit 5: Quantitative Overlaying-Understanding the Computational Dimensions of Social Science

- The growing role of computational methods in social sciences-The Quantitative vs. the Qualitative debate
- The gap between the 'what' and 'why' of data
- Living in a data-driven world: The pros and cons of data dependency

Unit 6: Achieving an Interface between the Digital World and the Social World

- Working towards integrating the social and digital worlds
- Current global demand for building social and computational skills
-

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Suggested Readings

- Adler, Paul S, Paul du Gay, Glen Morgan & Michael Reed(2014). *The Oxford Handbook of Sociology, Social Theory, and Organization Studies*, Oxford University Press.
- Barnet, Vincent(Ed.)(2014). *History of Global Economic Thought*, Routledge.
- Cho, S., Crenshaw, K. W., & McCall, L. (2013). *Toward a Field of Intersectionality Studies: Theory, Applications, and Praxis*. Signs, 38(4), 785–82024).10.
- Chatterjee Biswajit and Joydeb Sasmal (Eds.)(2024),*The Indian Economy @75: Successes and Challenges*, Routledge India.
- Dasgupta, A. (2002). *A History of Indian Economic Thought*. Routledge.
- George, Sobin, Manohar Yadav and Anand Inbanathan (Eds.)(2020). *Change and Mobility in Contemporary India: Thinking M.N. Srinivas Today*, Routledge.
- Hedström, Peter and B. Wittrock (Eds.) (2009).*The Frontiers of Sociology*, Brill Academic Publishers.
- Haidt, Jonathan(2024) *The Anxious Generation: How the Great Rewiring of Childhood Is Causing*

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
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an Epidemic of Mental Illness, Penguin Press.

- Krishna, Ananth V.(2010). *India Since Independence: Making Sense of Indian Politics*, Pearson.
- Mukherjee, S., & Ramaswamy, S. (2011). *A History of Political Thought: Plato to Marx*. PHI Learning.
- Salganik, M. J. (2017). *Bit by Bit: Social Research in the Digital Age*. Princeton University Press.
- United Nations Development Programme. (2024). *Gender inequality index (GII) 2023*. UNDP

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English for Communication 1

Course Title	**English for Communication 1**
Course Code	TSM101A
Course Type	Ability Enhancement Compulsory Course
Department	Directorate of Transferable Skills and Leadership Development
Faculty	FLAHS/FMC/FMPS/FAD/SSS

1. Course Summary

The course aims at equipping the students with skills essential for effective communication in terms of speaking, writing and comprehension.

The course gives practical exposure to the students by equipping them to use appropriate body language and tone for conversation. It focusses on comprehension of words and building of the word repertoire for meaningful communication. Students are instructed on the ways to construct grammatically correct sentences and compose paragraphs and essays.

2. Course Size and Credits:

Number of Credits	02
Credit Structure (Lecture: Tutorial)	01:01
Total Hours of Interaction	30
Number of Weeks in a Semester	15
Department Responsible	Directorate of Transferable Skills and Leadership Development
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO-1. Identify the nuances of communication skills
CO-2. Apply the concepts of grammar in written communication
CO-3. Apply professional etiquette as appropriate
CO-4. Practice extempore and basic conversation skills
CO-5. Practice comprehension skills
CO-6. Compose precise paragraphs as per the given topic

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4. Course Contents

Unit 1 (Communication Skills):

Process of communication, terminologies used in communication process, active listening, communication barriers, types of communication – verbal and non-verbal

Unit 2 (Grammar)

Sentence formation, sentence types, different parts of speech, adjectives and articles, verbs and preposition, present and past tense, future tense, use of participles in different tenses, usage of tenses, rules of subject verb agreement

Unit 3 (Essentials of Speaking Skills):

Importance of spoken skills, appropriate use of language, appropriate use of tone, pitch and volume

Unit 4 (Extempore):

Preparation for extempore, mind mapping for speaking readiness, Content of extempore – beginning, body and conclusion, Delivery of extempore – body language and paralanguage

Unit 5 (Conversation Skills)

Body language in conversation, tones in conversation, conversation manners, stages of conversation – Introduction, feed forward, close, order of introduction, conversation barriers

Unit 6 (Reading and the Techniques)

Skimming, scanning and reading in details

Unit 7 (Paragraph Writing)

Structure of paragraph – topic sentence, supporting sentence, conclusion sentence, functions of paragraph, paragraph patterns, paragraph writing principles – coherence, unity, order, length

Unit 8 (Comprehension)

Purpose of comprehension, low-level comprehension, high-level comprehension

Unit 9 (Précis Writing)

Paraphrasing techniques, Usage of appropriate words

Unit 10 (Professional Etiquette and Goal Setting)

Etiquette and its importance, types of etiquette – workplace, meeting, telephone, dining, norms of etiquette, goals, types of goal, setting SMART goal

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Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
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Director
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RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Semester 2

Course Specifications, B.Sc. (Hons.) in Computational Social Sciences

Introduction to Computer Sciences

Course Title	Introduction to Computer Sciences
Course Code	SSF103A
Course Type	CFC3
Department	Data Sciences and Analytics
Faculty	School of Social Sciences

Course Summary

The objective of this course in to introduce basic concepts and subject matter in computer science. The course structure covers the basic ideas with input and output, hardware and software, and how to work with the essential computer applications. The course will help to develop basic computer science skills to kick-start with the CSS course.

Course Size and Credits:

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	3:1:0
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	Data Sciences and Analytics
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO-1. Handle a computer system for day to day use.
CO-2. Enumerate different types of input/ output devices and types of memory.
CO-3. Perform basic arithmetic operations using different number systems including binary arithmetic.
CO-4. Differentiate between system and application software.
CO-5. Prepare documents / spreadsheets.

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Course Contents

Unit 1: Introduction to Computers
Characteristics of computers, uses of computers, components of a digital computer, types of computers.

Unit 2: Number Systems
Binary, Octal and Hexadecimal number systems, Binary Coded Decimals (BCD), Binary Coded Octals (BCO), Binary Coded Hexadecimals (BCH), 1's complement, 2's complement, conversion from one number system to another, binary arithmetic (addition, subtraction), binary subtraction using 2's complement.

Unit 3: Input and Output Devices:

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Keyboard, mouse, touch screen, joystick, scanner, web camera, MICR, OCR, OMR, bar-code reader, monitor, printer, plotter. Memory: Primary, secondary, auxiliary memory; RAM, ROM, cache memory, magnetic tape, magnetic disks, hard disk drives, optical disks, CD-R, DVD, flash drives, blue ray disc.

Unit 4: Computer Organization and Architecture:

C.P.U., registers, system bus, main memory unit, LOCF - Page: 1 of 35 processors., motherboard, ports and interfaces, expansion cards, ribbon cables, SMPS, memory chips.

Unit 5: Software:

System software, application software, operating system and its functions and types.

Unit 6: Overview of Emerging Technologies:

Bluetooth, cloud computing, big data, data mining, mobile computing. Practical Practical exercises based on the concepts mentioned in theory using relevant software.

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Course Specifications, B.Sc. (Hons.) in Computational Social Sciences

Introduction to Data Sciences

Course Title	Introduction to Data Sciences
Course Code	SSF104A
Course Type	CFC4
Department	Data Sciences and Analytics
Faculty	School of Social Sciences

1. *Course Summary*

This is an introductory course designed to give students at the School of Social Sciences with a foundational understanding of the concept of data science and its potential applications in the field of social science. The course emphasizes on some of the essential concepts, techniques for extracting information from data, finding significance and also conveying that information through visualization techniques. The course also imparts the ethical considerations related to data collection, analysis.

2. *Course Size and Credits:*

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	3:1:0
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	Data Sciences and Analytics
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. *Course Outcomes (COs)*

After the successful completion of this course, the student will be able to:

CO-1. Understand the fundamental principles of data science and its applications in various domains of social sciences.

CO-2. Demonstrate knowledge of different data collection methods and understand their relevance in various research contexts.

CO-3. Apply exploratory data analysis techniques to gain insights, identify patterns, and detect outliers in datasets and perform basic statistical analysis to interpret data and draw meaningful conclusions.

CO-4. Get introduced with some of the data visualization techniques to communicate insights and trends visually.

CO-5. Recognize the ethical considerations and privacy implications associated with data science and data handling.

4. *Course Contents*

Unit 1: Introduction to Data Science and its Applications

- What is Data Science: Data as information carrier and the science behind it
- Overview of data science and its importance in the field of social sciences

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- Role of data in decision-making and problem-solving
- Key concepts in data science: data, variables, observations, and measurements
- Big data and Data Science hype

Unit 2: Data Collection and Types of Data

- Methods of data collection: surveys, interviews, experiments, observations
- Qualitative and quantitative data: definitions and characteristics
- Sampling techniques and their applications
- Data sources and data quality considerations

Unit 3: Exploratory Data Analysis (EDA)

- Descriptive statistics: measures of central tendency, dispersion, and distribution
- Data visualization techniques: histograms, scatter plots, bar charts
- Exploring relationships and patterns in data
- Identifying outliers and missing data
- Introduction to statistical analysis in data science

Unit 4: Data Visualization for Insights

- Principles of effective data visualization
- Choosing appropriate visual representations for different types of data
- Designing clear and informative charts, graphs, and diagrams
- Communicating data insights visually

Unit 5: Analyzing Social Networks and Network Analysis

- Introduction to social network analysis
- Basics of network visualization and metrics
- Identifying key actors and relationships in social networks
- Applications of network analysis in psychology, sociology, economics, and public policy

Unit 6: Data Ethics and Privacy

- Ethical considerations in data science
- Privacy protection and data anonymization techniques
- Ensuring fairness and avoiding bias in data analysis
- Legal and regulatory frameworks for data privacy and protection

Ramanath K.V
Dean Academics
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Reference Books:

1. Introducing Data Science Big data, machine learning, and more, using Python tools

By Davy Cielen, Arno D. B. Meysman, and Mohamed Ali ; Manning Publication

2. Ethics and Data Science by Mike Loukides , Hilary Mason, DJ Patil ; O'Reilly publications
3. Doing Data Science: Straight Talk from the Frontline 1st Edition, by Cathy O'Neil , Rachel Schutt ; O'Reilly publications
4. Data Science from Scratch: First Principles with Python by Joel Grus O'Reilly publications

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

Director
School of Social Sciences & School of Law
M S Ramaiah University of Applied Sciences
Bengaluru – 560054

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Research Methodology in Social Sciences

Course Title	Research Methodology in Social Sciences
Course Code	SCC103A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

This course aims to introduce undergraduate students to the fundamental concepts, principles and methodologies used in social science research while developing their academic writing skills. The course is structured into five comprehensive units, each addressing key aspects of research methods and academic writing, to be covered over the semester. Overall, the intent is to produce rigorous, replicable, and reliable research that can enhance learners' understanding of social phenomena and improve societal outcomes.

2. Course Size and Credits:

Number of Credits	**4**
Credit Structure (Lecture: Tutorial)	**3:1**
Number of Weeks in a Semester	**15**
Total Hours of Interaction	**60**
Total Course Marks	**100**
Pass Criterion	**As per the Academic Regulations**
Attendance Requirement	**As per the Academic Regulations**

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO1. Understand scientific inquiry in social sciences, nature, and scope of research.

CO2. Develop critical thinking skills, enabling students to evaluate and review research literature, identify gaps, and formulate research questions

CO3. Use modern methods of data collection as well as analysis techniques.

CO4. Enhance academic writing skills, learning to write clear, structured, and well-argued research reports and dissertations.

CO5. Use proper citation and referencing techniques and adhere to the ethical principles in research.

4. Course Contents:

Unit 1: Introduction to Social Research (2 weeks)

- Basic concepts: definition, meaning, objectives and significance of social research
- The scientific inquiry in social sciences, stages in research
- Types of research: Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical

Ramanath K.V.
Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Head
Department of Sociology
School of Social Sciences
M.S. Ramaiah University of Applied Sciences

Director
School of Social Sciences & School of Law
M.S Ramaiah University of Applied Sciences

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Introduction to Sociology

Course Title	Introduction to Sociology
Course Code	SCB101A
Course Type	Foundational Course
Department	Sociology
Faculty	School of Social Sciences

Course Summary

The objective of this course is to lay a solid foundation for understanding the vital role Sociology plays in addressing the complexities of contemporary society. The curriculum is thoughtfully designed to provide insights into key sociological theories and concepts and open up an ample scope for applying these theories and concepts for comprehending the real-life experiences of people from different walks of life. Students will engage in a critical dialogue on social institutions, such as family, education, government, and religion, to understand their functions and the influence they have on our lives. Additionally, the course explores the nature of social inequalities, focusing on issues related to class, race, gender and rural-urban disparities, enabling students to recognize and critically assess the systems that create and reinforce these inequalities. The course also examines the impact of digital technology on society, investigating how advancements in communication and social media have transformed interpersonal relationships, cultural norms, and social structures.

Course Size and Credit

Number of Credits	03
Credit Structure (Lecture, Tutorial, Practical)	3:1:0
Total Hours of Interaction	45
Number of weeks in a Semester	15
Department Responsible	Sociology
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

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Course Outcomes

After the successful completion of the course the students will be able to:

CO1- Examine the contemporary challenges and cultivate a comprehensive understanding of the world around them.

CO2 – Understand the significance of research in sociology and cultivate valuable skills to critically analyze societal issues, formulate thoughtful inquiries and contribute to meaningful discussions and solutions.

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CO3- Explore the transformative impact of digital technology on society, and discern how digital communication, social media, and technological advancements shape interactions, alter cultural practices, and redefine social relationships.

CO4- Develop an understanding of the tools needed to navigate the complexities of modern life.

Course Contents

Unit-1. Fundamentals of Sociology

- Thinking Sociologically: Sociology and Common Sense
- Evolution of Sociological Thought: Classical, Modern and Post-Modern
- Cultivating the Sociological Imagination: Individual vs. Societal Structure
- Applying sociological knowledge for problem solving-The role of Public Sociology
- **Basic Concepts:**
  - Society, Community, Institution, Social Group
  - Norms, Values, Sanctions, Customs, Folkways, Mores
  - Culture, Cultural Lag, Socialization, Social Processes

Unit-2. Social Institutions- Evolution and Progress

- Family, Marriage and Kinship : Functions, typologies and recent changes
- Economy: Functions, typologies and recent changes
- Polity: Governance, State and Civil Society
- Religion: Forms, Religion in contemporary times
- Education: Changing role of education in contemporary society

Unit-3 Social Inequality

- Understanding Social Stratification and Inequality: Caste, Class, Gender, Race and Ethnicity
- Spatial Inequality: Rural-Urban divide
- Sociology and Social Inclusion: The Inter-connection

Unit 4 Sociology in Digital Era

- Democratization of social space on digital platforms
- Impact of digital technology on social institutions, online communities
- Risk Society: Cyber-crime, Cyber culture and Digital identity

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Dean - Academics
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Suggested Readings

1. Beck, Ulrich(1992). *Risk Society: Toward a New Modernity*, Sage Publications.
2. Béteille, André(2002). *Sociology : Essays on Approach and Method*, Oxford University Press.

Director
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Department of Sociology
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3. Dube, S.C.(1992). *Understanding Change: Anthropological Sociological Perspectives*, Vikas Publication House.
4. Giddens, Anthony(2009). *Sociology*, Polity Press.
5. Haralambos, M. (1998). *Sociology : Themes and Perspectives* , Oxford University Press.
6. Harari, Yuval Noah (2024). *Nexus: A Brief History of Information Networks from the Stone Age to AI*, Random House.
7. Jayaram , N. (1998). *Introductory Sociology* , Macmillan India
8. Karve, Irawati (1953). *Kinship Organization in India*, Deccan College.
9. Macionis, John and Ken Plummer (2011), *Sociology: A Global Introduction*, Pearson.
10. Mills, Charles Wright(1959). *Sociological Imagination*, Oxford University Press.
11. Shah A.M.(2014). *The Writings of A,M, Shah: Household and Family in India*, Orient BlackSwan.
12. Uberoi, Patricia (1997).*Family, Kinship and Marriage in India*, Oxford University Press.

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

Director
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M S Ramaiah University of Applied Sciences
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Course Specifications, B.Sc. (Hons.) in Computational Social Sciences

Python for Social Sciences

Course Title	Python for Social Sciences
Course Code	SCC205A / SCC105A
Course Type	Core Course
Department	Sociology/DSA
Faculty	School of Social Sciences

- Course Summary:

  This course introduces Python as a powerful tool for data analysis in the social sciences. Designed for beginners, it covers core programming concepts and essential libraries like NumPy, Pandas, Matplotlib, and Seaborn. Students will learn to load, clean, and analyze real-world datasets relevant to sociology, healthcare, and education. Emphasis is placed on hands-on practice and data interpretation. By the end, students will be equipped to perform basic exploratory data analysis and visualize key insights.

- Course Size and Credits:

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	3:0:1
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	Sociology/Data Sciences and Analytics
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

- Course Outcomes (COs)

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

CO1. Understand and write basic Python code.
CO2. Use Python libraries like NumPy, Matplotlib, Seaborn, and Pandas for data analysis and visualization.
CO3. Load, clean, and manipulate datasets.
CO4. Create basic visualizations to summarize data.
CO5. Perform basic EDA to uncover trends and patterns.
CO6. Apply Python to analyze datasets from sociology and other domains.

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- Course Contents

Unit 1: Introduction to Python and Its Applications and Python Basics

1. What is Python?
2. Why use Python in Sociology?
3. Real-world examples of Python in social sciences.
4. Variables, data types, and basic operations.
5. Lists, tuples, and dictionaries.
6. Conditional statements and loops.

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2. **Hands-on**: Install Python (via Anaconda), and set up Jupyter Notebook. Write simple Python scripts (e.g., calculating averages, creating dictionaries for survey data).

Unit 2: Introduction to NumPy

1. What is NumPy, and why is it important?
2. Creating arrays, basic operations on arrays.
3. Statistical functions (mean, median, standard deviation).
4. Indexing and slicing in arrays.

3. **Hands-on**: Create a NumPy array from a list of survey scores; Calculate the mean and standard deviation of a dataset on monthly incomes.

Unit 3: Working with Data (Pandas)

1. Introduction to Pandas library.
2. Loading datasets (CSV, Excel).
3. Exploring datasets: .head(), .info(), .describe().
4. Selecting and filtering data.

4. **Hands-on**: Load and explore a small dataset on social indicators (e.g., gender distribution in education).

Module 4: Introduction to Matplotlib and Seaborn

1. Basics of Matplotlib.
2. Creating line plots, bar charts, and histograms.
3. Customizing plots: titles, labels, and legends.
4. Saving plots as image files.
5. Basics of Seaborn and its advantages over Matplotlib.
6. Creating advanced visualizations: box plots, scatter plots, and heatmaps.
7. Customizing themes and color palettes.

5. **Hands-on**: Visualize employment trends over time using line plots; Create a bar chart of survey results on satisfaction levels; Create a box plot to visualize income distribution; Generate a heatmap to analyze correlations in a dataset on health and education indicators.

Unit 5: Basic Exploratory Data Analysis (EDA)

1. Identifying missing data.
2. Summary statistics and understanding distributions.
3. Correlations and relationships.

6. **Hands-on**: Perform EDA on a Sociology Dataset, Healthcare Dataset, Education Dataset

Essential Readings:

- Kaswan, Kuldeep Singh, Jagjit Singh Dhatterwal, and B. Balamurugan. *Python for Beginners*. Chapman and Hall/CRC, 2023.
- Hetland, Magnus Lie. *Beginning Python: from novice to professional*. Apress, 2017.
- Brooker, Phillip. "Programming with Python for social scientists." (2019): 1-328.
- Cioffi-Revilla, Claudio. *Introduction to computational social science*. Springer Verlag London Limited, 2014.
- Grus, Joel. *Data science from scratch: first principles with python*. O'Reilly Media, 2019

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M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

Director
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M S Ramaiah University of Applied Sciences
Bengaluru – 560054

Course Specifications, B.Sc. (Hons.) in Computational Social Sciences

Computer Assisted Qualitative Data Analysis (CAQDAS1)

Course Title	Computer Assisted Qualitative Data Analysis (CAQDAS1)
Course Code	SCM101A
Course Type	Skill Enhancement Compulsory Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

Skill enhancement course will provide the opportunity and knowledge to develop and strengthen the utilization of computer applications for qualitative data analysis. Leaners will earn skills to gain, maintain, and advance in codifying (Themes) complicated thick data.

2. Course Size and Credits:

Number of Credits	2
Credit Structure (Lecture: Tutorial)	1:1
Number of Weeks in a Semester	15
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO1. Effectively understand and analyze the qualitative data through computer assisted technology

CO2. Write precise briefs or reports and technical documents

CO3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations become more effective individual through goal/target setting, and practicing creative thinking.

CO4. Function effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships

4. Course Contents

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UNIT 1: Understanding the Qualitative Research

- Data Collection- Individually and Team
- Types of Research
- Critical Analysis and grounded theory

UNIT 2: Qualitative Data Analysis

- Manually Data Analysis
- Computer Assisted Analysis
- Comparative Analysis

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Unit 3: Introduction to Computer Assisted Qualitative Data Analysis Skills

- MAXQDA

- nVivo, Delve
- Hands on Training Software – MAXQDA
    - Themes and Subthemes

Unit 4: Report Generating with Qualitative Data Visualization

- Report Making
- Code Mapping
- Visual Tools
- Word Cloud, Semantic Network Analysis

Suggested Readings:

1. Qualitative Research: A Guide to Design and Implementation, 4th Edition
2. The Craft of Research, by Wayne C. Booth, Gregory C. Colomb, and Joseph M. Williams
3. Doing Your Research Project: Open Up Study Skills, 5th Edition by Bell
4. Introducing Research Methodology: A Beginner's Guide To Doing A Research Project, 2nd Edition by Flick
5. Computer Programs for Qualitative Data Analysis, Eben Weitzman and Matthew B. Miles- University of Massachusetts, Boston, USA

Head
Department of Social Science
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bangalore-560

Director
School of Social Sciences & School of Law
M S Ramaiah University of Applied Sciences
Bangalore – 560

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Semester 3

Graph Theory for Social Networks

Course Title	Graph Theory for Social Networks
Course Code	SCC201A
Course Type	Core Course
Department	Data Sciences and Analytics
Faculty	School of Social Sciences

1. *Course Summary*

This course offers an introductory exploration into the exciting field of graph theory, a branch of mathematics that studies the relationships between objects represented as vertices and edges. Students will delve into fundamental concepts, properties, and applications of graphs, equipping them with a solid foundation in graph theory. This knowledge is valuable for various fields, including computer science, network analysis, and operations research.

2. *Course Size and Credits:*

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	3:1:0
Total Hours of Interaction	15
Number of Weeks in a Semester	60
Department Responsible	Data Sciences and Analytics
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. *Course Outcomes (COs)*

After the successful completion of this course, the student will be able to:

CO-1. Develop a deep understanding of fundamental graph theory concepts and their applications.
CO-2. Gain proficiency in representing, manipulating, and analyzing graphs.
CO-3. Learn to identify and apply graph connectivity and traversal techniques.
CO-4. Understand and utilize graph algorithms for solving real-world problems.

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4. *Course Contents*

Unit 1: **Introduction to Graphs:**
Definitions and basic terminology in graph theory, Types of graphs (undirected, directed, weighted, unweighted), Graph representations (adjacency matrix, adjacency list), Isomorphism and subgraphs.

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Unit 2: **Graph Connectivity:**
Paths, cycles, and trails in graphs, Connected graphs and components, Cut vertices and bridges, Eulerian and Hamiltonian graphs, Applications in network design and transportation planning.

Unit 3: **Trees and Spanning Trees**
Definitions and properties of trees, Spanning trees and minimum spanning trees, Tree traversal algorithms (Depth-First Search, Breadth-First Search), Applications in computer networks and optimization problems.

Unit 4: **Graph Algorithms**
Shortest path algorithms (Dijkstra's algorithm, Bellman-Ford algorithm), Minimum spanning tree algorithms (Prim's algorithm, Kruskal's algorithm), Graph coloring and chromatic number, Applications in route optimization, data structures, and scheduling.

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

Director
School of Social Sciences & School of Law
M S Ramaiah University of Applied Sciences
Bengaluru – 560054

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Bangalore-560054

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Science, Technology and Society

Course Title	Science, Technology and Society
Course Code	SCC202A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

The course "Science, Technology, and Society" aims to provide undergraduate students with a critical understanding of the dynamic interactions between scientific knowledge, technological innovation, and societal structures. It explores how science and technology are not only products of cultural, historical, and political contexts but also active forces that shape human values, institutions, and social inequalities. By examining philosophical foundations, ethical concerns, and case studies especially within the Indian context—the course enables students to analyze the mutual influence of science, technology, and society. Ultimately, it equips learners with analytical tools to engage responsibly with scientific developments and their societal implications.

2. Course Size and Credits

Number of Credits	4
Credit Structure (Lecture: Tutorial)	3:1
Number of Weeks in a Semester	15
Total Hours of Interaction	60
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the completion of this course, the students will be capable of the following:

1. Understand key concepts, theories, and philosophical foundations related to the study of science, technology, and society.
2. Critically assess the methodological, ethical and cognitive dimensions of scientific inquiry and technological innovation.
3. Analyze how social, cultural, and institutional factors shape the development and application of science and technology.
4. Comprehend the role and impact of science and technology in the Indian context, including policy frameworks and contemporary issues.

Head
Department of Sociology
School of Social Sciences
M.S. Ramaiah University of Applied Sciences
Bengaluru-54

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M.S. Ramaiah University of Applied Sciences
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5. Course Contents:

Unit 1: Foundations of Science, Technology, and Society

- Understanding STS: Concepts, History, and Theories
- Historical evolution of science and technology
- Key STS theories (Technological Determinism, Social Construction of Technology, Actor-Network Theory)
- Role of science in shaping society and vice versa

Unit 2: Cognitive, Methodological and Ethical Dimensions of Science and Technology

- Cognitive Dimensions of Science: Exploration of how scientific knowledge is constructed and validated
- Ethical Dimensions: Examination of moral responsibilities and ethical considerations in scientific practice
- Methodological Dimensions: Inductivism, Hypothesism, Positivism
- Karl Popper's Falsificationism: Analysis of the falsifiability criterion in science
- Thomas Kuhn's Paradigm Shifts: Examination of scientific revolutions and paradigm changes

Unit 3: Social Structures and Inequities in Scientific Communities

- Inequalities in Science: Matthew effect
- Rewards and Recognitions in Science: Investigation of the reward system and recognition in scientific fields
- Cumulative Advantage and Symbolism of Intellectual Property: Analysis of how intellectual property rights influence scientific progress and inequality

Unit 4: Social Shaping of Technology

- Interplay Between Society and Technological Development
- Technology as Knowledge: Understanding technology as a form of knowledge and its societal implications
- Social factors influencing technological innovation and adoption
- Case Studies: Examination of specific instances where society and technology have co-evolved

Unit 5: Science, Technology, and Society in the Indian Context

6. Reception of Modern Science in India: Exploration of how modern science was received and adapted in Indian society
7. Science Policies in India: Analysis of governmental policies shaping scientific research and development
8. Information Society: Study of the impact of information technology on Indian society
9. Different technologies and its Implications: Discussion on the societal and ethical implications of biotechnological advancements in India

Suggestive/Recommended readings:

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- Krishna, V. V. (2007). *Science, technology and society: Indian perspectives*. Pearson Education India.
- Bijker, W. E., Hughes, T. P., & Pinch, T. (Eds.). (1987). *The social construction of technological systems: New directions in the sociology and history of technology*. MIT Press.
- Latour, B. (1987). *Science in action: How to follow scientists and engineers through society*. Harvard University Press.
- Kuhn, T. S. (1962). *The structure of scientific revolutions*. University of Chicago Press.
- Popper, K. R. (1959). *The logic of scientific discovery*. Hutchinson.
- Merton, R. K. (1973). *The sociology of science: Theoretical and empirical investigations*. University of Chicago Press.
- Winner, L. (1986). *The whale and the reactor: A search for limits in an age of high technology*. University of Chicago Press.

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Course Specifications, B.Sc. (Hons.) in Computational Social Sciences

Course Title	Introduction to Public Policy
Course Code	SCB201A
Course Type	Foundational Course
Department	Public Policy
Faculty	School of Social Sciences

1. *Course Summary*

The course will enable learners to develop an in-depth understanding of meaning of public policy and identify characteristics of effective and ineffective policies. The course will also examine policies, its consequences and outcomes. The objective of this course is to explore many of the paradoxes inherent in public policy research by focusing on the topics that animate today's most meaningful public debates.

2. *Course Size and Credits:*

Number of Credits	3
Credit Structure (Lecture: Tutorial: Practical)	2:1
Total Hours of Interaction	45
Number of Weeks in a Semester	15
Department Responsible	Public Policy
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. *Course Outcomes (COs)*

After the successful completion of this course, the student will be able to:

CO-1. Know the nature and key concepts of public policy;
CO-2. Examine the roles and functions of actors in policy process
CO-3. Analyze theories and types of public policy
CO-4. Understand stages in policy making

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4. *Course Contents*

Unit 1: Definitions of Public Policy and Policy Context

- Nature of Public Policy
- Key Concepts of Public Policy

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Unit 2: Actors in Public Policy

- Defining a Policy Actor and the Different Goals
- Governmental and Non-Governmental Actors in the Policy Process

Unit 3: Types and Theories of Public Policy

- Typologies of Public Policy

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- How and Why Policies are Implemented

Unit 4: Roles of Actors

- Role of Actors in Decision-making Process
- Ways and Methods to Gather Information of a Policy Area

Unit 5: Market and Non-Market Policies

- Different Market Instruments used by Governments
- Non-Market Instruments used by Governments

Unit 6: Stages in Policy Making

- Policy Formulation
- Policy Implementation
- Policy Evaluation

Unit 7: Policy Memos

- Explore Strategies to make effective Policy Recommendations to solve real-world problems

Essential Readings:

- Kraft, M. E. & Furlong, S. R. (2019). Public policy: Politics, analysis, and alternatives. Seventh edition. Sage and CQ Press
- Weimer, D. L. & Vining, A. R. (2017). Policy analysis: Concepts and practice. Sixth edition. Routledge
- Dente, B. (2014). Understanding policy decisions. First edition. Springer
- Birkland, T. A. (2019). An introduction to the policy process: Theories, concepts and models of public policy making. Fifth edition. Routledge

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Course Title	Economics 101
Course Code	SCB202A
Course Type	Foundational Course
Department	Economics
Faculty	School of Social Sciences

1. Course Summary

The objective of this course in to introduce basic concepts and subject matter in economics. Aspects of markets, law of demand and supply are covered. The course structure covers the major ideas in economics and intends to provide wider vision of the present discourses in macroeconomics. The course will help to develop aptitude to relate concepts with research and policy.

2. Course Size and Credits:

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	3:1:0
Total Hours of Interaction	
Number of Weeks in a Semester	
Department Responsible	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO-1. Know the basic concepts and subject-matter of economics;
CO-2. Learn about how price is determined through interactions between buyers and sellers
CO-3. Conceptualize the various terminologies used in national income accounting.
CO-4. Understand monetary and fiscal policy measures

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4. Course Contents

Unit 1: Exploring the subject matter of Economics (brief introduction)

1. Scope and method of economics: scarcity, choice and market; what to produce, how to produce and how to distribute output; scarcity of resources, opportunity cost and trade off; efficient product combination; positive vs. normative issues; partial equilibrium (ceteris paribus assumption) vs. general equilibrium (inter-dependence of markets); microeconomic issues vs. macroeconomic issues; economic systems/models.

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2. Concept of Market and prices: self-interested agents; competition as basic driving force; price as an invisible hand; price and value: value paradox; real and nominal prices
3. Market Regulation and government intervention: why and when should government intervene – Case of market failure (externality; public good); equity vs. efficiency (the issue of distribution); rationing; employment generation.

Unit 2: Demand and Supply Analysis

1. Demand: schedule and curve; law of demand and its exceptions; determinants of individual demand; shifts v/s movements along the demand curve; elasticity –price elasticity, cross-price elasticity; substitutes and complements; income elasticity; normal and inferior goods; derivation of market demand curve from individual demand curve.
2. Supply: schedule and curve (implication as marginal cost curve); determinants; shifts v/s movements along the curve; elasticity - price elasticity of supply and slope of supply curves; Marshal's time period analysis; Market supply from individual supply;

Unit 3: Market Structure

1. Perfectly competitive market – Features, equilibrium
2. Imperfect competition- Monopoly, Monopolistic Competition, Oligopoly- features, equilibrium

Unit 4: National Income Accounting

Basic concepts of National Income accounting; The circular flow; Concepts of National Income; The measurement of National Income.

Unit 5: Monetary Variables & measures

1. Inflation and measurements; CPI, WPI, GDP deflator; Inflation Targeting
2. Interest Rate- types

Unit-6: Fiscal Policy Variables & Measures

1. Taxation: Types, canons of taxation
2. Expenditure: Types, canons of expenditure
3. Deficits and Debt: Concepts, types of deficits

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Essential Readings:

1. Principles of Micro Economics - Gregory Mankiw
2. Microeconomics - Pindyck and Rubinfeld
3. Mankiw. Macroeconomics. Worth Publishers.

Froyen. Macroeconomics. Pearson Education.

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Course Title	English for Communication-2
Course Code	TSM102A
Course Type	Ability Enhancement Compulsory Course
Department	Directorate of Transferable Skills and Leadership Development
Faculty	FLAHS/FMC/FMPS/FAD/SSS

1. Course Summary

This course equips students with professional oral and written communication skills. The course enables the students to draft letters, reports and e-mails for professional communication. Thestudents will be trained to deliver oral presentations and participate in group discussion. The studentswill be equipped with analyzing and reading the complex documents and given case studies to solve and arrive at a solution using their communication proficiency and analytical skills.

2. Course Size and Credits:

Number of Credits	03
Credit Structure (Lecture: Tutorial: Practical)	3:0:0
Total Hours of Interaction	45
Number of Weeks in a Semester	15
Department Responsible	Directorate of Transferable Skills and Leadership Development
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO-1. Explain the nuances of professional communication
CO-2. Compose professional written document as appropriate
CO-3. Discuss the importance of Time and Stress Management
CO-4. Practice basic presentation skills, group discussion and debating skills
CO-5. Demonstrate comprehension of complex document

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4. Course Contents

Unit 1 (Basics of Communication):

Forms and channels for professional communication, directions of professional communication,styles of professional communication

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Unit 2 (Essay Writing):

Structure of an essay – introduction, body and conclusion, ordering of essay structure, Usage of transitioning words, use of appropriate language and tone

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Unit 3 (Letter Writing):

Purpose of letter writing, Letter format – address, date, salutation, subject line, body of the letter, complementary close, signature, types of letter – Information letter, complaint letter, request letter for projects / internships / industry visits, use of appropriate language and tone while drafting letter, Agenda and Minutes of meeting, Cover letter and CVs

Unit 4 (E-mail):

E-mail as a channel of communication, e-mail format – 'To', 'CC', 'BCC', 'Subject Line', Salutation, Body, and Complementary Close, Situational usage of e-mail

Unit 5 (Time Management and Stress Management):

The concept of time and stress management, Time management grid, prioritization, types of stress, ways to handle stress

Unit 6 (Presentation Skills):

The importance of presentation skills, various stages of presentation planning – development of structure and style, interpersonal sensitivity, presentation accessories and equipment, time management during presentation, stages of presentation – introduction, body and conclusion, presentation etiquette

Unit 7 (Debate)

Importance of debating skills, various stages of debate planning – development of structure and style, interpersonal sensitivity, time and stress management as a debating skill, stages for debate, debate etiquette

Unit 8 (Group Discussion)

Purpose of group discussion, various stages of group discussion planning – development of structure and style, interpersonal sensitivity, types of group discussion, group discussion delivery, group discussion etiquette

Unit 9 (Comprehension – Advanced)

Active listening, listening comprehension and paraphrasing techniques, comprehension of complex documents

Unit 10 (Report Writing)

Purpose of report writing, report format, use of language while report writing

Course Resources

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a. **Essential Reading**

1. Class Notes
2. Raman M and Sharma S (2004) Technical Communication: Principles and Practice. New Delhi: Oxford University Press
3. Hory Sankar Mukherjee, (2013), Business Communication, Oxford University Press
4. Kroehnert, Gary (2004), Basic Presentation Skills, Tata McGraw Hill

b. **Recommended Reading**

1. Sarvesh Gulati , (2010), Corporate Grooming and Etiquette, New Delhi, Rupa Publications India Pvt. Ltd
2. Simon Sinek , (2011), Start With Why, United States of America, Penguin Group
3. Kavita Tyagi and Padma Misra , 2011, Professional Communication, New

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Delhi, Prentice Hall India

c. Websites

- http://www.businessballs.com/presentation.htm
- http://www.allyoucanread.com/top-10-business-magazines/
- https://student-learning.tcd.ie/undergraduate/topics/self-management

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Semester 4

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Gender and Society

Course Title	Gender and Society
Course Code	SCC203A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

The course intends to familiarize learners with the concept and practice of gender from an interdisciplinary and intersectionality perspective and create an understanding of the ways by which patriarchy functions in all social institutions. It integrates theoretical discourses on gender with lived-in-experiences of the three genders and critically analyses everyday life from a gender lens. Since gender is a sociocultural construct and is to be understood only by analysing lived experiences of people in multi-group settings, field studies become an important component of the curriculum. Visiting neighborhood groups, schools, work places and generating gender segregated data on day-day-events, analysing Public Policies and Reports of Studies focusing on gender issues from a gender perspective.

2. Course Size and Credits:

Number of Credits	4
Credit Structure (Lecture: Tutorial)	3:1
Number of Weeks in a Semester	15
Total Hours of Interaction	60
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

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CO1. Understanding the socio-cultural basis of gender-based inequalities and establishment of gender as an analytical category.

CO2. Examining and critique gender assumptions underlying socio-economic-political-cultural life.

CO3. Questioning subtle and open gender prejudices inherent in all social institutions and their day-today functioning.

CO4. Obtaining knowledge of gender just laws and creating a community of gender sensitive students, faculty and administrators.

CO5. Analyzing various aspects of Gender as situated in the Sustainable Development Goals (SDGs) in the Indian Context and with specific reference to Karnataka

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4. Course Contents:

Unit 1: Obtaining a Conceptual Understanding of Gender

- Sex, Gender and Genders, Patriarchy, Femininity and Masculinity

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• Gender Bias, Gender Stereotypes, Gender Inequality, Gender Division of Labour, Sexuality, LGBTTQ+,
Gender Inclusivity, Gender Justice, Gender Sensitisation
• Shift from Welfare to Development to Empowerment Women's Movements

Unit 2: Feminism
• Feminism-The Concept and Practice
• Major Feminist Theoretical Discourses- Liberal feminism, Radical Feminism, Marxist Feminism, Socialist Postmodern Feminism, Eco Feminism, New Feminism-Feminist Studies
• Gender Studies & Women's Studies

Unit 3: Manifestations of Gender Inequality in Social Institutions: Cultural Construction of Gender
Images and Identities
• Gender based Socialisation in Family, Peer group and Neighbourhood
• Gendering Religion, Caste and Ethnicity
• Gender in Educational Content and Practices
• Gender and Economy- Gender Division of Labour, Invisibility of Women's Work, Wage Discrimination
• Gender, Power and Governance- Marginalisation of Women in Political Decision Making
• Gender and Media

Unit 4: Gender-based Violence
• Violence within the Family (Domestic Violence), Sexual Abuse of Children, Female Foeticide, Female Infanticide, Child Marriage, Dowry related Violence,
• Killings in the name of Honour, Violence against the Female Body, Rape and Acid attack
• Female Genital Mutilation. Violence against the Elderly, Disabled, Dalit and Tribal Women

Unit 5: Towards Creating a Gender Just Society: National and International Interventions
• The Constitution of India- Laying the foundation for creating a Gender Just Society
• Initial Efforts at locating the space for Gender Responsive Policy-The Five- Year Plans, National Policy for Empowerment of Women-2000, National and State Commissions for Women
• Gender Just Laws: Major Initiatives- Laws against Sex-selective abortions, Dowry and Domestic Violence, Discrimination in Property Inheritance, Sexual Harassment at Workplace & Ill treatment of
Elderly, Disabled and LGBTQ+ community
• The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)-1979,
International Women's Decade-1975-1985
• Locating Gender in the Context of Sustainable Development Goals in the Indian Context with specific reference to Karnataka- Targets, Indicators, Challenges and Emergence of the importance of datadriven policy formulation in the State
• The Autonomous Women's Movement in India- Beginnings, Shifts in Goals and Strategies, Struggles, Achievements and Contemporary and Future Challenges. The NGO Sector and gender issues.

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Mandatory Readings:
o Bhasin, K. (2000). Understanding Gender. Kali for Women, New Delhi.
o Flavia Agnes. (2016). Women and Law in India, Oxford.

o Geetha, V. (2007), Patriarchy, Stree Publications, Calcutta.
o Glover, D. & C. Kaplan. (2009). Genders. Routledge. New York.
o Jane Pilcher and Imelda Whelehan (2016). Key Concepts in Gender Studies, Sage.
o Sarkar, Sumita(ed). (2021). Gender Inequality and Discrimination in India: Discourse and Dilemmas, Rawat Publications, Jaipur.
o Sharmila Rege (2006). Writing Caste/Writing Gender: Narrating Dalit Women's Testimonios. Zuban, India.
o Shila Shaver (ed), (2018). Handbook on Gender and Social Policy. EE Elgar Publishing.
o Soma Kundu. (2021). 'Gender Budgeting for Sustainable Development in India'. Economic Political Weekly. Vol. 55, Issue No. 16 pp- 43-57.
o Sylvia Walby (1986). Patriarchy at Work. University of Minnesota Press, Minneapolis.

Mandatory Portals:

o The National and State Indicator Frameworks on SDGs at www.niti.gov.in & https://planning.karnataka.gov.in/english
o Sustainable Development Goals – Karnataka @ https://www.karnataka.gov.in/karnataka_hub/Sustainable%20Development%20Goals/en
o UNDP- India – Sustainable Development Goals @ https://www.undp.org/india/sustainabledevelopment-goals

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Social and Cultural Anthropology

Course Title	Social and Cultural Anthropology
Course Code	SCC204A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

This course provides a comprehensive exploration of Social and Cultural Anthropology within the context of the B.Sc. Computational Social Sciences program. Students will delve into the fundamental principles of anthropology and learn how computational methods can be applied to study and analyze diverse societies and cultures. Through a combination of theoretical discussions and hands-on computational exercises, students will gain insights into the richness of human societies while developing essential computational skills.

2. Course Size and Credits:

Number of Credits	**4**
Credit Structure (Lecture: Tutorial)	**3:1**
Number of Weeks in a Semester	**15**
Total Hours of Interaction	**60**
Total Course Marks	**100**
Pass Criterion	**As per the Academic Regulations**
Attendance Requirement	**As per the Academic Regulations**

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO1. Understand the key concepts and theories of social and cultural anthropology.

CO2. Apply anthropological methodologies to conduct fieldwork and ethnographic research.

CO3. Analyze and interpret anthropological data using computational tools and techniques.

CO4. Recognize and appreciate the cultural diversity and complexity of human societies.

CO5. Evaluate ethical considerations in anthropological research, particularly in the context of computational methods.

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4. Course Contents:

Unit 1: Introduction to Social and Cultural Anthropology

6. Anthropology as a holistic discipline: biological, linguistic, archaeological, and sociocultural
7. Foundational theorists: Tylor, Boas, Malinowski, Levi-Strauss, Margret Mead, Ruth Benedict, Evans Pritchard and Radcliffe-Brown.
8. Indian Thinkers: MN Srinivas, SC Dube, Abhijit Guha and Irawati Karve
9. Key concepts: Culture, Society, Kinship, Ethnocentrism, Historical Particularism.
10. Ethnographic fieldwork: participant observation, interviews, case studies, Interpretive Analysis
11. Ethics in anthropological research: informed consent, representation, reflexivity

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Unit 2: Cultural Diversity and Cultural Relativism

- Cultural diversity and universals
- Concept of cultural relativism and its critiques
- Comparative study of social practices (e.g., marriage, religion, kinship systems)
- Case studies: tribal societies, urban anthropology, migration studies
- The role of language and symbolism in cultural transmission

Unit 3: Computational Tools in Anthropology

- Theoretical introduction to computational anthropology
- Digital ethnography: working with online communities and digital identities
- Examples of computational methods:
    - Social network analysis (to examine kinship or migration patterns)
    - Text mining and qualitative coding of ethnographic narratives
    - Geospatial mapping of field sites and social boundaries
- Case studies of computational anthropology from recent literature

Unit 4: Social and Cultural Change

- Theories of cultural change: diffusionism, acculturation, globalization
- Concepts of Social Change in India: Sanskritization, Westernization and Modernization
- Impact of technology and media on culture
- Urbanization, diaspora, and identity
- Agent-based modeling (conceptual): how simulated agents help us study cultural adaptation
- Cultural resilience and hybridization
- Historical and contemporary examples (e.g., Indigenous responses to modernity)

Unit 5: Applied Anthropology and Social Issues

- Definition and scope of applied anthropology
- Addressing contemporary challenges: public health, education, inequality, environment
- Introduction to computationally informed policy studies (e.g., predicting migration trends)
- Discussion of case studies:
    4. Digital activism
    5. Refugee resettlement
    6. Indigenous rights
- Student presentations: conceptual projects proposing how anthropology can be applied to a real-world issue using both qualitative and computational insights

Suggested Readings:

6. Back, L., Bennett, A., Edles, L. D., Gibson, M., Inglis, D., Jacobs, R., & Woodward, I. (2012). Cultural sociology: An introduction. John Wiley & Sons.

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7. Bentley, R. A., & O'Brien, M. J. (2012). The Accumulation of Cultural Innovations. In: The SAGE Handbook of Social Network Analysis.
8. Boellstorff, T. et al. (2012). Ethnography and Virtual Worlds: A Handbook of Method. Princeton University Press.
9. Daniel Miller & Heather Horst (2012). Digital Anthropology. Berg Publishers.
10. Guest, K. J. (2013). Cultural anthropology: A toolkit for a global age. WW Norton & Company."
11. Hammersley, M., & Atkinson, P. (2019). Ethnography: Principles in practice. Routledge.
12. Horowitz, M. C., & Lizardo, O. (2013). "Introducing cultural sociology." American Journal of Cultural Sociology, 1(1), 1-16.
13. Robben, A. C., & Sluka, J. A. (Eds.). (2012). Ethnographic fieldwork: An anthropological reader. John Wiley & Sons.
14. Wesch, M. (2009). YouTube and you: Experiences of self-awareness in the context collapse of the recording webcam. *Explorations in media ecology*, *8*(2), 19-34.

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Department of Sociology
School of Social Science
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Social Computing and Data Mining

Course Title	Social Computing and Data Mining
Course Code	SDC201A
Course Type	DSE
Department	DSA
Faculty	School of Social Sciences

1. *Course Summary*

This course introduces the foundational mathematical concepts necessary for understanding and analyzing social data using computational methods. Students will learn about vectors, matrices, eigenvalues, and eigenvectors, with a focus on their application in social network analysis and data mining algorithms. The course also covers basic calculus concepts such as limits, continuity, and derivatives, which are essential for understanding optimization techniques used in social computing tasks. Through this course, students will gain practical skills in modeling, mining, and visualizing social network data, as well as understanding semantic web technologies and community detection methods.

2. *Course Size and Credits:*

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	3:1:0
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. *Course Outcomes (COs)*

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After the successful completion of this course, the student will be able to:

CO-1: Explain the fundamentals of the Semantic Web and Social Web, and analyze social networks using key concepts and measures.

CO-2: Understand and apply ontology-based knowledge representation techniques to model and aggregate social network data.

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CO-3: Extract, detect, and evaluate communities in social networks using state-of-the-art data mining algorithms and tools.

CO-4: Employ graph theory and visualization techniques to represent and interpret social network structures and dynamics.

CO-5: Apply foundational mathematical concepts such as vectors, matrices, eigenvalues, and calculus to support computational social science methods.

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CO-6: Analyze real-world social network data and leverage computational tools to derive meaningful insights about social interactions and behaviors.

4. *Course Contents*

Unit I: Introduction to Semantic Web:

Limitations of current Web - Development of Semantic Web - Emergence of the Social Web - Social Network analysis: Development of Social Network Analysis , Key concepts and measures in network analysis - Electronic sources for network analysis: Electronic discussion networks, Blogs and online communities - Web-based networks - Applications of Social Network Analysis.

Unit II: Modelling, aggregating and knowledge representation

Ontology and their role in the Semantic Web: Ontology-based knowledge Representation - Ontology languages for the Semantic Web: Resource Description Framework - Web Ontology Language - Modelling and aggregating social network data: State-of-the-art in network data representation - Ontological representation of social individuals - Ontological representation of social relationships - Aggregating and reasoning with social network data - Advanced representations.

Unit III: Extraction and mining communities in web social networks

Extracting evolution of Web Community from a Series of Web Archive - Detecting communities in social networks - Definition of community - Evaluating communities - Methods for community detection and mining - Applications of community mining algorithms - Tools for detecting communities social network infrastructures and communities - Decentralized online social networks - Multi-Relational characterization of dynamic social network communities.

Unit IV: **Advanced Data Mining Techniques in Social Computing**

Data Mining Overview for Social Data

Clustering and Community Detection (Deeper Dive): More algorithms and approache to grouping users or content (e.g., spectral clustering, modularity maximization).

Frequent Pattern Mining and Association Rules: Discovering co-occurrence and interaction patterns in social data.

Link Prediction Techniques: Non-ML methods such as similarity metrics (Jaccard, Adamic/Adar) for predicting social ties.

Anomaly and Outlier Detection: Rule-based and statistical approaches to identify unusual social behaviors.

Text Mining in Social Computing: Basic NLP methods like keyword extraction, topic modeling (LDA) applied to social media texts.

Evaluation and Validation Techniques: Metrics to assess quality of mining results like modularity, conductance for community detection.

Data Preprocessing for Social Data: Handling missing, noisy, or incomplete data common in social datasets.

Tools and Frameworks: Practical introduction to tools like Gephi, Pajek, and basic scripting in Python or R for mining social networks.

Unit V: Visualization and applications of social networks

Graph theory - Centrality - Clustering - Node-Edge Diagrams - Matrix representation - Visualizing online social networks, Visualizing social networks with matrix-based

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representations - Matrix and Node-Link Diagrams - Hybrid representations - Applications - Cover networks - Community welfare - Collaboration networks - Co-Citation networks.

Essential Reading

1..Peter Mika, —Social Networks and the Semantic Webl, First Edition, Springer 2007.
2. Borko Furht, —Handbook of Social Network Technologies and Applicationsl, 1st Edition, Springer, 2010.

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Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

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Decision Making in Social and Information Sciences

Course Title	Decision Making in Social and Information Sciences
Course Code	SCD203A
Course Type	Discipline Specific Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

This course delves into the theoretical foundations and practical applications of decision-making processes within the realms of Social and Information Sciences. Students will explore various models, methods, and tools used in decision science, emphasizing their application in real-world social and information contexts. The course also introduces students to data-informed and algorithm-supported decision-making, offering conceptual exposure to how big data, predictive models, and machine learning are used to enhance decision outcomes in modern social systems.

2. **Course Size and Credits:**

Number of Credits	**4**
Credit Structure (Lecture: Tutorial)	**3:1**
Number of Weeks in a Semester	**15**
Total Hours of Interaction	**60**
Total Course Marks	**100**
Pass Criterion	**As per the Academic Regulations**
Attendance Requirement	**As per the Academic Regulations**

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO1. Create and apply decision models to analyze and solve complex problems in social and information sciences.

CO2. Recognize and mitigate cognitive biases influencing decision-making processes in social and information contexts.

CO3. Utilize data analytics and information sciences to inform and improve decision-making strategies.

CO4. Enhance collaborative decision-making skills, considering the social dynamics and information flow within groups.

CO5. Assess the ethical and societal implications of decisions in social and information sciences.

CO6. Develop a conceptual understanding of how computational tools such as predictive models, decision trees, and algorithmic systems influence decision-making processes in social and information contexts.

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4. Course Contents:

Unit 1: Foundations of Decision Science

- Introduction to decision science theories and models
- Decision-making under certainty, risk, and uncertainty
- Behavioral economics and decision-making
- Introduction to data-informed decision-making in social systems

Unit 2: Cognitive Biases in Decision Making

- Identifying common cognitive biases

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- Strategies for mitigating biases
- Application of behavioral insights in decision science
- Influence of digital environments and algorithms on bias perception

Unit 3: Data-Driven Decision Making

- Role of data analytics in decision sciences
- Big data and decision-making processes
- Machine learning for decision support
- Conceptual exploration of predictive models and algorithmic tools (non-technical)

Unit 4: Collaborative Decision Making

- Group dynamics and decision outcomes
- Technology-supported collaborative decision-making
- Decision-making in interdisciplinary teams
- Use of shared digital platforms and dashboards for group decision support

Unit 5: Ethical Considerations in Decision Sciences

- Ethical frameworks for decision-makers
- Societal impact assessment of decisions
- Case studies on ethical decision-making in social and information sciences
- Ethics of algorithmic decision systems and data-driven governance

Note: This course does not involve hands-on training in programming or data analytics. Computational and data-driven decision-making frameworks are introduced at a conceptual level, using case studies and real-world applications.

Suggested Readings:

1. "Thinking, Fast and Slow" by Daniel Kahneman
2. "Nudge: Improving Decisions About Health, Wealth, and Happiness" by Richard H. Thaler and Cass R. Sunstein
3. "Superforecasting: The Art and Science of Prediction" by Philip E. Tetlock and Dan M. Gardner
4. "Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking" by Foster Provost and Tom Fawcett
5. "Collaborative Intelligence: Thinking with People Who Think Differently" by Dawna Markova and Angie McArthur
6. "Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy" by Cathy O'Neil
7. "Rational Choice in an Uncertain World" by Reid Hastie and Robyn M. Dawes
8. "The Signal and the Noise" by Nate Silver
9. Ethics of Artificial Intelligence and Decision Making – MIT Media Lab case studies (available online)
10. Ethics and Data Science by Hilary Mason, DJ Patil, and Mike Loukides (O'Reilly Media)

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Computer- Assisted Quantitative Data Analysis

Course Title	Computer-Assisted Quantitative Data Analysis (CAQDAS2)
Course Code	SCM201A
Course Type	SECC
Department	DSA
Faculty	School of Social Sciences

1. *Course Summary*

The purpose of this course is to introduce the importance of Data analysis on quantitative data to convey the insight of any data. They will be introduced to EDA through visualization, applying important aspects of data aggregation and filtering through Power Bi software and the use of basic programming.

1. *Course Size and Credits:*

Number of Credits	02
Credit Structure (Lecture: Tutorial: Practical)	1:1:0
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	Data Sciences and Analytics
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

2. *Course Outcomes (COs)*

After the successful completion of this course, the student will be able to:

CO-1. Conduct exploratory data analysis over quantitative data

CO-2. Craft visual presentations of data for effective communication.

CO-3. Use knowledge of perception and cognition to evaluate visualization design alternatives.

CO-4. Apply data transformations such as aggregation and filtering for visualization and dentify opportunities for the application of data visualization in various domains.

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3. *Course Contents*

Unit 1: Introduction to Power Bi/Excel

Course introduction, Datavizualization best practices, Getting started with Tableau Desktop, Connecting to the tutorial dataset, Creating the first charts, Filtering, and sorting data.

Unit 2: Working on Charts

Creating common visualizations (bar charts, line charts, etc.), Assembling a dashboard layout, Using dashboard filters

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Unit 3: Data Transformation

Data vizualization best practices, Creating simple calculations on data, Using table calculations

Unit 4: Interactions

Interactivity with text and visual tooltips, Interactivity with actions (filter, highlight, URL), Drilldown between dashboards

Unit 5: Data Storytelling

Intro to data storytelling, Creating a data story in Tableau, Overview of the Tableau ecosystem, Further learning opportunities

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Semester 5

Introduction to Artificial Intelligence and Machine Learning

Course Title	**Introduction to Artificial Intelligence and Machine Learning**
Course Code	SCC301A
Course Type	Core Course
Department	DSA
Faculty	School of Social Sciences

12. Course Summary:

This course introduces students to the foundational concepts and techniques **of Artificial Intelligence (AI) and Machine Learning (ML),** emphasizing their applications in social sciences. It spans both symbolic AI approaches (such as logic, reasoning, and search) and data-driven ML techniques (supervised, unsupervised, and probabilistic learning). Students will explore the ethical, philosophical, and practical challenges posed by AI systems in human and social contexts. Hands-on labs using Python/R enable real-world data analysis and model implementation.

Course Size and Credits:

Number of Credits	04
Credit Structure (Lecture: Tutorial: Practical)	3:1:0
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	Data Sciences and Analytics
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO1. Understand the theoretical foundations and evolution of Artificial Intelligence and Machine Learning.

CO2. Implement and evaluate ML models for classification, regression, and clustering.

CO3. Understand and apply logic-based AI, search algorithms, and probabilistic reasoning.

CO4. Explore real-world applications of AI/ML in social systems and networks.

CO5. Critically analyze ethical implications and societal impacts of AI in decision-making.

Course Contents

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UNIT 1: Foundations of AI and Machine Learning

- Definition and Scope of AI; Evolution of AI and ML
- Types of AI: Narrow, General, and Super AI
- Machine Learning Types: Supervised, Unsupervised, Reinforcement
- Applications of AI/ML in Social Sciences

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- Data Preprocessing

UNIT 2: Classical AI – Reasoning, Logic & Search

- Problem Formulation and State Space
- Uninformed Search: DFS, BFS
- Informed Search: A*, Greedy Search
- Game Playing: Minimax, Alpha-Beta Pruning
- Logic and Knowledge Representation

UNIT 3: Supervised Learning

- **Regression Algorithms**
  - Linear Regression, Gradient Descent
  - Multiple Linear Regression, Regularization (L1/L2)
- **Classification Algorithms**
  - Logistic Regression, k-NN
  - Decision Trees (ID3, Gini, Entropy)
  - Random Forests,

- Evaluation & Model Selection
- Bias-Variance Tradeoff; Overfitting and Underfitting
- Applications in social media analysis, behavioral prediction, policy modeling

UNIT 4: Unsupervised Learning & Dimensionality Reduction

- Clustering:
  4. k-Means, Hierarchical Clustering
- Dimensionality Reduction:
  4. PCA, feature selection
- Applications:
  4. Topic modeling, anomaly detection
- Social Science Use-Cases: Community detection, ideology clustering

UNIT 5: Probabilistic Models, NLP & AI Ethics

- Basics of Probability in ML
- Bayes' Theorem, Conditional Probability
- Naïve Bayes: Algorithm & Applications (e.g., text classification, spam filtering)
- **AI and Society**: Fairness, Bias, Transparency in AI; Ethical and Legal Implications of AI Systems

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Essential Readings:

15. Alpaydin, E. (2021). *Introduction to Machine Learning*. MIT Press.
16. Géron, A. (2019). *Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow*. O'Reilly.
17. Russell, S., & Norvig, P. (2021). *Artificial Intelligence: A Modern Approach* (4th ed.). Pearson.
18. Burkov, A. (2019). *The Hundred-Page Machine Learning Book*. Andriy Burkov.
19. Ng, A. *Machine Learning Yearning*. Online: https://info.deeplearning.ai/machine-learning-yearning-book

20. Barocas, S., Hardt, M., & Narayanan, A. (2019). *Fairness and Machine Learning*. https://fairmlbook.org

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School of Social Science
M.S. Ramaiah University of Applied Sciences

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Database Management Concepts and applications

Course Title	Database Management Concepts and applications
Course Code	SCC302A
Course Type	Discipline Specific Course
Department	Data Sciences and Analytics
Faculty	School of Social Sciences

1. *Course Summary*

This course is intended to provide a thorough knowledge of the principles, design, programming, and applications of database systems. The concepts of databases along with the challenges of effective design of database systems are taught. Data modeling, schemas, normalization, and query languages are covered in detail. The physical organization of databases, indexing structures, and transaction processing are covered. Multidimensional data modeling and OLAP concepts are introduced. Database administration, management, and interfacing are covered. Students are trained to design, implement and interface databases for data-centric software applications.

2. *Course Size and Credits:*

Number of Credits	4
Credit Structure (Lecture: Tutorial: Practical)	3:1
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	Data Sciences and Analytics
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

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3. *Course Outcomes (COs)*

After the successful completion of this course, the student will be able to:

CO-1. Describe the concepts, design, and applications of database systems
CO-2. Explain the principles of data modeling, querying, storage, transactions, and optimization of database systems
CO-3. Analyze the schema and use appropriate normalization techniques for relational databases
CO-4. Develop queries using query languages for a given database system and Apply principles of database systems to model data and create queries
CO-5. Design and implement an efficient database system and interface it with a given application

4. *Course Contents*

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Unit 1 : Introduction to Database Systems:
Purpose of database systems, characteristics of database approaches, history of database applications, classification of DBMS, database users, architectures for DBMS, recent database applications, data models, schemas, data independence, database design, and implementation process.

Unit 2 Entity-Relationship Model:
E-R diagrams, entities, attributes, relationships, roles and constraints, Enhanced Entity-Relationship (EER) diagrams, subclasses and super classes, specialization, and generalization.

Unit 3 - Relational Data models: Relational schema, relational model constraints, keys, relational database design, relational algebra, relational calculus.

Unit- 4 Query Languages:
SQL- data definition and data types, query formulation, constraints in SQL, basic queries in SQL, complex queries in SQL, QBE, query processing, database programming - techniques and issues, embedded SQL, using JDBC, database stored procedures.

Unit-5 : Normalization for Relational Databases:
Functional dependency, normal forms, decomposition of a schema, multivalued dependencies, join dependencies, dependency preservation, inclusion dependencies.

Unit- 6: File Organization and Storage:
Basic file structure, RAID technology, hashing techniques, indexing structures, types of single-level ordered indexes, multi-level indexes, B+ trees.

Unit -7: Transaction Processing:
Transaction processing systems, transaction states, ACID properties, characterizing schedules, recoverability, and serializability of schedules, concurrency control, locking techniques, timestamp ordering, database recovery techniques, shadow pages, ARIES recovery algorithm, database security, and authorization.

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Identity and Sexuality in Digital Era

Course Title	Identity and Sexuality in Digital Era
Course Code	SCC303A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

This course explores the complex intersection of identity and sexuality in the digital age, using computational social sciences as a lens for analysis. Students will investigate how digital technologies shape, represent, and influence individual and collective identities and sexualities. Through a blend of theory, data analysis, and case studies, students will gain a deep understanding of the evolving landscape of identity and sexuality in the digital era.

2. **Course Size and Credits:**

Number of Credits	**4**
Credit Structure (Lecture: Tutorial)	**3:1**
Number of Weeks in a Semester	**15**
Total Hours of Interaction	**60**
Total Course Marks	**100**
Pass Criterion	**As per the Academic Regulations**
Attendance Requirement	**As per the Academic Regulations**

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO1. Analyze the impact of digital technologies on the formation and expression of personal and collective identities.

CO2. Explore the role of social media, online communities, and dating apps in shaping contemporary sexual identities.

CO3. Employ computational tools and methods to collect and analyze data related to identity and sexuality in the digital realm.

CO4. Critically evaluate ethical and privacy considerations in research involving sensitive topics like sexuality.

4. Course Contents:

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Unit 1: Introduction to Identity and Sexuality in the Digital Era

- Defining identity and sexuality in the digital age.
- Historical context and evolution of digital technologies.
- Theoretical frameworks for studying identity and sexuality.
- Ethical considerations in researching sensitive topics.

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Unit 2: Digital Identities and Online Personas

- Conceptualizing digital identities.
- Online self-presentation and identity performance.

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- Social media and the construction of digital personas.
- Analysis of online identity-related data.

Unit 3: Digital Sexualities

- Shifting paradigms of sexuality in the digital era.
- Exploration of online dating apps and communities.
- Social media's influence on sexual expression and identity.
- Data analysis of digital sexuality-related content.

Unit 4: Data Analysis and Visualization of Digital Identities and Sexualities

- Introduction to computational methods and tools tailored for analyzing digital identities and sexualities.
- Hands-on workshops on data collection, preprocessing, and structuring for identity and sexuality-related datasets.
- Utilizing data visualization techniques to uncover patterns, trends, and nuances in online identity and sexuality expression.

Unit 5: Contemporary Issues and Digital Activism

- Exploring pressing contemporary issues related to identity and sexuality in the digital era, such as cyberbullying, online harassment, and digital advocacy.
- Analyzing case studies of digital activism movements focused on identity and sexuality, including #MeToo, LGBTQ+ rights advocacy, and online support communities.
- Engaging in critical discussions on the impact of digital platforms on marginalized and underrepresented groups' identities and sexualities.
- Reflection on the evolving landscape of identity and sexuality in the digital era.

Suggested Readings:

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1. "The Presentation of Self in Everyday Life" by Erving Goffman.
2. "Online Intimacies: Social Media and the Secret Lives of Teens" by C. J. Pascoe
3. "The Mediated Construction of Reality" by Nick Couldry and Andreas Hepp.
4. boyd, d. (2010). "Social network sites as networked publics: Affordances, dynamics, and implications." In Networked self: Identity, community, and culture on social network sites (pp. 39-58). Routledge.
5. Duguay, S. (2017). "'There's a lifestyle that comes with it': Producing the 'Authentic' on Instagram." Information, Communication & Society, 20(7), 965-981.

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
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6. Fox, J., Warber, K. M., & Makstaller, D. C. (2013). "The role of Facebook in romantic relationship development: An exploration of Knapp's relational stage model." Cyberpsychology, Behavior, and Social Networking, 16(1), 3-7.

7. Marwick, A., & Lewis, R. (2017). "Media manipulation and disinformation online." Data Society Research Institute.

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

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Governance: Digital and Computing

Course Title	Governance: Digital and Computing
Course Code	SCD301A
Course Type	Discipline Specific Course
Department	Sociology & Public Policy
Faculty	School of Social Sciences

1. Course Summary

This course explores the intricate relationship between governance and the digital landscape within the context of Computational Social Sciences. Students will gain insights into the challenges and opportunities posed by emerging technologies, examining the impact of computing on governance structures, policies, and societal interactions

2. **Course Size and Credits:**

Number of Credits	**4**
Credit Structure (Lecture: Tutorial)	**3:1**
Number of Weeks in a Semester	
Total Hours of Interaction	
Total Course Marks	**100**
Pass Criterion	**As per the Academic Regulations**
Attendance Requirement	**As per the Academic Regulations**

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO1. Analyze the evolution of digital governance structures and their impact on societal systems, emphasizing the role of computational technologies.

CO2. Assess the ethical considerations in the development and implementation of digital governance, considering the social consequences of computing systems.

CO3. Apply computational tools to enhance governance mechanisms, promoting efficiency and transparency.

CO4. Critically analyze and formulate policies that address the challenges posed by digital advancements in societal governance.

4. Course Contents:

Unit 1: Introduction to Digital Governance

- Overview of governance in the digital era
- Historical evolution of digital governance
- Key concepts: e-Government, open data, and digital citizenship

Unit 2: Ethical Considerations in Digital Governance

- Ethical frameworks in computing
- Privacy and security concerns
- Bias and fairness in algorithmic decision-making

Unit 3: Technologies Shaping Governance

- Blockchain and decentralized governance
- Artificial Intelligence and machine learning in policy-making
- Internet of Things (IoT) and smart cities

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Dean - Academics
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Unit 4: Policy Development and Analysis

- Policy formulation in response to technological advancements
- Impact assessment of digital policies
- International perspectives on digital governance

Unit 5: Case Studies and Best Practices

- Real-world examples of successful digital governance implementations
- Case studies on failures and lessons learned
- Group projects: analyzing and proposing solutions to current governance challenges

Suggested Readings:

1. "The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power" by Shoshana Zuboff
2. "Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy" by Cathy O'Neil
3. "Blockchain Revolution: How the Technology Behind Bitcoin and Other Cryptocurrencies is Changing the World" by Don Tapscott and Alex Tapscott
4. "Artificial Intelligence: A Guide for Thinking Humans" by Melanie Mitchell
5. "Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia" by Anthony M. Townsend
6. "Data and Goliath: The Hidden Battles to Collect Your Data and Control Your World" by Bruce Schneier

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Diversity and Inclusion in Social Sciences

Course Title	Diversity and Inclusion in Social Sciences
Course Code	SCD302A
Course Type	Discipline Specific Elective
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

This dynamic course explores the critical intersection of race, diversity, and inclusion within the realm of social sciences. Students will engage in thoughtful discussions, hands-on activities, and research projects to understand the complex social dynamics related to race and diversity. The course places a strong emphasis on fostering inclusivity and equipping students with the tools to contribute positively to diverse societies.

2. **Course Size and Credits:**

Number of Credits	**4**
Credit Structure (Lecture: Tutorial)	**3:1**
Number of Weeks in a Semester	**15**
Total Hours of Interaction	**60**
Total Course Marks	**100**
Pass Criterion	**As per the Academic Regulations**
Attendance Requirement	**As per the Academic Regulations**

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO1. Analyze the historical and contemporary dimensions of race and diversity in society.
CO2. Understand key concepts and theories related to race, ethnicity, and inclusion in social sciences.
CO3. Recognize the importance of diverse perspectives and cultures in research and society.
CO4. Apply critical thinking to address issues related to discrimination, inequality, and social justice.
CO5. Develop research and communication skills to promote inclusivity and diversity.

4. Course Contents:

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Unit 1: Introduction to Race, Diversity, and Inclusion

- Overview of the course and its significance in contemporary society.
- Defining key concepts: race, ethnicity, diversity, and inclusion.
- Historical context of race and diversity in social sciences.

Unit 2: Theories of Race and Identity

- Exploration of major sociological and anthropological theories on race and identity.
- Examination of how identity is constructed and influenced by societal factors.
- Intersectionality and its impact on individuals' experiences.

Unit 3: Cultural Diversity and Global Perspectives

- Understanding cultural diversity and its role in shaping societies.
- Exploring global perspectives on diversity and inclusion.

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- Analysis of how cultural diversity impacts various aspects of social sciences.

Unit 4: Social Change Models and Inclusion Theories

- Examination of theoretical models of social change and their relevance to issues of inclusion and diversity.
- Analysis of how social movements, both historical and contemporary, have been informed by theoretical perspectives.
- Evaluation of the impact of theoretical paradigms on policy development, advocacy, and societal attitudes.

Unit 5: Activism for Inclusion

- Examination of historical and contemporary social justice movements driven by issues of race, diversity, and inclusion.
- Analysis of the impact of grassroots activism and societal attitudes.
- In-depth case studies on movements like Black Lives Matter, LGBTQ+ rights advocacy, and Indigenous rights activism.

Suggested Readings:

1. "Race, Ethnicity, Gender, and Class" by Joseph F. Healey and Andi Stepnick.
2. "Whistling Vivaldi: How Stereotypes Affect Us and What We Can Do" by Claude M. Steele.
3. "Diversity and Society: Race, Ethnicity, and Gender" by Joseph F. Healey.
4. DiAngelo, R. (2011). "White fragility." International Journal of Critical Pedagogy, 3(3), 54-70.
5. Crenshaw, K. (1989). "Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics." University of Chicago Legal Forum, 139-167.
6. Alexander, M. (2010). "The New Jim Crow: Mass Incarceration in the Age of Colorblindness." The New Press.
7. Rothstein, R. (2017). "The Color of Law: A Forgotten History of How Our Government Segregated America." Liveright Publishing Corporation.

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

Director
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M S Ramaiah University of Applied Sciences
Bengaluru – 560054

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Course Title	Human Centred Systems
Course Code	SCD303A
Course Type	Core Course
Department	Sociology & DSA
Faculty	School of Social Sciences

1. Course Summary

This course explores the design, development, and evaluation of human-centered systems, emphasizing their critical role in Computational Social Sciences. Students will learn how to create systems that prioritize user needs and integrate computational methods to analyze and enhance human interactions with technology. Through a combination of theory, practical exercises, and case studies, students will gain the skills and knowledge necessary to design and evaluate systems that are both effective and user-friendly.

2. **Course Size and Credits:**

Number of Credits	**4**
Credit Structure (Lecture: Tutorial)	**3:1**
Number of Weeks in a Semester	**15**
Total Hours of Interaction	**60**
Total Course Marks	**100**
Pass Criterion	**As per the Academic Regulations**
Attendance Requirement	**As per the Academic Regulations**

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO1. Understand the principles of human-centered design and its significance in system development.
CO2. Apply user-centered design methodologies to create and improve computational systems.
CO3. Evaluate the usability and user experience (UX) of human-centered systems.
CO4. Integrate computational techniques to enhance system performance and user satisfaction.
CO5. Analyze the social and ethical implications of human-centered systems.

4. Course Contents:

Unit 1: Introduction to Human-Centered Systems

- Definition of human-centered systems.
- Historical perspectives and evolution of user-centered design.
- Importance of usability and user experience (UX).
- Ethical considerations in designing for human-computer interaction.

Unit 2: User-Centered Design Methods

- User research techniques: surveys, interviews, and observation.
- Persona development and user journey mapping.
- Prototyping and wireframing for iterative design.
- Conducting usability testing and heuristic evaluations.

Unit 3: Computational Enhancements in Human-Centered Systems

- Introduction to computational methods for system improvement.

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School of Social Science
M.S. Ramaiah University of Applied Sciences
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M.S. Ramaiah University of Applied Sciences
Bangalore-560054

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- Data-driven design and personalization.
- Machine learning for recommendation systems.
- A/B testing and analytics for optimizing user experiences.

Unit 4: Case Studies and Practical Implementation

- Analysis of real-world human-centered systems in diverse domains.
- Hands-on exercises in prototyping, user testing, and data analysis.
- Group projects to design, develop, and evaluate a human-centered system.
- Ethical considerations in system design and implementation.

Unit 5: Social and Ethical Aspects of Human-Centered Systems

- Impact of human-centered systems on society and individuals.
- Ethical dilemmas in system design, data collection, and user profiling.
- User privacy and data security in human-centered systems.
- Discussion of emerging trends and challenges in the field.

Suggested Readings:

1. "The Design of Everyday Things" by Don Norman.
2. "Interaction Design: Beyond Human-Computer Interaction" by Jenny Preece, Helen Sharp, and Yvonne Rogers.
3. "Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics" by William Albert and Thomas Tullis.
4. Norman, D. A., & Draper, S. W. (1986). "User-centered system design: New perspectives on human-computer interaction." CRC Press.
5. Nielsen, J., & Molich, R. (1990). "Heuristic evaluation of user interfaces." Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, 249-256.
6. Bødker, S., Kammersgaard, J., & Simonsen, J. (2004). "Participatory IT design: Designing for business and workplace realities." MIT Press.
7. Doshi-Velez, F., Kortz, M., Budish, R., Bavitz, C., Gershman, S., O'Brien, D., & Schieber, B. (2017). "Accountability of AI under the law: The role of explanation." arXiv preprint arXiv:1711.01134.

Head
Department of Sociology
School of Social Sciences

Director
School of Social Sciences & School of Law
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Semester 6

Track 1: Computational Sociology

Track 1: Computational Sociology

Sociology of Health and Well-Being

Course Title	Sociology of Health and Well-Being (CC12)
Course Code	SCC304A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

The Sociology of Health and Well-being course explores the social dimensions of health, illness, and well-being. It examines the ways in which social factors, structures, and processes shape health outcomes and healthcare systems. The course analyses key theories, concepts, and empirical studies in the field of medical sociology, providing students with a comprehensive understanding of the social determinants of health and the social implications of healthcare practices. The course will involve Lectures/Assignments/Self-study /Poster and Album making/Presentations/ Group Readings and Discussions/ Developing Case studies/ Interactive meets with health care providers and seekers, apart from mandatory field visits to the hospital settings.

2. Course Size and Credits:

Number of Credits	5
Credit Structure (Lecture: Tutorial)	4:1
Number of Weeks in a Semester	
Total Hours of Interaction	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able:

CO1. Understanding the socio-cultural basis of inequalities in health care access and utilization.

CO2. Analyzing public health policies and reports related to health from a sociological perspective.

CO3. Developing the skills required to interact with all stakeholders in hospital settings, collecting and interpreting health related data and using the knowledge of the course for making health care institutions more people friendly.

CO4. Exploring the social implications of healthcare systems and interventions.

4. Course Contents

Unit 1: Social Construction of Health and Illness

- Defining Health, Illness and Well-being- Sociology of Health and Wellbeing -Its Meaning
- Scope and Relevance- -Medical Sociology and Sociology in Medicine

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- Approaches to Understanding Health and Disease
- Major Theoretical Perspectives on Sociology of Health – Political Economy, Functionalist, Symbolic Interactionist, Subaltern and Gender

- Medical Gaze (Michel Foucault)- Medicalization as Social Control

Unit 2: Social Determinants of Health (SDOH)

- Social Inequalities and Health Disparities- Role of Education, Economic Stability, Safe Work Spaces, Health Care Access, Natural and Built Environment, Social Networks and Social Support in Health
- Coping with Health Problems of the Elderly, Disabled and Sexual Minorities
- Case Studies on SDOH from global and Indian context **(Practical Exercises)**

Unit 3: Illness and Therapy as Experience-Biomedical Vs. Socio-Cultural

- Understanding the Experience of Illness in an Intersectionality Framework-Gender, Caste, Class, Religion, Rural –Urban Location
- Socio-Cultural Factors in Health Care Utilization
- Dealing with Illness-Experiences of the Pandemic in India and in a Global Setting
- Ways India handled CoVID-19 Pandemic
- Access toand Utilization of Technological Innovations in Health Care.

Unit 4: Healthcare Systems and Institutions

- Comparative Analysis of Healthcare Systems and Health Care Institutions
- The Hospital as aSocial Institution- Role of Sociology in Hospital Management
- Sociologists as Health Knowledge Providers, Social Counsellors, Health Researchers and Data Analysts

Unit 5: Health Policy and Social Change in India

- Public Health Policy as Agency- Shifts in Public Health Policy Priorities – Analysis of Healthcare in India – Challenges and Future Opportunities
- Making Public Health Policy People-centric through Health Advocacy – India's Healthcare Policy
- Barefoot Doctors, ANMs, ASHA Workers and the Less Visible Health Care Providers-Their Social Profile and Work Life –
- Future HealthChallenges-Health as a Human Right
- Sustainable Development Goals (SDGs) and Health in the Global and Indian Context

Mandatory References

- Akram, Mohammad (2014). *Sociology of Health*, Rawat Publications, Jaipur.
- Charmaz, K. (2014). *The Social Reality of Illness: Patient Experiences and Perspectives*, SagePublications.
- Cockerham, W. C. (2016). *Medical Sociology* (14th Edition), Routledge.
- Conrad, P., & Leiter, V. (2019). *The Sociology of Health and Illness: Critical Perspectives* (10thEdition.), Sage Publications.
- Conrad, P. (2011). *The Medicalization of Society: On the Transformation of Human Conditionsinto Treatable Disorders*, John Hopkins University Press.
- Gopi Devdutt Tripathy, Anurita Jalan & Mala Kapur Shankardass (2021), *Sociological*

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Dean - Academics
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Head
Department of Sociolo
School of Social Scie
M.S. Ramaiah University of Appli
Bengaluru -54

Director
School of Social Sciences & School of Law
M S Ramaiah University of Applied Sciences
Bengaluru - 560054

Reflectionson the Covid-19 Pandemic in India: Redefining the Normal, Springer.

- Link, B. G., & Phelan, J. C. (1995). *Social Conditions as Fundamental Causes of Disease*, NationalLibrary of Health.
- Marmot, M. (2015). *The Health Gap: The Challenge of an Unequal World*, National Library of Medicine.
- Navarro, V. & Shi, L. (Eds.). (2001). The Political Economy of Social Inequalities: Consequencesfor Health and Quality of Life, Routledge.
- Tamilarasan, M (2016). *Medical Sociology*. Rawat Publications, Jaipur.

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
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Mobility and Migration

Course Title	Mobility and Migration (CC13)
Course Code	SCC305A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

The course introduces to the students the fundamentals of migration and mobility in the context of the large-scale migration occurring across the globe, including labor and other forms of migration. The multi-disciplinary nature of the course will enable the students to appreciate the development impact potential that migration can bring about and also the vulnerabilities that migrants face across corridors. This aspect will be addressed through the lens of law and governance, including the role of the Government of India and other UN bodies, apart from multi-lateral platforms in addressing the concerns. Finally, the course will highlight how mobility as being preferred by many countries of destination as against migration and permanent settlement. The course will attempt to cover both global and Indian context, as well.

2. Course Size and Credits:

Number of Credits	**5**
Credit Structure (Lecture: Tutorial)	**4:1**
Number of Weeks in a Semester	**16**
Total Hours of Interaction	**60+15 (Lectures + Tutorials)**
Total Course Marks	**100**
Pass Criterion	**As per the Academic Regulations**
Attendance Requirement	**As per the Academic Regulations**

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO1. Demonstrate understanding of the core concepts concerning migration and mobility.
CO2. Able to contextualise the migration patterns and streams in the contemporary debate on migrationand development, and migration and governance.
CO3. Familiarise and apply the learnings vis-à-vis the laws regulating and governing both internal and international migration from India.
CO4. Evaluate the development impact of migration and mobility.
CO5. Future of Work and its strong linkage with migration and mobility pathways.

4. Course Contents:

Unit 1: The Multi-Disciplinary Nature of the Course & Setting the Context

- Introduction to Key Concepts in Migration & Mobility
- Understanding Types of Migration & Contributing Factors, and the difference between

Ramanath K.V.
Dean - Academics
M S Ramaiah University of Applied Sciences
Bangalore-560054

Head
Department of Sociology
School of Social Science
Ramaiah University of Applied Sciences
Bengaluru -54

Director
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migration and mobility

- Internal & International Migration and Mobility: Pathways, Skills, Remittances & Other Issues
- Introduction to Migration Statistics, both in the Indian and Global Context

Unit 2: Migration & Development and Governance of Migration

- The Migration & Development Debate: Theories, Constituent Elements & Policy.
- Governance of Migration, both in Global and Indian Context: Principles and Models
- Major Issues Concerning International Migration – Brief Introduction to Skills, Remittances and Diaspora Connect

Unit 3: Migration Law, Policy and Governance in the Indian Context

- Inter-State Migrant Workmen Act (Regulation & Employment)
- Emigration Act, 1983
- Emigration Bill, 2023
- UN Conventions on Migration & their Applicability
- India's Commitment to the SDGs, GCM & GCR
- Social Security Agreements (SSAs), Labour Mobility Partnerships (LMPs) and Future of India's engagement with Countries of Destination (COD)

Unit 4: Development Impact of Migration and Mobility in the Indian Context

- Climate Change, Human Rights, Migration and Mobility
- Remittances in the Indian Context: Regulation & Channels
- Diaspora Philanthropy as an instrument of engagement

Unit 5: Future of Work for Sustainable Migration and Mobility Pathways

- Skills Landscape in India & the linkages with Migration and Mobility
- Enhancing Migration and Mobility through Skill Upgradation
- Mutual Recognition of Skills & Qualification Frameworks
- Bilateral & Multilateral Engagement (G2G) by the Government of India to Facilitate Migration of Skilled Personnel
- Role of Industry Bodies, Certification & Assessment Agencies

Mandatory Readings:

- Afram, Gabi G. (2011). The Remittance Market in India: Opportunities, Challenges and Policy Options. World Bank.
- Cohen, Robin. (1997). Global Diasporas: An Introduction. London, UCL Press.
- de Haas, H. (2010). Migration and Development: A Theoretical Perspective. The International Migration Review, 44(1), 227–264.
- de Haas, H., Castles, S. & Miller, M.J. (2020) The Age of Migration: International population movements in the modern world.New York, Guilford Press.

Ramyanth K.V.
Dean - Academics
M S Ramaiah University of Applied Sciences
Bangalore-560054

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
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- Gollerkeri, Gurucharan, and Natasha Chhabra. (2016), Migration Matters: Mobility in a Globalizing World. Delhi, Oxford University Press.
- S. Castles & R. Delgado Wise (Eds.). (2008) Migration and development: perspectives from the south. Geneva: International Organization for Migration.
- Sidel, Mark. (2008). A Decade of Research and Practice of Diaspora Philanthropy in the Asia Pacific Region: The State of the Field (May 2008). U Iowa Legal Studies Research Paper No. 08- 09.
- Singh, Alwyn Didar, Working with the Diaspora for Development Policy Perspectives from India, Migration Policy Centre, CARIM-India Research Report, 2012/25, Thematic Reports.

Mandatory Reports:

- Global Compact for Safe, Orderly and Regular Migration (GCM) adopted by the UNGA on 19 December 2018 (A/RES/73/195).
- Workforce of the Future: The Competing Forces Shaping 2030 by PWC published in 2018.

Mandatory Browsing of Portals:

- International Labour Organisation (ILO): www.ilo.org
- International Organisation for Migration (IOM): UN Agency on Migration: www.iom.net
- Ministry of External Affairs (MEA): www.mea.gov.in
- Ministry of Skill Development and Entrepreneurship: www.msde.gov.in
- National Skills Development Corporation (NSDC): www.nsdcindia.org
- The Organization for Economic Cooperation and Development (OECD): www.oecd.org

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences

Director
School of Social Sciences & School of La
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Cultural Modeling I

Course Title	Cultural Modeling I (CC14)
Course Code	SCC306A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

This course provides an introduction to the foundational concepts and methods of cultural modeling within Computational Social Sciences. Students will explore how computational tools and techniques can be used to analyze, represent, and simulate cultural phenomena.

2. **Course Size and Credits:**

Number of Credits	**5**
Credit Structure (Lecture: Tutorial)	**4:1**
Number of Weeks in a Semester	**15**
Total Hours of Interaction	**60**
Total Course Marks	**100**
Pass Criterion	**As per the Academic Regulations**
Attendance Requirement	**As per the Academic Regulations**

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:
CO1. Define the key concepts and theories related to cultural modeling.
CO2. Understand the role of computational methods in modeling cultural processes.
CO3. Apply various modeling techniques to analyze and represent cultural phenomena.
CO4. Evaluate the strengths and limitations of different cultural modeling approaches.

4. Course Contents:

Unit 1: Introduction to Cultural Modeling

- Definition of cultural modeling and its significance in Computational Social Sciences.
- Historical context and development of cultural modeling approaches.
- Theoretical foundations for modeling culture.

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Unit 2: Agent-Based Modeling in Cultural Context

- Introduction to agent-based modeling (ABM) and its application in cultural modeling.
- Building and simulating cultural agent-based models.
- Analyzing emergent cultural patterns and behaviors using ABM.
- Case studies of ABM in modeling cultural phenomena.

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Unit 3: Cultural Networks and Dynamics

- Exploration of network analysis techniques for studying cultural dynamics.
- Modeling the diffusion of cultural traits and ideas in networks.
- Analyzing network structures and their impact on cultural influence.

- Case studies on cultural diffusion and network dynamics.

Unit 4: Cultural Content Analysis

- Introduction to text mining and natural language processing for cultural analysis.
- Analyzing cultural content from texts, social media, and digital sources.
- Sentiment analysis and topic modeling in cultural content.
- Practical exercises in cultural content analysis.

Unit 5: Applied Cultural Modeling Projects

- Group projects where students design and execute cultural modeling projects.
- Integration of modeling techniques and data sources for cultural analysis.
- Presentation and discussion of project findings.
- Reflection on the applications and future directions of cultural modeling.

Suggested Readings:

1. "Agent-Based and Individual-Based Modeling: A Practical Introduction" by Steven F. Railsback and Volker Grimm.
2. Axelrod, R. (1997). "The Dissemination of Culture: A Model with Local Convergence and Global Polarization." Journal of Conflict Resolution, 41(2), 203-226.
3. Borgatti, S. P., Everett, M. G., & Johnson, J. C. (2013). "Analyzing Social Networks." SAGE Publications.
4. Watts, D. J. (2002). "A Simple Model of Global Cascades on Random Networks." Proceedings of the National Academy of Sciences, 99(9), 5766-5771.
5. Gonçalves, B., Perra, N., & Vespignani, A. (2011). "Modeling Users' Activity on Twitter Networks: Validation of Dunbar's Number." PLoS ONE, 6(8), e22656.

Head
Department of Sociology
School of Social Science
M S Ramaiah University of Applied Sciences
Bengaluru -54

Director
School of Social Sciences & School of [illegible]
M S Ramaiah University of Applied Sciences
Bengaluru – 560054

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Policy craft: Navigating the Nexus of Law and Governance-I

Course Title	Policy craft: Navigating the Nexus of Law and Governance-I (CC15)
Course Code	SCC307A
Course Type	Core Course
Department	
Faculty	School of Social Sciences

5. *Course Summary*

While performing the role of governing, understanding the institutions, methods and substance of the law is crucial. Policymakers must understand the law, both as a potential instrument of societal change and as an important constraint to the process of regulation and decision making. This course will explore the relationship between law and governance, providing participants with an introduction to legal decision making and the role of law and courts in the political system. It will also aim to develop core legal skills such as legal argumentation and interpretation.

6. *Course Size and Credits:*

Number of Credits	05
Credit Structure (Lecture: Tutorial: Practical)	4:1:0
Total Hours of Interaction	
Number of Weeks in a Semester	
Department Responsible	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

7. *Course Outcomes (COs)*

After the successful completion of this course, the student will be able to:

CO-1. Understand the nature and scope of policy crafting

CO-2. Learn basic concepts of law and governance

CO-3. Comprehend the inter-disciplinary approach used to highlight relationship between policy, law and governance

8. *Course Contents*

Unit 1: Governance I: Theories and Concepts

Unit 2: Governance II: The Legal Dimension

Unit 3: Law, Constitutionalism and Political Theory

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Department of Sociology
School of Social Sciences
M.S. Ramaiah University of Applied Sciences
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Unit 4: Sociology and Politics of Law

Unit 5: Law and Economics

Unit 6: Administrative Reforms and New Public Management

Unit 7: Contemporary Issues in Development

Unit 8: Development Ethics

Essential Reading:

- Kevin J Fandi (2018), Law and Public Policy, Routledge
- Kuldeep Mathur (2020), Public Policy and Politics in India: How Institutions Matter Oxford University Press

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School of Social Science
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Track 2: Computational Economics

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Track 2: Computational Economics

Course Title	Advanced Micro-Economics (CC12)
Course Code	SCC308A
Course Type	Core Course
Department	Economics
Faculty	School of Social Sciences

1.Course Summary

Aspects of advanced theories of consumer behavior are covered. Computation of various costs and revenues are also introduced. Finally, price determination in different market structures are discussed in this course.

2.Course Size and Credits:

Number of Credits	05
Credit Structure (Lecture: Tutorial: Practical)	4:1:0
Total Hours of Interaction	
Number of Weeks in a Semester	
Department Responsible	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3.Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO-1. Apprehend the consumer's choice under various conditions;
CO-2. Understand different concepts of costs and production and their role in determining the producer's behavior.
CO-3. Computing different types of costs and revenue.
CO-4. Understand price determination in different market structures

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4.Course Contents

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Unit 1: The Consumer Theory

1. The consumption decision/choice problem - budget constraint and budget set.
2. Consumer preferences: Concept and properties of indifference curves; nature of commodities: good vs. bad (pollution); perfect substitutes, perfect complements; cardinal v/s ordinal utility
3. Consumer's optimum choice; marginal rate of substitution, tangency condition.

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4. Effect of change in price; derivation of demand curve; decomposition into income and substitution effects.
5. Effect of change in income: income consumption curve, Engel curve.
6. Revealed preference. Choice under uncertainty – utility function and expected utility, risk aversion and risk preference.

Unit 2: Production, Technology and Firm's Input Choices

1. Technology and production: concept of production function and cost minimising choice of inputs.
2. Iso-product curve/isoquant and properties; production technology v/s production technique.
3. Short-run and law of variable proportions (TP, AP, MP curves); long run and returns to scale (IRS, CRS, DRS).
4. Cost of production and Firm's input choices: Cost structure – explicit v/s implicit or opportunity cost; economic and accounting costs.
5. Cost equation, isocost line; Cost minimization and choice of technique; long run and short run expansion path

Unit 3: Cost Functions/cost curves

1. Concepts of different types of costs curves – fixed, sunk, variable costs; total, average, and marginal costs; short-run total, average, fixed cost curves, short run marginal cost curve. Relation between these curves with the product curves
2. Long-run cost functions; economies and diseconomies of scale and shape of the long-run average cost curve, derivation of LAC as envelope to SACs, long run marginal cost curve.
3. Product transformation curve, joint production, economies and diseconomies of scope.

Unit 4: The Firm and Market Structure:

1. Perfect Market Structure: Organization, Firms and Profit Maximization. Marginal Revenue, Marginal Cost and Profit Maximization. Short run competitive equilibrium of the firm, short run supply curve of firm and industry, Output choice and competitive equilibrium in long run. Consumer and Producer surplus. Introduction to input markets.
2. Imperfect Competition: Price determination in Monopoly market and Oligopoly; Introduction to Game Theory; Introduction to models under asymmetric information.

Essential Readings:

1. Principles of Micro Economics - Gregory Mankiw
2. Microeconomics - Pindyck and Rubinfeld
3. Intermediate Microeconomics: A Modern Approach - Hal R Varian - Publisher: SPRINGER (INDIA) PVT. LTD

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Course Title	**Applied Econometrics-I (CC14)**
Course Code	SCC310A
Course Type	Core Course
Department	
Faculty	School of Social Sciences

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1. Course Summary

This course is designed to expose the students to the basic econometric theories. It provides some useful tools for student's future research. It also helps the students to develop a way of thinking in quantitative terms.

2.Course Size and Credits:

Number of Credits	05
Credit Structure (Lecture: Tutorial: Practical)	4:1:0
Total Hours of Interaction	75
Number of Weeks in a Semester	15
Department Responsible	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3.Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO-1. Understand the nature and scope of econometrics.
CO-2. Learn Classical Linear Regression Model and its properties and applications.
CO-3. Learn the use of statistical inferences and hypothesis testing in econometrics.

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4.Course Contents

Unit 1: Nature and Scope of Econometrics: Distinction between Economic Model and Econometric model. Concept of stochastic relation, Role of random disturbance in econometric model.

Unit 2: Types of data: Cross section, time series, panel and pooled cross-sectional data.

Unit 3: Classical Linear Regression Model: The classical assumptions. Concepts of population regression function and sample regression function. Estimation of model by method of ordinary least squares (both simple and multiple linear model). Simple correlation, partial correlation, and multiple correlation. Properties of the Least Squares Estimators (BLUE) in SLRM- Gauss-Markov theorem. Qualitative (dummy) independent variables – intercept dummy and slope dummy.

Unit 4: Statistical inference in linear regression model: Use of standard normal, chi2, t, and F statistics in linear regression model. Testing hypothesis, Single test and Joint test. Goodness of fit (in terms of R2, adjusted R2 and F statistic), Analysis of Variance (ANOVA).

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Unit 5: Violations of Classical Assumptions: Multicollinearity - Consequences, Detection (Variance Inflationary Factor (VIF)) and Remedies. Heteroscedasticity - Consequences, Detection (Lagrange Multiplier test) and Remedies. Autocorrelation - Consequences, Detection (Durbin-Watsontest) and Remedies.

Essential Reading

1. Basic Econometrics - Damodar Gujarati, Dawn Porter, Sangeetha Gunasekar - Publisher: McGraw Hill Education
2. Introductory Econometrics: A Modern Approach - Jeffrey Wooldridge - Publisher: South-Western College Publishing

Introduction to Econometrics - G S Maddala, Kajal Lahiri - Publisher: Wiley

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School of Social Science
M.S. Ramaiah University of Applied Sciences
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Policy craft: Navigating the Nexus of Law and Governance-I

Course Title	Policy craft: Navigating the Nexus of Law and Governance-I (CC15)
Course Code	SCC307A
Course Type	Core Course
Department	
Faculty	School of Social Sciences

1.*Course Summary*

While performing the role of governing, understanding the institutions, methods and substance of the law is crucial. Policymakers must understand the law, both as a potential instrument of societal change and as an important constraint to the process of regulation and decision making. This course will explore the relationship between law and governance, providing participants with an introduction to legal decision making and the role of law and courts in the political system. It will also aim to develop core legal skills such as legal argumentation and interpretation.

2.Course Size and Credits:

Number of Credits	05
Credit Structure (Lecture: Tutorial: Practical)	4:1:0
Total Hours of Interaction	
Number of Weeks in a Semester	
Department Responsible	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3.Course Outcomes (COs)

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After the successful completion of this course, the student will be able to:

CO-1. Understand the nature and scope of policy crafting

CO-2. Learn basic concepts of law and governance

CO-3. Comprehend the inter-disciplinary approach used to highlight relationship between policy, law and governance

4.Course Contents

Unit 1: Governance I: Theories and Concepts

Unit 2: Governance II: The Legal Dimension

Unit 3: Law, Constitutionalism and Political Theory

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Unit 4: Sociology and Politics of Law

Unit 5: Law and Economics

Unit 6: Administrative Reforms and New Public Management

Unit 7: Contemporary Issues in Development

Unit 8: Development Ethics

Essential Reading:

- Kevin J Fandi (2018), Law and Public Policy, Routledge
- Kuldeep Mathur (2020), Public Policy and Politics in India: How Institutions Matter Oxford University Press

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Political Economy of Development: Skills, Livelihood and Entrepreneurship I

1. Course Summary

This course introduces students to the political economy of development by examining the relationship between economic growth, employment, skills, livelihoods, and entrepreneurship. It explores classical and contemporary theories of development alongside the changing nature of labour markets in the digital economy. The course critically analyses skill development policies, livelihood strategies, entrepreneurship ecosystems, and the role of technology in shaping inclusive and sustainable development. Students are introduced to computational approaches for analyzing labor market trends and development indicators.

2. Course Size and Credits

Number of Credits	05
Credit Structure (Lecture: Tutorial: Practical)	4:1:0
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	Sociology
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

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3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO-1: Explain major theories and concepts of political economy and development in relation to employment, skills, and livelihoods.

CO-2: Analyse labour market transformations, skill development initiatives, and entrepreneurship policies using socio-economic indicators.

CO-3: Interpret datasets related to employment, livelihoods, and development using basic computational and statistical tools.

CO-4: Evaluate the impact of digital technologies and platform economies on livelihoods and entrepreneurial opportunities.

CO-5: Develop evidence-based recommendations for inclusive livelihood and entrepreneurship strategies using development data.

4. Course Contents

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Unit 1: Political Economy of Development

1. Meaning and concepts of development

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2. Classical and contemporary theories of development
3. Political economy perspectives on growth and inequality
4. Sustainable and inclusive development

Unit 2: Skills, Employment and Labour Markets

1. Changing nature of work
2. Skill development and human capital
3. Informal economy and employment
4. Labour market indicators and measurement

Unit 3: Livelihoods and Social Protection

1. Sustainable livelihood framework
2. Rural and urban livelihoods
3. Social protection and welfare programmes
4. Gender, livelihoods and social inclusion

Unit 4: Entrepreneurship and Innovation

1. Entrepreneurship ecosystems
2. Social entrepreneurship
3. MSMEs and start-up economy
4. Government policies supporting entrepreneurship

Unit 5: Computational Approaches to Development Analysis

1. Development indicators and open data sources
2. Labour market and entrepreneurship datasets
3. Data visualisation for development analysis
4. Evidence-based policy evaluation

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Essential Readings

1. Amartya Sen. *Development as Freedom*. Oxford University Press.
2. Michael P. Todaro and Stephen C. Smith. *Economic Development*. Pearson.
3. Dani Rodrik. *One Economics, Many Recipes*. Princeton University Press.
4. Jean Drèze and Amartya Sen. *An Uncertain Glory: India and Its Contradictions*. Penguin.
5. United Nations Development Programme. *Human Development Report* (latest edition).
6. World Bank. *World Development Report* (latest edition).

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Semester 7

Track 1: Computational Sociology

Computational Explorations in Health and Well-Being

Course Title	Computational Explorations in Health and Well-Being (CC16)
Course Code	SCC401A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

The Computational Explorations in Sociology of Health and Well-Being course provides the students an opportunity to understand and appreciate various aspects of digital technologies and computer applications in provision of healthcare for everyone. The course will focus on various aspects of data in the context of healthcare including an exclusive focus on the Indian context. Further, the course highlights the growing relevance of analytics and the advantages it brings to efficient administration of health through appropriate use of available technologies, and also the challenges to be addressed.

2. Course Size and Credits:

Number of Credits	5
Credit Structure (Lecture: Tutorial)	4:1
Number of Weeks in a Semester	
Total Hours of Interaction	
Number of Weeks in a Semester	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able:

CO1. Identify various sources of data available for analysis and inference in the healthcare sector

CO2. Examine the datasets available pertaining to provision of healthcare in the Indian context – Issues & Challenges

CO3. Appreciate the need for and relevance of accurate & structured data in healthcare and its consequential impact on better delivery of health

CO4. Familiarise with latest developments in computational technologies in healthcare andthe challenges

CO5. Learn and Apply use of Computational Explorations in Healthcare through Case Studies andDigital Applications

4. Course Contents

Unit 1: Data in the context of Health and Well-Being

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- Constituent Elements of Healthcare Sector in the Indian Context
- Data Collection in the Healthcare Sector – structured and unstructured
- Types of Data in Healthcare & formats that include structured forms, photographs, medical reports, prescriptions, digital, scans, multimedia and electronic health records
- Healthcare Data Analytics & Challenges including Data Privacy & Security
- Relevance of Sociology in Medicine and Healthcare Sector

Unit 2: Overview of Data on Healthcare in the Indian Context & Challenges

- Health Management Information System (HMIS) and other varied survey sources such as National Family Health Survey (NFHS), Annual Health Survey (AHS), District Level Household Survey (DLHS), Clinical Datasets with Hospitals, Patient Medical Records (PMR), PHC Data, National Health System Resource Centre (NHSRC), National Health Mission (NHM) & others
- Ways to Clean & Format Data from Varied Sources to address misinformation and missing information
- Master Data Management Solutions for ensuring Data Quality
- Training & Capacity Building Programs for Healthcare Professionals

Unit 3: Relevance of Accurate Data Collection & Analysis in Healthcare – Case Studies

- Enhances Efficient Documentation of all types of Clinical Records
- Efficient Treatment Delivery based on accurate and structured data
- Predictive Analysis & Improved Healthcare Trajectory for Patients
- Patient-Centric Decision Making
- Efficient & effective use of AI & ML Algorithms
- Data Visualisation for Identification of Patterns and Correlations

Unit 4: Computational Technologies for Healthcare

- Medical Big Data in Healthcare & Multi-Source Medical Data Fusion
- Machine Learning, Artificial Intelligence, Internet of Things & Data Analytics
- Computational Biology & Interface with Healthcare
- Healthcare Management Models based on Deep Learning
- Cloud Computing in Healthcare Industry
- Case Studies of Innovations in Computational Technology in Healthcare

Unit 5: Challenges in Use of IT in Healthcare

- Interdisciplinary Research in Healthcare Systems, Process and Workflow
- Addressing the Human-Computer Interaction in a Clinical Context
- Uniformity of Guidelines on Computable Knowledge Structures and Models across Hospital Settings.
- Data Infrastructure & Challenges: The Rural-Urban Divide
- Academic-Industry Collaboration to Promote Innovation in Computational Technologies for Healthcare
- Policy on Promoting National Level Digital Health Frameworks

Mandatory References

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- Dash, S., Shakyawar, S.K., Sharma, M. et al. (2019). Big data in healthcare: management, analysis and future prospects. J Big Data 6, 54.
- Dicuonzo G, Galeone G, Shini M, Massari A.(2022) Towards the Use of Big Data in Healthcare: A Literature Review. Healthcare (Basel). Jul 1;10(7):1232
- Flöther FF and Griffin PF (2023). How can quantum technologies be applied in healthcare, medicine and the life sciences? Research Directions: Quantum Technologies. 1, e7, 1–2
- Jain, D. Regulation of Digital Healthcare in India: Ethical and Legal Challenges. Healthcare, 2023, 11, 911
- Nielsen P, Sahay S. A. (2022). critical review of the role of technology and context in digital health research. DIGITAL HEALTH. 2022;8.
- Ruogu Fang, Samira Pouyanfar, Yimin Yang, Shu-Ching Chen, and S. S. Iyengar. 2016. Computational health informatics in the big data age: A survey. ACM Comput. Surv. 49, 1, Article 12 (June 2016), 36 pages. DOI: http://dx.doi.org/10.1145/2932707
- Sayantan Khanra, Amandeep Dhir, A. K. M. Najmul Islam & Matti Mäntymäki (2020) Big data analytics in healthcare: a systematic literature review, Enterprise Information Systems, 14:7, 878- 912
- Secinaro, S., Calandra, D., Secinaro, A. et al. (2021). The role of artificial intelligence in healthcare: a structured literature review. BMC Med Inform Decis Mak 21, 125
- Stead, William, W & Lin, Herbert S. (2009). Computational Technology for Effective Healthcare: Immediate Steps and Strategic Direction. Washington D.C: The National Academic Press.
- Ur Rasool, R.; Ahmad, H.F.; Rafique, W.; Qayyum, A.; Qadir, J.; Anwar, Z. Quantum Computing for Healthcare:A Review. Future Internet 2023, 15, 94.

Conference Proceedings:

O Pervasive Computing Technologies for Healthcare: 16th EAI International Conference, Pervasive Health 2022, Thessaloniki, Greece, December 12-14, 2022, Proceedings

Reports:

O Artificial Intelligence in Health Care: Benefits and Challenges of Machine Learning Technologies for Medical Diagnostics, A report by GAO & National Academy of Medicine (September 2022)
- Digital Health in India. A Report by Nishith Desai Associates (July 2023)
- Global Strategy on Digital Health: 2020-2025. A Report by World Health Organisation (2021)
- National Digital Health Mission: Strategy Overview. A Report by National Health Authority (July 2020)

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Computational Explorations in Mobility and Migration in India

Course Title	Computational Exploration in Mobility and Migration in India (CC17)
Course Code	SCC402A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

Data on Migration and Mobility, both internal and international, is essential to understand the magnitudeand far-reaching impact the process has on wider aspects of both countries of origin and destination. The border crossing of people involves various stages and often the process is determined by several push and pull factors. The course will attempt to understand, appreciate and apply various learnings from the last semester (Ref: Course on Migration and Mobility- Semester 6) with use of migration and mobility data. In doing so, the course shall cover various critical themes that find application of using migration and mobility data in policy formulation, law, governance and future of work inter alia understanding the challenges and way forward in the domain.

2. Course Size and Credits:

Number of Credits	**5**
Credit Structure (Lecture: Tutorial)	**4:1**
Number of Weeks in a Semester	
Total Hours of Interaction	
Total Course Marks	**100**
Pass Criterion	**As per the Academic Regulations**
Attendance Requirement	**As per the Academic Regulations**

3. Course Outcomes (COs)

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After the successful completion of this course, the student will be able to:

CO1. Appreciate the linkages between the determinants of migration and mobility, and data.
CO2. Command and apply the research methods pertaining to migration, design and implement data-driven projects on migration and mobility.
CO3. Gain first-hand experience of how migration -based data dashboards and platforms are designedand used, both in India and abroad, in select countries.
CO4. Recognize the role played by bilateral and multilateral agencies, government to government cooperation and other UN agencies in streamlining collection and analysis of migration and mobility data.
CO5. Understand the challenges faced by institutions that collect data, including administrators, and design platforms that feed data into policy formulation.

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4. Course Contents:

Unit 1: Data on Internal and International Migration: Challenges and Deficits

- Migration & Mobility: Definitions, Data and Deficits
- Analysis of Stages of Migration w.r.f Data Collection & Analysis
- Efforts to Understand Data Inventory in the Global and Indian Context
- Criteria used by Agencies that collect Migration Data & Variables of Importance

Unit 2: Research Methods in Migration and Mobility & Data Sets

- Migration Stock and Flow: Understanding the Difference & its impact
- Relevance of Big Data for Research on Migration and Mobility
- Use of Push-Pull Factors Theoretical Framework
- Lessons from the NSSO, Migration Surveys in India and other Studies

Unit 3: Migration Data Platforms: Who is Driving the Evidence-Based Data?

- Understanding Migration Statistics w.r.f to select Countries of Origin and Destination
- Factors Influencing Migration Data Collection & Analysis
- Linkages between census data and migration & mobility statistics
- Migration Data Platforms: Case Studies from South Asia, GCC and European Union
- Bilateral and Multilateral Partnerships for Improving Data Capture and Analysis

Unit 4: Role of UN Bodies and other Multilateral Institutions in Data Collection and Analysis

- Efforts by the UN Bodies to Improve Data Collection by Countries of Origin and Destination
- Evaluation of Select Platforms – UNDESA, Migration Data Portal, OECD' s International Migration Database, KNOMAD & World Bank
- Linkages between Sustainable Development Goals (SDGs), migration and mobility

Unit 5: Future Challenges & Issues with Migration and Mobility Data

- Data Deficiencies in the Informed Policy Making: matching the Entry and Exit Data
- Relevance of Migration and Mobility Data for Informed Policy Formulation: Are Administrators Collecting Minimalist Data?
- Disentangling Migrants from other Categories for better Data Collection & Analysis
- Where are the Irregular Migrants? Who is Counting the Absent?
- Challenges posed by Circular, Seasonal and Temporary Migrants

Mandatory Readings:

- Abel, G. J., & Sander, N. (2014). Quantifying global international migration flows. Science, 343(6178), 1520-1522.
- Bilsborrow R. E., Hugo G., Oberai A. S. (1997). *International Migration Statistics: Guidelines for Improving Data Collection Systems*. 1, Vol. 14, 1–425. Geneva: International Labour Organization.
- Brierley, M. J., Forster, J. J., McDonald, J. W., & Smith, P. W. (2008). Bayesian estimation of migration

Ramyath K.V.
Dean- Ac...
M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Head
Department of Sociology
School of Social Sciences
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

Director
School of Social Sciences & School o
M S Ramaiah University of Applied Sciences
Bengaluru – 560054

flows. International Migration in Europe. Chichester, United Kingdom: Wiley, 149-174.

- de Beer J., Raymer J., van der Erf R., van Wissen L. 2010. "Overcoming the Problems of Inconsistent

International Migration Data: A New Method Applied to Flows in Europe." *European Journal ofPopulation* / Revue Européenne de Démographie 26(4): 459–81.

- Del Fava, E., Wiśniowski, A., & Zagheni, E. (2019). *Modelling international migration flows by integrating multiple data sources.*
- Fargues, Philippe. (2018). *Advancing knowledge on international migration: data and research needs*. Report by International Union for the Scientific Study of Population (IUSSP).
- Potzschke, Steffen & Rinken, Sebastian (eds.). 2022. *Migration Research in a Digitized World: Using Innovative Technology to Tackle Methodological Challenges*. IMISCOE Open Access Series.
- Scholten, Peter (ed.). 2022. *Introduction to Migration Studies: An Interactive Guide to the Literatures on Migration and Diversity* IMISCOE Research Series.
- Vargas-Silva, Carlos. (ed).(2012). *Handbook of Research Methods in Migration*. Cheltenham (UK)/Northampton (USA): Edward Elgar.
- Willekens, F., & Baydar, N. (2023). Forecasting place-to-place migration with generalized linear models. In Population structures and models (pp. 203-244). Routledge.

Mandatory Portals to Refer:

- ILO, International Labour Migration Statistics Database in ASEAN (ILMS), http://apmigration.ilo.org/asean-labour-migration-statistics).
- International Organization for Migration, International Migration Law Glossary on Migration, Geneva 2004, http://www.iomvienna.at/sites/default/files/IML_1_EN.pdf

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

Director
School of Social Sciences & School of Law
M S Ramaiah University of Applied Sciences
Bengaluru – 560054

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Cultural Modeling II

Course Title	Cultural Modeling II (CC18)
Course Code	SCC403A
Course Type	Core Course
Department	Sociology & DSA
Faculty	School of Social Sciences

1. Course Summary

Building on the foundational concepts of cultural modeling, this advanced course delves deeper into the world of cultural modeling within Computational Social Sciences. Students will explore advanced modeling techniques, complex cultural dynamics, and interdisciplinary approaches to understanding and simulating cultural phenomena.

2. **Course Size and Credits:**

Number of Credits	**5**
Credit Structure (Lecture: Tutorial)	**4:1**
Number of Weeks in a Semester	
Total Hours of Interaction	
Total Course Marks	**100**
Pass Criterion	**As per the Academic Regulations**
Attendance Requirement	**As per the Academic Regulations**

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO1. Demonstrate an advanced understanding of cultural modeling theories and methods.
CO2. Apply advanced computational techniques to model complex cultural processes.
CO3. Design and implement interdisciplinary cultural modeling projects.
CO4. Evaluate and critique advanced cultural modeling approaches.
CO5. Synthesize and communicate insights from advanced cultural modeling projects effectively.

4. Course Contents:

Unit 1: Advanced Theoretical Foundations

- Deepening knowledge of advanced cultural modeling theories.
- Exploration of interdisciplinary perspectives and their relevance.
- Discussion of cutting-edge trends and debates in the field.

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Unit 2: Complex Cultural Systems and ABM

- Advanced techniques in agent-based modeling (ABM) for modeling complex cultural systems.
- Incorporating multi-agent interactions and adaptive behaviors into cultural ABM.
- Analyzing emergent patterns and phenomena in culturally diverse populations.
- Case studies illustrating advanced applications of ABM in cultural modeling.

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Unit 3: Network Science and Cultural Dynamics

- Advanced network analysis methods for modeling intricate cultural dynamics.
- Modeling the evolution of cultural networks and communities.
- Analyzing information flow, opinion diffusion, and cultural influence in complex networks.
- Case studies demonstrating advanced network modeling in cultural analysis.

Unit 4: Advanced Content Mining and Text Analysis

- Advanced text mining techniques for cultural content analysis.
- Sentiment analysis, topic modeling, and advanced content mining approaches.
- Analyzing and visualizing complex cultural narratives and discourse.
- Practical exercises in advanced cultural content analysis.

Unit 5: Interdisciplinary Cultural Modeling Projects

- Design and execute interdisciplinary cultural modeling projects.
- Integration of advanced modeling techniques, data sources, and interdisciplinary perspectives.
- Reflection on the future directions and applications of advanced cultural modeling in Computational Social Sciences.

Suggested Readings:

1. "Multiagent Systems: Algorithmic, Game-Theoretic, and Logical Foundations" by Yoav Shoham and Kevin Leyton-Brown.
2. "Network Science" by Albert-László Barabási.
3. "Text Mining: Applications and Theory" by Michael W. Berry and Jacob Kogan.
4. Epstein, J. M. (2006). "Complex Systems and Agent-Based Modeling." In Complexity Science (pp. 33-65). Springer.
5. Carley, K. M. (1996). "A Comparison of Artificial and Human Organizations." Journal of Mathematical Sociology, 21(1-2), 33-61.
6. Macy, M. W., & Willer, R. (2002). "From Factors to Actors: Computational Sociology and Agent-Based Modeling." Annual Review of Sociology, 28, 143-166.
7. Cioffi-Revilla, C., & Rogers, J. D. (2002). "The Computational Modeling of Civil Violence." International Studies Review, 4(3), 45-65.

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M.S. Ramaiah University of Applied Sciences
Bangalore-560054

Director
School of Social Sciences & School of Law
M S Ramaiah University of Applied Sciences
Bengaluru – 560054

Head
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Sociological Implications on Computing Technology

Course Title	Sociological Implications on Computing Technology (CC19)
Course Code	SCC404A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1.Course Summary

The objective of this course is designed to bring the perspectives of the sciences, social sciences, and humanities to the question of the impact of computers on society. To present factual material and provide a forum to motivate and analyze the students. Small group discussions give the student the opportunity to voice his opinions. Projects, papers, and surveys may be used to channel the students' exploration of these areas.

2.Course Size and Credits:

Number of Credits	05
Credit Structure (Lecture: Tutorial: Practical)	4:1:0
Total Hours of Interaction	
Number of Weeks in a Semester	
Department Responsible	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3.Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO-1. Students will be prepared with technological knowledge about the issues and face the challenges.
CO-2. Sensitized about various societal problems
CO-3. Technological implications will create opportunities for New & Innovative Learning
CO-4. To understand the relationship between society and technology

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4.Course Contents

Unit-1.Introduction to Technology
Definition, Nature and Scope of Technology, relationship between society and Technology

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Unit-2.Digital Age
Inequality, The social context of innovation, Automation in the workplace, Technology and income inequality, cyberspace creating and entirely different social realm, Issues and Challenges of Digital age.

Unit-3.The problem of technological determinism
The Internet as progressive social advisor, does technology make us lonely, is computer programming dominated by human. Technological determinism v/s social constructionism

Unit-4.SCOT Perspectives
Sociology of Innovation and Social Construction of Technology, Government Policies & Application of Technology

Unit-5 Social Movements and Cybercrimes
Types of social movements - alternative, redemptive, reformative and revolutionary. Relationship between social movements and cybercrimes

Essential Readings:

1. Anderson, A.R. (Ed.) Minds and Machines. Contemporary Perspectives in Philosophy Series, Prentice-Hall, Englewood Cliffs, N.J., 1964.
2. Kahn, H., and Wiener, A.J. The Year2000: Framework for Speculation on the Next Thirty-Three Years. Macmillan, New York, 1967.
3. Martin, J., and Norman, A. The Computerized Society. Prentice-Hall, Englewood Cliffs, N.J., 1970.
4. L. Marx, "Technology: The Emergence of a Hazardous Concept"
5. L. Winner, "Do Artifacts Have Politics?"
6. N. Invernizzi & G. Foladori, "Nanotechnology and the Developing World: Will Nanotechnology Overcome Poverty or Widen Disparities?"
7. L. Nakamura, "Race In/For Cyberspace: Identity Tourism and Racial Passing on the Internet"
8. S. Marche, "Is Facebook Making Us Lonely?"
9. M. Gladwell, "Small Change"
10. N. Ensmenger, "Making Programming Masculine"

E. Brynjolfsson & A. McAfee, "Why Workers Are Losing the War Against the Machines"

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School of Social Sciences & School of Law
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Bengaluru – 560054

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School of Social Science
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RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Track 2: Computational Economics

Track 2: Computational Economics

Course Title	Advanced Macro Economics (CC16)
Course Code	SCC405A
Course Type	Core Course
Department	Economics
Faculty	School of Social Sciences

1. *Course Summary*

This course introduces advanced concepts in macroeconomics like IS-LM curves, aggregate demand, effective demand etc. Employment and output determination under classical model and Keynesian model are discussed. Computation of multiplier, equilibrium price and output are covered. Comparative statics, open economy models are also covered in this course.

2. *Course Size and Credits:*

Number of Credits	05
Credit Structure (Lecture: Tutorial: Practical)	4:1:0
Total Hours of Interaction	
Number of Weeks in a Semester	
Department Responsible	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

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3. *Course Outcomes (COs)*

After the successful completion of this course, the student will be able to:

CO-1. Learn the macroeconomics in the long run – The Classical Model.
CO-2. Learn the macroeconomics in the short run – The Keynesian Revolution.
CO-3. Learn effectiveness of different government policies under short run and long run.
CO-4. Learn basics of the open economy macroeconomics.

4. *Course Contents*

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Unit 1: The Classical system:

1. Income and Output Determination: Basic ideas of Classical Macroeconomics; Say's Law and Quantity Theory of Money, Loanable fund theory
2. The Classical Theory of Income and Employment determination; full Employment and wage-price flexibility

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3. Classical Dichotomy and Neutrality of Money.

Unit 2: Simple Keynesian Model (SKM):

1. Income and Output Determination-The SKM in a Closed Economy without Government; Consumption Function; the Keynesian Saving Function; stability of equilibrium; the concept of effective demand, the Simple Keynesian Multiplier; the paradox of thrift;
2. SKM in a Closed Economy with Government; government expenditure and tax; the government expenditure multiplier and the tax rate multiplier; the balanced budget multiplier; the budget surplus; effects of tax changes and government purchases on budget surplus; the full employment budget surplus.

Unit 3: Macroeconomic Foundations:

1. The bond market as the mirror image of the money market-the Walras' Law.
2. Relationship between bond price and rate of interest- the concept of Keynesian liquidity preference schedule-speculative demand for money and liquidity trap.
3. Investment function: Concepts of Marginal productivity of capital, marginal efficiency of capital (MEC) and marginal efficiency of investment (MEI)- Jorgenson's neo-classical theory-Acceleration principle- fixed and variable. Multiplier-accelerator interaction.

Unit 4: IS-LM Model:

1. Equilibrium, stability and comparative statics.
2. Crowding out. Effects of fiscal and monetary policies.

Unit 5: Complete Keynesian Model:

1. Derivation of aggregate demand curve. Derivation of aggregate supply curves both in the presence and absence of wage rigidity.
2. Equilibrium, stability, and comparative statics-effects of monetary and fiscal policies.

Unit 6: Open Economy Models:

1. Concepts of exchange rates; nominal and real exchange rates; floating, fixed and pegged exchange rates.
2. Balance of Payments; Absolute and Comparative advantages.

Essential Readings:

1. Mankiw. Macroeconomics. Worth Publishers.
2. Froyen. Macroeconomics. Pearson Education.
3. Romer, D., Advanced Macroeconomics, second edition, McGraw-Hill, 2001
4. Andrew B. Abel and Ben S. Bernanke, Macroeconomics, Pearson Education, Inc., 7th edition, 2011.

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School of Social Science
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Ramanath K.V.
Dean - Academics
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RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Applied Econometrics II

Political Economy of Development — Skills, Livelihood and Entrepreneurship II

Course Title	**Political Economy of Development: Skills, Livelihood and Entrepreneurship II**
Course Code	SCC406A
Course Type	Core Course
Department	Sociology
Faculty	School of Social Sciences

1. Course Summary

Building upon the foundational concepts introduced in Part I, this course focuses on contemporary development challenges through computational approaches to policy analysis, entrepreneurship, innovation, and digital livelihoods. Students examine emerging labour markets, platform economies, artificial intelligence, financial inclusion, and sustainable entrepreneurship. The course equips students with analytical skills to evaluate development programmes using computational methods and evidence-based policy frameworks.

2. Course Size and Credits

Number of Credits	05
Credit Structure (Lecture: Tutorial: Practical)	4:1:0
Total Hours of Interaction	60
Number of Weeks in a Semester	15
Department Responsible	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

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After the successful completion of this course, the student will be able to:

CO-1: Assess the role of innovation, digital technologies, and platform economies in economic development and entrepreneurship.

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CO-2: Analyse public policies related to employment, entrepreneurship, financial inclusion, and sustainable development using empirical evidence.

CO-3: Apply computational tools to examine development datasets and evaluate socio-economic programmes.

CO-4: Design data-informed entrepreneurial and livelihood solutions addressing local and regional development challenges.

CO-5: Critically evaluate development policies and communicate evidence-based policy recommendations through analytical reports.

4. Course Contents

Unit 1: Digital Economy and Development

1. Digital transformation and economic development
2. Platform economy and gig work
3. Artificial intelligence and the future of work
4. Digital public infrastructure

Unit 2: Entrepreneurship for Sustainable Development

1. Innovation and entrepreneurship
2. Green entrepreneurship
3. Women and youth entrepreneurship
4. Start-up ecosystems and incubation

Unit 3: Financial Inclusion and Development

1. Financial inclusion and inclusive growth
2. Digital payments and fintech
3. Microfinance and self-help groups
4. Financial literacy and entrepreneurship

Unit 4: Policy Analytics and Development

1. Monitoring and evaluation of development programmes
2. Evidence-based policymaking
3. Open government data
4. Impact assessment techniques

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Unit 5: Computational Applications in Development

1. Data analytics for public policy
2. GIS and spatial dimensions of development
3. Dashboard development and data visualisation

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4. Case studies in computational development economics

Essential Readings

1. Dani Rodrik. *Straight Talk on Trade*. Princeton University Press.
2. Jeffrey Sachs. *The Age of Sustainable Development*. Columbia University Press.
3. Erik Brynjolfsson and Andrew McAfee. *The Second Machine Age*. W.W. Norton.
4. Abhijit Banerjee and Esther Duflo. *Good Economics for Hard Times*. Penguin.
5. United Nations. *Sustainable Development Goals Report* (latest edition).
6. World Bank. *World Development Report: Data for Better Lives* (or latest relevant edition). \

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Department of Sociology
School of Social Science
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Applied Econometrics- II

Course Title	Applied Econometrics-II (CC18)
Course Code	SCC407A
Course Type	Core Course
Department	Economics
Faculty	School of Social Sciences

1.Course Summary

This course starts with econometrics modelling. It will also cover Qualitative response models, viz. logit, probit and tobit and linear probability model. Finally, basic time series analysis will be introduced to the students. Simultaneous equation model and panel data analysis are also covered in this course.

2. Course Size and Credits:

Number of Credits	05
Credit Structure (Lecture: Tutorial: Practical)	4:1:0
Total Hours of Interaction	
Number of Weeks in a Semester	
Department Responsible	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

After the successful completion of this course, the student will be able to:

CO-1. Learn advanced econometrics concepts and its applications;
CO-2. Understand econometrics modelling;
CO-3. Learn qualitative response models;
CO-4. Learn basic time series analysis and panel data analysis

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4. Course Contents

Unit 1: Econometric Modeling: Model Specification and Diagnostic Testing: Model selection criteria; Types of specification errors; Consequences of model specification errors; Tests of specification errors; Errors in measurements.

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Unit 2: Instrumental Variable (IV) Estimation and Two Stage Least Square (2SLS)
Omitted Variable bias, statistical inference with IV estimator, 2SLS

Unit 3: Simultaneous Equation Model:
Nature of simultaneous equation model, identifying and estimation of a structural equation using reduces form, systems with more than two equations, Examples and estimation using statistical software.

Unit 4: Time Series Econometrics: Some Basic Concepts: Stochastic process; Unit root stochastic process; trend stationary and difference stationary stochastic process; integrated stochastic process. Examples and estimation using statistical software.

Unit 5: Panel Data analysis
Nature of panel data analysis, Fixed effect estimation, Random effect model, Fixed effect versus random effect model, diagnostic checks, Examples and estimation using statistical software.

Unit 6: Qualitative Response Regression Models:
Introduction to Linear Probability Model; Logit Model, Probit Model; Tobit Model.

Essential Reading

1. Basic Econometrics - Damodar Gujarati, Dawn Porter, Sangeetha Gunasekar - Publisher: McGraw Hill Education
2. Introductory Econometrics: A Modern Approach - Jeffrey Wooldridge - Publisher: South-Western College Publishing
3. Introduction to Econometrics - G S Maddala, Kajal Lahiri - Publisher: Wiley
4. Applied Econometric Time Series-Walter Enders, Wiley Publications

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International Monetary Economics

Course Title	International Monetary Economics (CC19)
Course Code	SCC408A
Course Type	Core Course
Department	Economics
Faculty	School of Social Sciences

1. Course Summary

Pre and post Bretton wood international monetary system are covered in the syllabus. The course covers international finance consisting Balance of Payments, exchange rate determination, global financial system and lessons to be learnt from global financial crisis.

2. Course Size and Credits:

Number of Credits	05
Credit Structure (Lecture: Tutorial: Practical)	4:1:0
Total Hours of Interaction	
Number of Weeks in a Semester	
Department Responsible	
Total Course Marks	100
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

2. *Course Outcomes (COs)*

After the successful completion of this course, the student will be able to:

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CO-1: Development from Gold standard to post Bretton wood monetary system

CO-2: Understand the concepts of Balance of Payments, exchange rate determination

CO-3: Know the International Monetary system and learn the lessons from recent financial crisis.

3. *Course Contents*

Unit 1: Pre Bretton-Wood System

1. Gold Standard
2. Great Depression

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Unit 2: Post-war International Monetary System

1. Bretton Woods system and the post-Bretton Woods era
2. Reforms of the international monetary system, Euro currency and Eurobond markets
3. Currency derivatives: futures, options and swaps
4. Introduction to Economic and monetary union in Europe
5. IMF and the World Bank

Unit 3: Balance of Payments

1. Collection, reporting and presentation of BoP, An overview of sub-accounts in BoP
2. Elasticity and absorption approaches to the BoP
3. Automatic BoP adjustment mechanism, automatic mechanism with flexibility in prices, interest rates and income levels.

Unit 4: Exchange Rate Determination

1. Foreign exchange, Foreign exchange market, spot market, forwards and future markets, Fixed exchange rate, Flexible exchange rate
2. PPP theory of exchange rate determination and law of one price, Absolute and relative PPP, a generalized version of PPP, Balassa-Samuelson model; Uncovered interest rate parity, Monetary models of exchange rate determination,

Unit 5: Crises and Lessons

1. International debt crisis: Background and origin of debt crisis, the Mexican moratorium
2. Currency crisis and the East Asian Financial Crisis: First, Second and Third generation models of currency crisis,
3. Global financial crisis

Essential Readings

1. Salvatore.S, *International Economics*, Wiley.
2. Pilbeam, Keith. *International Finance*, Palgrave Macmillan.
3. Levi.D.M. *International Finance*, Routledge.
4. Krugman and Obstfeld- International Economics: Theory and Policy, Pearson Education

Head
Department of Sociology
School of Social Science
M.S. Ramaiah University of Applied Sciences
Bengaluru -54

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