MAHATMA GANDHI UNIVERSITY

Kottayam, Kerala

Undergraduate Programmes (HONOURS)
2024 Admission Onwards

SYLLABUS						
SIGNATURE COURSE						
Name of the College	Marthoma College, Kuttapuzha P.O, Tiruvalla					
Faculty/ Discipline	History					
Programme	BA (Hons) History					
Course Coordinator	MATHEW					
Contributors						
Course Name	Introduction to Social Relations of Science and Technology					
Type of Course	DSE					
Specialization title	Science and Technology Studies (STS)					
Course Code	MG3DSEHISA00					
Course Level	200					
Course Summary	The course is intended to provide the philosophical foundations and historical formation of scientific thinking. It delves into the cross cultural fertilisation of knowledge and offers an understanding that the production of knowledge is a collective and collaborative enterprises rather than exclusionary and parochial. The course also familiarise socio- historical context where thinkers and scientists formulated their understanding of the natural world.					
Semester	3	**Credits**			4	**Total Hours**
Course Details	**Learning Approach**	Lecture	Tutorial	Practical	Others	
		4		0		60
Pre-requisites, if any						

Course Outcomes (CO)

Number of COs		**5**	
CO No.	**Expected Course Outcome**	**Learning Domains ***	**PO No**
1	Learn and understand the basic definitions and terminologies of science	K, U	PO1, PO2
2	Understand and appreciate the epistemological foundations and methodological distinctiveness of science	U, AP	PO2
3	Evaluate the contributions of various civilizations in promoting the scientific thinking	E	PO2, PO3, PO4
4	Analyze the cross cultural exchanges of scientific knowledge	AN	PO2, PO3, PO6
5	Appreciate the social context of science and technology	AP	PO7, PO8

**Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)*

CO-PO Articulation Matrix

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	3	-	-	-	-	-	-	-	-
CO 2	-	2	-	-	-	-	-	-	-	-
CO 3	-	1	3	2	-	-	-	-	-	-
CO 4	-	2	2	-	-	2	-	-	-	-
CO 5	-	-	-	-	-	-	1	2	-	-

'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).

Course Content

Content for Classroom transaction (Units)

Module	Units	Course Description	Hrs	CO No.
1	What is Science			
	1.1	Etymology and Definitions	3	["1"]
	1.2	What is Method? Philosophical Understanding of Science	4	["2"]
	1.3	Social and Historical Epistemologies	4	["2"]
	1.4	Technology and Society	3	["5"]
2	The Beginning of Scientific Thought			
	2.1	Knowledge about Nature in the Ancient World	4	["3", "5"]
	2.2	Early Philosophers: Contexts and Themes	4	["3", "5"]
	2.3	Aristotle's Perspectives	4	["2", "5"]
	2.4	Cosmology after Aristotle: The Geocentric View	3	["2", "5"]
3	Centres of Learning and Circulation of Knowledge in the Medieval World			
	3.1	Chinese and Indian Contributions	3	["3", "4"]
	3.2	Science in the Islamic World	5	["3", "4"]
	3.3	The Translation Movement	4	["3", "4"]
	3.4	The Renaissance and Humanism	4	["3", "4"]
4	The Emergence of Modern Science			
	4.1	Early Universities and The Status of Knowledge	4	["2", "3"]
	4.2	The Copernican Revolution	3	["2", "3"]
	4.3	Francis Bacon on Scientific Method	3	["2"]
	4.4	Knowing the Natural World: Rationalism and Empiricism	5	["2"]

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** The course coordinator may facilitate ICT enabled lectures (25 hrs) to orient the students to the basic issues and debates. Group Debates (15 hrs) can also be conducted on the materials provided. Critical reflection (7 hrs) on the core themes of the course are to be register either in written forms or in presentation mode. Numerous documentaries prepared by credible agencies may be screened to initiate a discussion. Documentary review (10 hrs), in this context would be effective to familiarize with the changes in the scientific knowledge. Invited Lecture (3 hrs) is to be arranged to discern the contemporary debates in the discipline.

Assessment Types	**MODE OF ASSESSMENT** Mode of Assessment: Theory **A. Continuous Comprehensive Assessment (CCA)** **• Theory – 30 Marks** 1) Viva Voce 2) In-class discussion 3) Reflective writing assignment 4) Presentation **B. End Semester Evaluation (ESE)** **• Theory – 70 Marks** Assessment Methods – Written Exam Duration of Examination – 2.00 Hrs Pattern of examination for Theory – Non-MCQ Different parts of written examination – Part - A , B , C Answer Type: ∘ PART - A ∘ Short answer - (10 out of 12) – 10 × 2 = 20 ∘ PART - B ∘ Short Essays - (6 out of 10) – 6 × 5 = 30 ∘ PART - C ∘ Essays - (2 out of 4) – 2 × 10 = 20

References

- Module 1 Merton, Robert K. 1938. “Science and the Social Order”. Philosophy of Science 5: 321–37. Reprinted as “The Normative Structure of Science” in Merton 1973: 255–66. Jasanoff, Sheila (ed.). 2004a. States of Knowledge: The Co-production of Science and Social Order. London & New York: Routledge. Hodge, M.J.S. & Cantor, G.N. 1990. “The Development of Philosophy of Science Since 1900”. Pp. 838–52, R.C. Olby, G.N. Cantor, J.R.R. Christie & M.J.S. Hodge (eds.). Companion to the History of Modern Science. London & New York: Routledge Module 2 DeWitt, Richard. 2010. Worldviews: An Introduction to the History and Philosophy of Science. Second edition. West Sussex: Wiley-Blackwell. Daston, Lorraine & Lunbeck, Elizabeth. 2011. Histories of Scientific Observation. Chicago & London: The University of Chicago Press. Module 3 Shank, Michael H. 2009. “Myth 2: That the Medieval Christian Church Suppressed the Growth of Knowledge”. Numbers: 20–7. Joseph, George Gheverghese. 2011 [1991]. The Crest of the Peacock: Non-European Roots of Mathematics. Princeton & Oxford: Princeton University Press. Module 4 DeWitt, Richard. 2010. Worldviews: An Introduction to the History and Philosophy of Science. Second edition. West Sussex: Wiley-Blackwell. Moore, John C.2018. A Brief History of Universities. Palgrave macmillan.

Suggested Readings

- Bloor, David. 1991 [1976]. Knowledge and Social Imagery. Second edition. Chicago & London: The Chicago University Press Bernal, J. D. 1939. The Social Function of Science. London: Routledge Lawson, Russel M. 2021. Science in the Ancient World: From Antiquity Through the Middle Ages. ABC- CLIO. Lloyd, GER. 1974. Early Greek Science: Thales to Aristotle. W.W. Nortons and Company. Gimpel, Jean 1977. The Medieval Machine: The Industrial Revolution of the Middle Ages. London: Gollancz. Haq, Syed Nomanul. 2009. “Myth 4: That Medieval Islamic Culture was Inhospitable to Science”. Numbers: 35–42 Wootton, David. 2015. The Invention of Science: A New History of the Scientific Revolution. Penguin Books. വറുഗീസ്, ഷിജു സാം. 2025. ശാസ്ത്രവിമർശം: സാമൂഹികജ്ഞാനസിദ്ധാന്ത സമീപനങ്ങൾ. Kottayam: DC Books

Affidavit

- We, Marthoma College, Kuttapuzha P.O, Tiruvalla and MATHEW, agree to permit the use of our proposed course syllabus by other faculty members within the same discipline for course delivery at their respective institutions.
- We, Marthoma College, Kuttapuzha P.O, Tiruvalla, agree to appoint a new course coordinator for the proposed Science and Technology Studies (STS) in the event of the unavailability of the currently nominated coordinator. This appointment will ensure the continued coordination of course delivery, assessments, and all related academic responsibilities necessary for the successful implementation of the specialization, for as long as the college offers this programme.
- We, Marthoma College, Kuttapuzha P.O, Tiruvalla and MATHEW, declare that no part of this signature course submitted here for approval has been taken from the course content developed by, or from any of the course titles prepared by, the BoS/expert committee in the same discipline under our University.

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SYLLABUS						
SIGNATURE COURSE						
Name of the College	Marthoma College, Kuttapuzha P.O, Tiruvalla					
Faculty/ Discipline	History					
Programme	BA (Hons) History					
Course Coordinator	MATHEW					
Contributors						
Course Name	Science and Modernity					
Type of Course	DSE					
Specialization title	Science and Technology Studies (STS)					
Course Code	MG4DSEHISA00					
Course Level	200					
Course Summary	The course delves into the intricate nexus between science and modern social structures. It critically examines the normative claims of science as the valid source of knowledge, analyses the negotiations between science and power and locate the scientific enterprises within the socio- historical matrix. The course also evaluates the contemporary debates on the social role of science.					
Semester	4	**Credits**			4	**Total Hours**
Course Details	**Learning Approach**	Lecture	Tutorial	Practical	Others	
		4				60
Pre-requisites, if any	The student should have successfully completed level 100-199 courses					

Course Outcomes (CO)

Number of COs		**5**	
CO No.	**Expected Course Outcome**	**Learning Domains ***	**PO No**
1	Evaluate the theoretical and empirical foundations of modern science	U, E	PO1
2	Analyze the nexus between social structures and scientific notions	AN	PO1, PO3
3	Understand the debates between science and other forms of knowledge	U	PO1, PO3, PO6
4	Apply the historical insights of science to examine the nature of economy, power and knowledge in the modern world	A, S	PO1, PO2
5	Generate an interest in the critique of modern science raised by the social movements	I, AP	PO5, PO6

**Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)*

CO-PO Articulation Matrix

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	-	-	-	-	-	-	-	-	-
CO 2	1	-	2	-	-	-	-	-	-	-
CO 3	2	-	1	-	-	2	-	-	-	-
CO 4	2	2	-	-	-	-	-	-	-	-
CO 5	-	-	-	-	1	2	-	-	-	-

'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).

Course Content

Content for Classroom transaction (Units)

Module	Units	Course Description	Hrs	CO No.
1	Towards a New World View			
	1.1	The Scientific Revolution	3	["1"]
	1.2	Systematising Observations and Experiments: From Galileo to Robert Boyle	4	["1"]
	1.3	The New Science and Its Institutions: From Royal Society to Research Universities	4	["1", "2"]
	1.4	Science and Religion: Understanding a Complex Relationship	3	["2", "4"]
2	Science, Technology and the Emergent Social Structure			
	2.1	Rise of Capitalism and the Newtonian Physics	4	["2", "3", "4"]
	2.2	Science and the Protestant Ethic	4	["2", "3"]
	2.3	Conflicting Perspectives about Nature: New Science Vs Witchcraft and Magical Traditions	4	["2", "3"]
	2.4	Science, Technology and Industrial Revolution	3	["2", "4"]
3	Science and Empire			
	3.1	Colonialism and Science: The Symbiosis	3	["3", "4"]
	3.2	Eurocentrism and Science: Knowledge Relations between the Centre and Periphery	5	["2", "3", "4"]
	3.3	Scientific Foundations of Racism in the Nineteenth Century	4	["3", "4", "5"]
	3.4	Domestication of Science in the Colonies	4	["3", "4"]
4	Science and Technology in the Post-World War Period			
	4.1	The Internal Differentiation of Science: Disciplinary Formations in the Nineteenth Century	4	["1", "2"]
	4.2	From Little Science to Big Science: The Changing Organisational Structure of Science	3	["2", "3", "4"]
	4.3	Nation- States and Science: Scientific Temper, Modernisation and Developmentalism	3	["2", "4"]
	4.4	Disenchantment with Science: New Social Movements and the Epistemological Critique of Science	5	["3", "5"]

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** The course coordinator should initiate the major debates through lectures after distributing the relevant materials to read (25 hrs). Since the course is dealing with discipline specific and general debates, group debates need to be conducted (20 hrs). The social activists who are working in the Peoples's science movement may be invited for lectures (10 hrs). The students are expected to collect various forms of local knowledge from their neighborhood and present it for documentation and discussion (5 hrs)

Assessment Types	**MODE OF ASSESSMENT** Mode of Assessment: Theory **A. Continuous Comprehensive Assessment (CCA)** **• Theory – 30 Marks** 1) Viva Voce 2) In-class discussion 3) Reflective writing assignment 4) Presentation 5) Documentation **B. End Semester Evaluation (ESE)** **• Theory – 70 Marks** Assessment Methods – Written exam Duration of Examination – 2.00 Hrs Pattern of examination for Theory – Non-MCQ Different parts of written examination – Part - A , B , C Answer Type: ∘ PART - A ∘ Short answer - (10 out of 12) – 10 × 2 = 20 ∘ PART - B ∘ Short Essays - (6 out of 10) – 6 × 5 = 30 ∘ PART - C ∘ Essays - (2 out of 4) – 2 × 10 = 20

References

- Module 1 Stichweh, Rudolf. 1992. "The Sociology of Scientific Disciplines: On the Genesis and Stability of the Disciplinary Structure of Modern Science". Science in Context 5(1): 3–15 Shapin, Steven. 1988. "The House of Experiment in Seventeenth-Century England". Isis 79(3): 373–404. Merton, Robert K. 1970 [1938]. Science, Technology and Society in Seventeenth-Century England. New York: Howard Fertig, Inc. & Harper & Row. Livingstone, David N. 2009. "Myth 17. That Huxley Defeated Wilberforce in their Debate over Evolution and Religion". Numbers: 153–60 Module 2 Werskey, Gary. 2007a. "The Marxist Critique of Capitalist Science: A History in Three Movements?" Science as Culture 16(4): 397–461. Visvanathan, Shiv. 1985. Organising for Science: The Making of an Industrial Research Laboratory. New Delhi: Oxford University Press Module 3 Jasanoff, Sheila. 2004b. "Ordering Knowledge, Ordering Society". Jasanoff 2004a: 13–45. Varughese, Shiju Sam. 2015a. "Colonial Intellectuals, Public Sphere and the Promises of Modernity: Reading Parangodeeparinayam". Pp. 41–58, Satheese Chandra Bose & Shiju Sam Varughese (eds.). Kerala Modernity: Ideas, Spaces and Practices in Transition. Hyderabad: Orient Blackswan. Sur, Abha. 2011b. "Dispersed Radiance: Caste, Gender, and Modern Science in India. New Delhi: Navayana. Prakash, Gyan. 1999. Another Reason: Science and the Imagination of Modern India. Princeton: Princeton University Press. Panikkar, K.N. 1992. "Indigenous Medicine and Cultural Hegemony: A Study of the Revitalization Movement in Keralam". Studies in History 8(2): 283–308. Varughese, Shiju Sam. 2015b. "The State-Technoscience Duo in India: A Brief History of a Politico-Epistemological Contract". Pp. 137–56, Axel Jansen, Andreas Franzmann & Peter Münte (eds.). Legitimizing Science: National and Global Publics (1800–2010). Frankfurt & New York: Campus Verlag. Sunandan, K.N. 2022. Caste, Knowledge, and Power: Ways of Knowing in Twentieth Century Malabar. New Delhi: Cambridge University Press Raina, Dhruv. 1997. "Evolving Perspectives on Science and History: A Chronicle of Modern India's Scientific Enchantment and Disenchantment (1850–1980)". Social Epistemology 11(1): 3–24

Suggested Readings

- Raina, Dhruv & Ashok Jain. 1997. "Big Science and the University in India". Krige & Pestre: 859–77. Price, Derek J. de Solla. 1963. Little Science, Big Science. New York: Columbia University Press. Girija, K.P. 2022. Mapping the History of Ayurveda:

Culture, Hegemony and the Rhetoric of Diversity. London & New York: Routledge. അശോകകുമാർ, വി. 2017. “ആഗോളശാസ്ത്രവും നാട്ടുശാസ്ത്രങ്ങളും കൈകോർക്കുമോ?” കേരളീയം, ജനുവരി, പു. 34–40. വറുഗീസ്, ഷിജു സാം. 2021b. “സയൻസും അച്ചടി ആധുനികതയും: ശാസ്ത്ര സംവാദത്തിന്റെ കേരളീയ സാമൂഹിക ചരിത്രം”. പു. 581–622, ബാബു ചെറിയാൻ (ജന. എഡി.). വാക്കിലെ ലോകങ്ങൾ: അച്ചടി മലയാളത്തിന്റെ 200 വർഷങ്ങൾ. കോട്ടയം: സാഹിത്യ പ്രവർത്തക സഹകരണ സംഘം & ബെഞ്ചമിൻ ബെയിലി ഫൗണ്ടേഷൻ. Numbers, Ronald L. (ed.). 2009. Galileo Goes to Jail and Other Myths about Science and Religion. Cambridge, MA & London: Harvard University Press. Dixon, Thomas. 2008. Science and Religion: A Very Short Introduction. Oxford & New York: Oxford University Press. Hessen, B. 1971. “The Social and Economic Roots of Newton’s Principia”. Pp. 149–209, Science at the Crossroads. Papers presented to the International Congress of the History of Science and Technology held in London from June 29th to July 3rd, 1931 by the delegation of the U.S.S.R. London: Frank Cass & Co. Ltd. Davis, Edward B. 2009. “Myth 13: That Isaac Newton’s Mechanistic Cosmology Eliminated the Need for God”. Numbers: 116–22.

Affidavit

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SYLLABUS						
SIGNATURE COURSE						
Name of the College	Marthoma College, Kuttapuzha P.O, Tiruvalla					
Faculty/ Discipline	History					
Programme	BA (Hons) History					
Course Coordinator	MATHEW					
Contributors						
Course Name	Historiographical Issues and Debates					
Type of Course	DSE					
Specialization title	Science and Technology Studies (STS)					
Course Code	MG5DSEHISA00					
Course Level	300					
Course Summary	The course delves into some of the thematic debates in the Science and technology Studies. It examines the social and historical composition of scientific knowledge and evaluates the notion that science is multicultural. The critique of the idea that technology is applied science is also analysed. The course will be enabled the student to locate the contemporary ways of knowledge production in natural science.					
Semester	5	**Credits**			4	**Total Hours**
Course Details	**Learning Approach**	Lecture	Tutorial	Practical	Others	
		4				60
Pre-requisites, if any						

Course Outcomes (CO)

Number of COs		**5**	
CO No.	**Expected Course Outcome**	**Learning Domains ***	**PO No**
1	Understand the debate on the historicity of the scientific knowledge	U	PO2
2	Evaluate the exchanges of concepts among various branches of knowledge	E, I	PO2, PO3
3	Analyze the multicultural nature of scientific knowledge	AN	PO2, PO4
4	Analyze the complex nexus between science and technology	AN, AP	PO2, PO3, PO4
5	Appreciate the contemporary nature of knowledge production in science	U, AP	PO1, PO2, PO3

**Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)*

CO-PO Articulation Matrix

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
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CO 2	-	2	1	-	-	-	-	-	-	-
CO 3	-	1	-	2	-	-	-	-	-	-
CO 4	-	2	2	2	-	-	-	-	-	-
CO 5	1	2	2	-	-	-	-	-	-	-

'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).

Course Content

Content for Classroom transaction (Units)

Module	Units	Course Description	Hrs	CO No.
1	Does Science have History?			
	1.1	Internalist History of Science	3	["3", "5"]
	1.2	Externalist History of Science	4	["3", "5"]
	1.3	Social History of Science Beyond the Internalist/Externalist Debate	4	["2", "3", "5"]
	1.4	Coproduction of Natural and Social Orders	4	["2", "3"]
2	Science Beyond Eurocentrism			
	2.1	Basalla's Three Stage Model and Its Critiques	4	["2", "3"]
	2.2	The Ecumenical Perspective of Joseph Needham	4	["1", "2", "5"]
	2.3	Why there was no Scientific Revolution in India or China? The Needhamian Question	4	["1", "2", "3"]
	2.4	Is Science Multicultural?	3	["3", "5"]
3	The Relationship Between Science and Technology			
	3.1	Abstract Knowledge and Practical Knowledge: Convergences and Divergences	3	["2", "3"]
	3.2	Caste Relations of Knowledge: Abstract and Practical Knowledge in India	5	["3", "5"]
	3.3	Technical Inventions during Industrial Revolution	4	["1", "2", "4"]
	3.4	Technology as Application of Science: Establishing the Linear Relationship in Big Science	4	["2", "4", "5"]
4	The Changing Organisational Structure of Science			
	4.1	Modern Science's Origin and Development outside the University	3	["2", "3", "4"]
	4.2	The Humboldtian Model of (Teaching and Research) University in Industrial Europe	3	["2", "3"]
	4.3	Science in Indian Universities	3	["3", "4"]
	4.4	The Changing Mode of Knowledge Production: Science Today	5	["4", "5"]

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** Since the course is designed to familiarize students about the major themes in Science and Technology Studies field, substantial lecture hours are to be assigned for introducing the debates on each themes (30 hrs).The lectures of experts need to be arranged (10 hrs). Classroom discussions to formulate opinion on the contested themes should be conducted followed by presentation or panel discussion (20 hrs)

Assessment Types	**MODE OF ASSESSMENT** Mode of Assessment: Theory **A. Continuous Comprehensive Assessment (CCA)** **• Theory – 30 Marks** 1) Open Book examination 2) In-class discussion 3) Reflective writing assignment 4) Presentation 5) Panel Discussion **B. End Semester Evaluation (ESE)** **• Theory – 70 Marks** Assessment Methods – Written Examination Duration of Examination – 2.00 Hrs Pattern of examination for Theory – Non-MCQ Different parts of written examination – Part - A , B , C Answer Type: ∘ PART - A ∘ Short answer - (10 out of 12) – 10 × 2 = 20 ∘ PART - B ∘ Short Essays - (6 out of 10) – 6 × 5 = 30 ∘ PART - C ∘ Essays - (2 out of 4) – 2 × 10 = 20

References

- Module 1 Shapin, Steven. 1992. “Discipline and Bounding: The History and Sociology of Science as Seen Through the Externalism-Internalism Debate”. History of Science 30(4): 333–69. Raina, Dhruv. 1997. “Evolving Perspectives on Science and History: A Chronicle of Modern India's Scientific Enchantment and Disenchantment (1850–1980)”. Social Epistemology 11(1): 3–24. Latour, Bruno. 1983. “Give Me a Laboratory and I will Raise the World”. Pp. 141–71, Karin D. Knorr-Cetina & Michael Mulkay (eds.). Science Observed: Perspectives on the Social Study of Science. London, Beverly Hills & New Delhi: Sage Publications Module 2 Harding, Sandra. 1998. Is Science Multicultural? Postcolonialism, Feminisms, and Epistemologies. Bloomington & Indianapolis: Indiana University Press. Needham, Joseph. 1969. The Grand Titration: Science and Society, East and West. London: Allen & Unwin. Module 3 Visvanathan, Shiv. 1985. Organising for Science: The Making of an Industrial Research Laboratory. New Delhi: Oxford University Press. Price, Derek J. de Solla. 1963. Little Science, Big Science. New York: Columbia University Press . Merton, Robert K. 1938. “Science and the Social Order”. Philosophy of Science 5: 321–37. Reprinted as “The Normative Structure of Science” in Merton 1973: 255–66. Module 4 Stichweh, Rudolf. 1992. "The Sociology of Scientific Disciplines: On the Genesis and Stability of the Disciplinary Structure of Modern Science". Science in Context 5(1): 3–15. Gibbons, Michal et al. 1994. The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies. Los Angeles: Sage Publications Ltd Nanda, Meera. 2016. Science in Saffron: Skeptical Essays on History of Science. New Delhi: Three Essays Collective. Raina, Dhruv & Ashok Jain. 1997. “Big Science and the University in India”. Krige & Pestre: 859–77.

Suggested Readings

- Jasanoff, Sheila (ed.). 2004a. States of Knowledge: The Co-production of Science and Social Order. London & New York: Routledge. ഇളയിടം, സുനിൽ പി. 2016. “ശാസ്ത്രത്തെ ചരിത്രവത്കരിക്കുക”. പു. 352–64, സുനിൽ പി. ഇളയിടം. നാനാർത്ഥങ്ങൾ: സമൂഹം, ചരിത്രം, സംസ്കാരം. കണ്ണൂർ: കൈരളി ബുക്ക്സ് Rose, Steven & Rose, Hilary 1973. "Can Science be Neutral?" Perspectives in Biology and Medicine 16(4): 605–24. Bloor, David. 1991 [1976]. Knowledge and Social Imagery. Second edition. Chicago & London: The Chicago University Press. മേനോൻ, ആർ.വി.ജി. 2019. സാങ്കേതികവിദ്യയുടെ ചരിത്രം. തൃശ്ശൂർ: കേരള ശാസ്ത്രസാഹിത്യ പരിഷത്ത്. Werskey, Garry. 2007b. “The Visible College Revisited: Second Opinions on the Red Scientists of the 1930s”. Minerva 45(3): 305–19.

Ziman, John. 1996. "'Postacademic Science': Constructing Knowledge with Networks and Norms". Science Studies 1: 68–80.

Affidavit

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MAHATMA GANDHI UNIVERSITY

Kottayam, Kerala

Undergraduate Programmes (HONOURS)
2024 Admission Onwards

SYLLABUS						
SIGNATURE COURSE						
Name of the College	Marthoma College, Kuttapuzha P.O, Tiruvalla					
Faculty/ Discipline	History					
Programme	BA (Hons) History					
Course Coordinator	MATHEW					
Contributors						
Course Name	Themes in Science and Technology Studies					
Type of Course	DSE					
Specialization title	Science and Technology Studies (STS)					
Course Code	MG6DSEHISA00					
Course Level	300					
Course Summary	The course introduces some of the major debates in Science and Technology Studies like science and society interphase, the sociology of scientific knowledge, etc,. It also surveys the feminist and post colonial critique of modern science. How the modern science became hegemonic and marginalised the alternative ways of perceiving reality is being investigated. Familiarising with the major debate in the filed would enrich the potential of the students to produce knowledge in the filed through rigorous research					
Semester	6	**Credits**			4	**Total Hours**
Course Details	**Learning Approach**	Lecture	Tutorial	Practical	Others	
		4				60
Pre-requisites, if any	The student should have successfully completed level 200-299 courses					

Course Outcomes (CO)

Number of COs		**5**	
CO No.	**Expected Course Outcome**	**Learning Domains ***	**PO No**
1	Evaluate the social construction theory of scientific knowledge	E	PO1, PO2
2	Understand the nexus between social structures and knowledge production in modern science	U, AP	PO2, PO3, PO6
3	Analyze the feminist and postcolonial critique of modern science	AN	PO2, PO3, PO6, PO7
4	Develop an interest in the contemporary nature of science	I	PO2, PO3, PO9
5	Evaluate the claim of value neutral nature of science	AN, E	PO2, PO6, PO8

**Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)*

CO-PO Articulation Matrix

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	2	-	-	-	-	-	-	-	-
CO 2	-	2	2	-	-	1	-	-	-	-
CO 3	-	1	2	-	-	2	1	-	-	-
CO 4	-	2	2	-	-	-	-	-	1	-
CO 5	-	1	-	-	-	2	-	2	-	-

'0' is No Correlation, '1' is Slight Correlation (Low level), '2' is Moderate Correlation (Medium level) and '3' is Substantial Correlation (High level).

Course Content

Content for Classroom transaction (Units)

Module	Units	Course Description	Hrs	CO No.
1	Science-Society Interphase			
	1.1	The Social Function of Science: J D Bernal	3	["2", "3"]
	1.2	Sociology of Science: Robert K.Merton	4	["2", "3", "5"]
	1.3	Women in Science Perspective	4	["1", "3", "4"]
	1.4	Science and Ideology: The Radical Science Movement	3	["3", "4"]
2	Sociology of Scientific Knowledge (SSK)			
	2.1	Thomas Kuhn's Idea of Paradigms in Science	4	["2", "3", "4"]
	2.2	The Strong Programme (Edinburgh School)	4	["1", "3", "4"]
	2.3	Laboratory Studies	4	["2", "5"]
	2.4	The Social Shaping of Technology	3	["2", "3"]
3	Feminist Studies of Science and Technology			
	3.1	Patriarchal Social Order and the Natural Order: the Background Assumptions of Scientists	3	["3", "4"]
	3.2	From Weak to Strong Objectivity (Sandra Harding)	5	["1", "5"]
	3.3	Donna Haraway: The Cyborg Manifesto	4	["1", "2", "4"]
	3.4	Nature is Queer!	4	["1", "3", "5"]
4	Postcolonial Studies of Science and Technology			
	4.1	Colonisation and the Development of Science	4	["1", "4", "5"]
	4.2	The Cultural Amphibians: Colonial Intelligentsia and Science	3	["1", "2"]
	4.3	Traditional and Local Knowledges and Modern Science in the Colony	3	["1", "3", "4"]
	4.4	Imperial Technologies and the Rise of National Consciousness	5	["2", "3", "4"]

Teaching and Learning Approach	**Classroom Procedure (Mode of transaction)** Classroom lectures enabled by ICT may offer learners the context of debates in the Science and Technology Studies (30 hours). The science and society interphase should be imparted by demonstrating social and historical case studies. Invited lectures by renowned academicians and discussions with social activist who lead the peoples' science movement may be recommended (15 hours). In-class discussions on the materials provided is to be conducted 15 hours)

Assessment Types	**MODE OF ASSESSMENT** Mode of Assessment: Theory **A. Continuous Comprehensive Assessment (CCA)** **• Theory – 30 Marks** 1) Open Book examination 2) In-class discussion 3) Reflective writing assignment 4) Presentation 5) Viva- Voce **B. End Semester Evaluation (ESE)** **• Theory – 70 Marks** Assessment Methods – Written Examination Duration of Examination – 2.00 Hrs Pattern of examination for Theory – Non-MCQ Different parts of written examination – Part - A , B , C Answer Type: ∘ PART - A ∘ Short answer - (10 out of 12) – 10 × 2 = 20 ∘ PART - B ∘ Short Essays - (6 out of 10) – 6 × 5 = 30 ∘ PART - C ∘ Essays - (2 out of 4) – 2 × 10 = 20

References

- Module 1 Philip, Kavitha. 2020. "The Science Problem in Marxism". Pp. 89–118, Benjamin Zachariah, Lutz Raphael & Brigitta Bernet (eds.). What is Left of Marxism: Historiography and the Possibilities of Thinking with Marxian Themes and Concepts. Oldenbourg: De Gruyter. Jasanoff, Sheila. 2004b. "Ordering Knowledge, Ordering Society". Jasanoff 2004a: 13–45. Faulkner, Wendy & Keller, Evelyn Fox. 1997. "On Seeing Brocken Spectres: Sex and Gender in Twentieth Century Science". Krige & Pestre: 43–60. Collins, H.M. 1975. "'The Seven Sexes: A Study in the Sociology of a Phenomenon, or the Replication of Experiments in Physics". Sociology 9(2): 205–24. Module 2 Visvanathan, Shiv. 1985. Organising for Science: The Making of an Industrial Research Laboratory. New Delhi: Oxford University Press. Turner, Stephen. 2008. "The Social Study of Science before Kuhn". Pp. 33–62, Edward J. Hackett et al. (eds.). The Handbook of Science and Technology Studies. Third edition. Cambridge, MA & London: MIT Press. Rose, Steven & Rose, Hilary 1973. "Can Science be Neutral?" Perspectives in Biology and Medicine 16(4): 605–24. Price, Derek J. de Solla. 1963. Little Science, Big Science. New York: Columbia University Press. Module 3 Schiebinger, Londa. 1999. Has Feminism Changed Science? Cambridge, MA & London: Harvard University Press Merchant, Carolyn. 1980. The Death of Nature: Women, Ecology and the Scientific Revolution. San Francisco: Harper & Row Publishers. Keller, Evelyn Fox & Longino, Helen E. (eds). 1996. Feminism and Science. Oxford & New York: Oxford University Press. Harding, Sandra. 1992. "Rethinking Standpoint Epistemology: What is 'Strong Objectivity?'". The Centennial Review 36(3): 437–70. Haraway, Donna J. 1985. "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s". Socialist Review 80: 65–107. Module 4 Prakash, Gyan. 1999. Another Reason: Science and the Imagination of Modern India. Princeton: Princeton University Press. Harding, Sandra. 1998. Is Science Multicultural? Postcolonialism, Feminisms, and Epistemologies. Bloomington & Indianapolis: Indiana University Press. Girija, K.P. 2022. Mapping the History of Ayurveda: Culture, Hegemony and the Rhetoric of Diversity. London & New York: Routledge.

Suggested Readings

- Fausto-Sterling, Anne. 2002 [1995]. "Gender, Race, Nation: The Comparative Anatomy of 'Hottentot' Women in Europe, 1815–17". Pp. 66–95, Kimberly Wallace-Sanders (ed.). Skin Deep, Spirit Strong: The Black Female Body in American Culture.

Ann Arbor: The University of Michigan Press. Cleetus, Burton. 2007. “Subaltern Medicine and Social Mobility: The Experience of the Ezhava in Kerala”. Indian Anthropologist 37(1): 147–72. Gould, Stephen Jay. 1981. The Mismeasure of Man. New York & London: W.W. Norton & Company. Gould, Stephen Jay. 1985. “The Hottentot Venus”. Pp. 291–305, Stephen Jay Gould. The Flamingo’s Smile: Reflections in Natural History. New York: Norton. Kuhn, Thomas S. 1970 [1962]. The Structure of Scientific Revolutions. Second edition. Chicago & London: The University of Chicago Press. Feyerabend, Paul K. 1993 [1975]. Against Method. Third Edition. London: Verso. Bloor, David. 1991 [1976]. Knowledge and Social Imagery. Second edition. Chicago & London: The Chicago University Press. Bernal, J. D. 1939. The Social Function of Science. London: Routledge.

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