COURSE OFFERINGS

First Semester - August - November 2019

(1) School of Conflict and Security Studies

(1) Course Title: An Introduction to Conflict and Security Studies

Subject/Discipline: Conflict and Security
Level of Course: PhD
Number of credits: Two
Name of Instructor: Suba Chandran D, Rajaram Nagappa, Narendar Pani and others

Probable starting date and schedule/timings: 6 August 2019, 1500-1600 hrs

Course Outline

The course provides an introduction to conflict and security studies. Divided into two broad themes – Conflict and Security, the course provides first an overview to conflict studies and security studies. Following the overview, the course then focuses on specific issues/subthemes.

A. Introduction to Conflict Studies
   a. Conflict Studies: A theoretical overview
   b. Internal Conflicts: Low-intensity, Ethnic, Religious, Sectarian etc
   c. Bilateral Conflicts
   d. Economics of Conflicts

B. Introduction to Security Studies
   a. Security Studies: A theoretical overview of traditional and non-traditional security
   b. Contemporary Security Issues and Developments
   c. Science, Technology and Security: Space, Nuclear, Cyber, Artificial Intelligence etc
   d. Non-Traditional Security: Environment, Gender, Maritime, Water etc
Course title: Global Politics: Contemporary World Affairs

Subject/ discipline: Interdisciplinary

Level of course: PhD Scholars

Number of credits: Three

Type: Lectures, Workshops, Presentations, Writings and Guest Lectures

Name of the instructor: D. Suba Chandran

Probable starting date and schedule/ timings: 5 August 2019

Course description:

The course provides an introduction to contemporary world affairs. The primary objective of the course is two – first, to enhance the understanding of contemporary global developments, with an attempt to comprehend the larger picture. Second, to identify trends leading forecasts on contemporary world affairs.

The Course will also invite senior scholars within and outside NIAS – also from within and outside India to provide lectures on contemporary world affairs.

Research Questions on Global Politics

The course focus on providing an explanation, and expects the scholars to increase their understanding on the following:

1. **Contemporary World Order**: Policies of the US, China, EU and Russia and their implications on the global order
2. **Big Power Politics**: US-China, US-Russia, Russia-China, and India-China
3. **Regional Politics**: South Asia, Southeast Asia, East Asia, Middle East and Europe
4. **Maritime Order**: South China Sea, Indian Ocean, Arctic, Blue Economy etc
5. **Contemporary Global Issues**: Climate Change, International Trade, Outer Space, Nuclear Order etc

Special Focus on South Asia

The Course aims to create an understanding from a South Asian perspective. Given the enormity of literature, primarily from an international perspective, there is a substantial gap in terms of approaching contemporary global issues from a South Asian perspective.

The course also aims to create a pool of scholars, thereby build capacity that would help the region in understanding issues of global politics, regional and international conflicts and also regional security in South Asia.
Enhancing Presentation Style & Writing Skills

A common issue facing young scholars is the challenge of effective communication. This course aims to address the same in terms of building basic skills of research presentation.

On the basic research tools side, the course aims to pick up different contemporary issues and make presentations – oral and power point, with an objective to convert the same into short writings to be published in the Course Portal.

Online Portal: Global Politics

The Course will also have an Online portal managed by the Course Instructor, where the writings of the scholars on contemporary world affairs will be published on a regular basis.

The scholars are expected to write four to six short notes (300-400 words) on contemporary world affairs, and two commentaries in 1000 words every month.

Effective Use of Social Media for Dissemination

The course will also recommend its scholars to maintain their own individual blogs and also help improving their tweets and related social media communication; the objective of this endeavour is to create awareness about making effective use of the social media for research and dissemination.

The course also aims to create a group of young scholars working on issues relating to peace and conflict, and pool them together with an online identity.

II Course Outline

Global Politics: Identifying Contemporary Issues

The course focuses on providing an explanation, and expects the scholars to increase their understanding on the following:

1. Contemporary World Order:
   - Policies of Big Power: US, China, EU, Russia and India
   - Institutionalism and World Politics: Role of International and Regional Organisations-

2. Regional Security:
   - South Asia
   - Southeast and East Asia
   - West Asia
   - Europe
   - Latin America
   - Africa
3. Maritime Security:

- South China Sea
- Indian Ocean
- Indo-Pacific
- Arctic
- Blue Economy

4. Science and Security:

- Energy Politics
- Climate Change
- Outer Space
- Nuclear Order and Disarmament
- Cyber Security
- Drones and Internal Security

5. International Economy and Security:

- Globalism and Economic Diplomacy: G7-G20 Summits
- International Economic and Financial Organisation- WTO, World Bank
- Trade and Conflict
- Regional Economic Integration

III Methodology

Daily Analysis

The scholars will meet every morning to analyse the daily developments around the world. Each scholar would pick up a region and a set of international issues, and follow them on a daily basis.

Every session would involve a discussion of current developments for 60 minutes.

Regular Presentations and Writing

Once a week, the students will make a presentation on a contemporary theme. Based on the presentation, students will be writing short notes/commentaries.

Guest Lectures and International Faculty:

Academics, Think Tankers, former government officials will be requested to take guest lectures on specific subjects.

Assessment

Assessment would be based on class presentations (50 percent) and writings (50 percent)
(3) Course title: Effective Research Writing: Articles, Essays, Books and Proposals

Subject/ discipline: Interdisciplinary

Level of course: PhD

Number of credits: Three

Name of the instructor: D. Suba Chandran

Type: (lecture, seminar, guided reading, etc): Lecture, Seminar, Paper Presentation, and Guest Lecture

Course description:
The course aims to provide basic skills in effective writing – covering different types of publications – short commentaries, journal essays, chapters in books, books etc. The course will also help the scholars in how to reference, what and how much.

The Course also aims to help the scholars with preparing research proposals for funding support, along with how to prepare a good budget.

The Course will also assist the scholars in preparing powerpoint presentation.

The Course will also help the scholars in maintaining a research blog for themselves.

Probable starting date and schedule/ timings: 06 August 2017, Every Tuesdays, 1000-1300 hrs

I Course Outline

The course would address the following.

Effective Writing: Purpose and Context
- Types of Writing
- How to convey and how not to?
- What is the Purpose?
- What is the Context?

Understanding the Audience
- Who is the audience?
- What do the audience want from the authors?
- How much time do the audience has?

An introduction to Writing Styles
- News Papers/Magazines
- Journals
- Chapters in Books
- Book Reviews
- Policy Briefs
- Reports and Working Papers
- Emails
Resumes and Short Bio
Abstracts

Referencing
- What is reference?
- Footnote, End Note, Interview and Bibliography: How to reference?
- What to Reference?
- And how much of referencing?

An introduction to Publication Process & Publishers
- Portals
- Newspapers
- Journals
- Books

An Introduction to Research Proposals for funding purposes
- How to prepare a proposal?
- What are the major elements?
- How to prepare a budget?

PhD Proposal: Identifying Research Questions
- Identifying the Subject
- What is a research question?
- Should we need one?

Research Presentations
- How to make effective presentations?
- Powerpoint: How to add power to our points?

Plagiarism
- What is Plagiarism?
- How to avoid?

II  Methodology

Classroom Lectures will be the primary mode of engagement.

Writing Workshops will focus on self-improvement. Writing has to be practiced; it cannot be taught. In every class, part of the time would be spent on self-practicing.

Student Presentations and Short Commentaries will play a crucial role in deepening the understanding of students. Every class will have at least two presentations on writing on a contemporary subject. Effective presentation is an essential pre-requisite for effective writing.

Regular Schedule will involve three hours every week, for 8 weeks. Every session would involve 60 minutes of lecture, followed by 120 minutes of presentations and writing practice.

Assessment will be based on interactions and participation in the class rooms (30 percent), student seminars/presentations (30 percent), and writings (40 percent each) during the course.
(4) Course Title: Introduction to Social Conflict

Subject/Discipline: Conflict Studies and Conflict Resolution

Level of Course: Post-Graduate, PhD

Number of credits: Two

Name of Instructor: Anshuman Behera

Teaching Assistant: Surya Sankar Sen

Type: This is primarily a lecture based course. The course will also involve seminars and guided readings.

Brief Description: This course will introduce the students on the basic understandings of the conceptual frameworks, theoretical orientations and specific issues around the social conflicts.

Course Outline

Understanding Conflict: An introduction

- Incompatible Goals
- Hostility
- Conflict actions
- Conflict environment
- Issues and contenders in conflict

Theoretical Framework of understanding conflict

- Nature and functions of social conflicts
- Greed and grievances around social conflicts
- Role of power elite and the masses in conflict
- Conflicts of local and national
- Conflicts of classes

Issues of Social Conflicts

- Identity and Ethnic conflict
- Conflicts over resource access and distribution
- Inequalities and conflict
- Violence and conflict
- Conflicts of ideologies

Reading List (Select)


Course Title: Introduction to Maritime Security: Concepts, Principles and Practices

Subject/Discipline: Conflict Studies and Security Studies

Level of Course: PhD

Number of credits: One (Elective course, 1.5 contact hours/week)

Name of Instructor: Prakash Panneerselvam (Email: Prakash.p@nias.res.in)

Brief Description:

Maritime Security is relatively a new term in the field of international relations. The subject has gained importance in the post-1990’s after collapse of Soviet Union and rise of new security challenges to nation-state from maritime domain. In the globalized world, the maritime safety and security are crucial aspect for trading nations to compete in global economy. This has huge impact on development efforts, insurance, international law and global shipping etc. The main aspect of this course is to allow students to understand and analyse current scenario in maritime affairs. The course was divided into two parts, first part focuses on theoretical aspect of the term maritime security and its present relevance in security studies. The section also emphasis on history and structure of the law of the sea from the maritime security point of view. The second part will discuss major non-traditional security threats in maritime domain and how it is affecting modern nation-state.

Learning objectives:

The learning objective of the elective course is to introduce the concepts of maritime security and the role of nation-state in combating security challenges in maritime domain.

Lecture topics and discussion

Part – I Concepts and Principles

I. Maritime Security- A Theoretical Approach
   What is Maritime Security? Examining maritime security in concept and practice.
   What is Naval Diplomacy? How it is different from Gunboat Diplomacy?
   Geopolitical Dimensions of Maritime Security
   Maritime Domain Awareness (MDA)

II. History of Sea power
   Sea-power and International trade
   Portuguese, Dutch and British global trade and maritime practices (1500 A.D to 1800 A.D)
   Maritime Strategy: A.T Mahan and Julian Corbett theories

III. International Relations and Maritime Domain
   History and structure of Law of the sea
   Debates on United Convention of Law of the Sea (UNCLOS) – 1982
   Role of International Tribunal for the Law of the Sea (ITLOS) & International Seabed Authority.

IV. Maritime Security Regimes & Multilateral Initiatives
   International Convention for the Safety of Life at Sea (SOLAS) – 1974
   Convention for the suppression of Unlawful Act 1988
   International Ship and Port Facility Security Code
   Proliferation Security Initiative (PSI) & Container Security Initiative (CSI)
   The Regional Cooperation Agreement on Combating Piracy and Armed Robbery against ships in Asia (ReCAAP) & Djibouti Code of Conduct.
V. **Port Security - Evolution and Trends**
   Security Aspects in shipping operations.
   Port operations, Handling of Hazards cargo on board and port.
   Brief look into Maritime IT processing.

Part – II **Maritime Security – Nontraditional Security Challenges**

I. **Maritime Terrorism**
   Threat assessments and understanding the threats
   Potential terrorist groups with maritime capability
   Potential scenarios and use of suicide Vessels
   Sea bound attack – Case study of Mumbai attack
   Terrorism-Piracy Similarities
   International Convention Dealing with maritime terrorism

II. **Piracy, armed robbery and hijacking the ships for ransoms.**
   Piracy and Armed Robbery definition
   Piracy impact on global economy
   Reason for rise of piracy and armed robbery
   Case Study: Straits of Malacca, Somali Pirates
   Legal provisions and role of Naval cooperation

III. **Human Trafficking, illegal immigrations, Drug, and weapon Smuggling**
   Trafficking routes in Indian Ocean.
   How these non-traditional security threats affecting good order at sea?
   Coastal states responsibility and international conventions.

IV. **Illegal, Unreported and Unregulated (IUU) Fishing & Marine Pollution**
   Assessing economic Impact of IUU fishing and pollution on coastal states
   Illegal foreign fishing vessels in India’s Exclusive Economic Zone
   Unreported fishing and transfer the catch at sea with the support of foreign fishing vessels.
   Effect of Oil spill and ballast water on marine and coastal ecology

V. **Emerging trends in maritime security**
   Cyber Security and emerging trends in maritime environment
   Blue Economy and Maritime Security
   Unmanned naval systems in future maritime environment

**Expected Student Workload:**

Elective course with 1.5 contact per week (about 10 classes). Students will be encouraged to take an assignment during the course work and his/her area of interest (with one presentation and one term paper submission).
(6) Course Title: Introduction to Strategic Studies. (Elective)

Subject/Discipline: Conflict and Security Studies

Level of Course: PhD

Number of credits: One  (Learning Course, 1 contact hours / week)

Name of Instructor: Amit Mukherjee (email: amukherjee@nias.res.in)

Brief Description:

Strategic Studies as a subject developed from the study, analysis and records of conduct and constructs of military campaigns and warfare over the past two centuries. ‘Strategy’ by itself forms the basis for achieving goals through implementation of certain methods thereby maximizing the chances of success. The field of strategic studies explores the issues surrounding the use of force as an instrument of policy. It lies between the fields of security studies (which encompasses many nonmilitary topics) and military science (which focuses on operational matters). It is also truly interdisciplinary, in that it welcomes both theoretically minded historians and historically minded political scientists. The realm of security, converging from conventional to non-conventional dimensions has also been deeply influenced by aspects of strategic studies. The changes in the world order during the distinct phases in the past centuries shall be described that include changes in strategy from siege to deterrence to present day geo-economic strategy and beyond.

Learning Objective: The main objective of this course is to provide introduction to the subject of Strategic Studies, its changing nature in the last century and its future shape and form. It would include learning military and non-military dimensions of Strategic Studies that encompass larger geo-political and security constructs. This would include understanding spheres of influence and interest, concepts of military strikes, alliances, dimensions of counter insurgency and counter terrorism strategy etc. It would also include familiarizing with classical and contemporary strategic thoughts from Clausewitz to Colin S. Gray.

Pre-Requisites: Interest in Security and Strategic Studies along with some elementary idea about world history would be beneficial (though not compulsory). Online reference material and other notes shall be provided by the Course Instructor, as per requirement.

Course Structure:


Basis for Final Grades:

In class participation: 50 %
Project Work: 20 %
Presentation of Project Work: 10 %
Term Paper: 20 %

Course would commence from: 5th of August 2019.
Reference Material / General Reading

1. On War by Carl Von Clausewitz.
2. The Art of War by Sun Tzu.
3. Strategy by B.H Liddle Hart.
4. Influence of Sea power upon History by AT Mahan
5. 33 Strategies of War by Robert Green.
7. People, States and Fear, Strategic Studies Military Technology & International Relations. By Barry Buzans
10. Security Studies by Lawrence Freedman

Alliance formation and national security, David Lalman & David Newman, University of Maryland, Department of Government and Politics and Maryland Collective Choice Center, College Park, MD, 20742 Published online: 09 Jan 2008. International Interactions: Empirical and Theoretical Research in International Relations, Publication details, including instructions for authors and subscription information: http://www.tandfonline.com/loi/gini20.


Bernard Loo, Geography and Strategic Stability, Published online: 17 Mar 2008. Journal of Strategic Studies, Publication details, including instructions for authors and subscription information: http://www.tandfonline.com/loi/fjss20.


In praise of strategy, Colin S. Gray, Review of International Studies http://journals.cambridge.org/RIS

The Future of Strategic Studies, Thomas G. Mahnken Published online: 17 Mar 2008, Journal of Strategic Studies, Publication details, including instructions for authors and subscription information: http://www.tandfonline.com/loi/fjss20

Threat and alignment behavior, Grace E. Iusi Scarborough & Bruce Bueno de Mesquita, International Interactions: Empirical and Theoretical Research in International Relations Publication details, including instructions for authors and subscription information: http://www.tandfonline.com/loi/gini20
(2) School of Humanities

(1) Course Title: Contemporary archaeology: The subject and the objective

Level of Course: PhD

Number of credits: Two

Name of Instructor: Smriti Haricharan

Course Description:

Archaeology has long justified its relevance in the contemporary context. However how it is used and how it uses contemporary issues, ideas and examples is an important aspect of archaeological theory and practice.Choices made on what is researched in archaeology is very much connected to the present, and sub disciplines of archaeology such as ethnoarchaeology and experimental archaeology directly use contemporary examples and audiences in how its ideation and application. However it is important to think about material remains such as those which are generally termed as ‘folk’ and how they are treated in archaeology. This course will discuss these aspects and explore the relationship between archaeology and the contemporary.

Learning Objectives:

To gain a basic understanding of the discipline
To understand the relevance of the contemporary to archaeology
To explore the use of archaeological methods and theory in studying the contemporary

Pre-requisites for registration/auditing:
None (Other than an interest in learning about contemporary archaeology)

Basis for Final Grades
In class participation/discussions: 15%
Research Project execution: 35%
Two presentations: 50%

References/Reading Material

(2) **Course Title:** Temple Architecture in South India - Origins and Evolution

**Number of Credits:** One

**Course Instructors:** Srikumar M. Menon

**Course Description:**

This course deals with the origins of temple architecture in the South Indian context and traces the different evolutionary trajectories temple form and design took in various regions to produce the rich and varied repository of temple forms that are found in the south India today. Beginning with the notion of sacred landscapes, and worship in the various Indic religious traditions, the possibility of the influence of prehistoric cultural practices on these is explored. Subsequently, the evolution of religious sanctuaries from hypaethral shrines to rock-cut temples and early structural temples is dealt with. The later evolution of the varied typologies is covered, as well as textual traditions that inform of these. The layout of temple large temple complexes and their evolution from modest beginnings is also studied, with emphasis on details of site selection, planning and landscape modification employed.

**Learning Objectives:**

This course is aimed at creating a basic framework to understand the nature of the South Indian temple, including origins and development. Beginning with the question of origins and possible influences that gave rise to the conception of the temple, the course aims to provide an understanding of the evolution in complexity of form and extent with the passage of time. An attempt will be made to approach the topic from the point of view of the artisans and artisanal guilds and how regional influences resulted in variations in form. Textual traditions that lay out the rules for the construction of temples will be explored, as well as whether these rules are followed in actual construction of monuments. Though the course aims for an understanding of temples in South India, examples from monuments all over the subcontinent would be taken to understand temple form and its influences better.

Due to the vast ambit of the course content, each topic is introductory in nature, with leads provided for the interested student to follow up any of these lines of inquiry. *The participants in this course are expected to follow up on the reading and online resources which will be provided in the lectures to develop further on the classroom discussions during the rest of the week.*

**Pre-requisites for registration/auditing:**

No prerequisites except a keen interest in understanding history and prehistory first-hand and from relevant literature.

**Expected Student Workload:**

1.5 hours of lectures in class, 3-4 hours of reading, 1-2 hours of perusal of online resources and two hours of writing assignments. *Total of upto 7.5 hours per week. Prospective students are advised to read the basis of grading spelt out below, which is indicative of assignments required during the course, before signing up.*

**Course Duration:** August-October 2019
Lecture Topics and Discussion

The main topics of the lectures are as follows:

1. **An Introduction to Temple Architecture in South India:** A brief overview of the nature and form of the South Indian temple, its possible origins in pan-Indian traditions and subsequent evolutionary trajectories.

2. **Monumental Architecture in the Indian Subcontinent – an overview:** The construction of monuments in the subcontinent – from prehistoric to later times; the idea of a monument. Prehistoric structures in South India.

3. **Prehistoric monuments:** A look at the earliest monuments – from the Stone Age and subsequent periods, till the construction of the earliest stone temples; typology, layout and distribution.

4. **The Earliest Temples:** Tracking the history of the earliest temples across India; and understanding the beginnings of temple architecture in stone at various nuclei in South India.

5. **Temple Form – Evolution and Regional Variations:** Development of temple form; continuity and evolution of formal traditions in temples; regional schools and guilds and regional variation in temple form.

6. **Case Studies – The Malaprabha Valley and Hampi:** The beginnings of monumental architecture and a study of selected individual monuments at an early temple site and a later one in Karnataka.

7. **Ancient Artisans – Artisans and Guilds in South India:** An examination of legendary and actual artisans from myth and history. Folklore, epigraphical records and literary references are the basis for this lecture.

8. **Site Visit:** To an appropriate and convenient locale, preferably a day trip.

9. **Textual Sources on Indian Temple Architecture:** An examination of the textual resources describing temple construction and an examination of their relevance to actual monuments.

10. **The Layout of Large Temple Complexes:** An examination of the design and layout of large temple complexes and their nature as composite complexes that came about by accretion or designed spaces.

**Basis for Final Grades**

Class participation: 15%

Review of assigned journal paper: 15%

Field trip and report: 20%

Documentation: 20%

Term paper on chosen topic: 30%
Books and References

Course Title: Carnatic Music Theory

Number of Credit: One

Instructor: M.B.Rajani

Course description:

This course will discuss concepts in Carnatic music repertoire that formed the founding platform for raga structures, their evolution and means of categorising them by sequential alphanumeric coding. We will explore available texts, earliest being Bharata's *Natya Sastra* which states Grama (fixed scales) as mentioned in its chapters on music, to, Melakarta syste in Govindacharya's *Samgrahachudamani* (late 17th to early 18th century) which is still in practice.
(3) School of Natural Sciences and Engineering

Foundation Course:

Introduction
The School of Natural Sciences and Engineering conducts research in areas related to Energy, Environment and Behaviour. Reflecting the research interests of the faculty members, the foundational course from the School will cover topics related to Sustainability, Governance, Coupled Human-Environment Systems, Behaviour and Decision Making and Biodiversity. The course consists of two modules; while the module from the Animal Behaviour and Cognition Programme will address themes related to Coupled Human-Environment Systems, Behaviour and Decision Making and Biodiversity, the module from the Energy and Environment Research Programme will focus on Sustainability and Governance.

Course Details

(I) Human-Environment Interactions
Course Instructors: V V Binoy, Sindhu Radhakrishna.

Brief description:
This module will look at various aspects of interactions between ecological and social systems. Beginning with how human and environmental systems are coupled, and feedback loops that sustain them, the course will then address how behaviour and decision making impact the environment around us. The final part of the module will focus on biodiversity, its importance in human systems, factors that influence changes in biodiversity and threats to biodiversity.

Duration of course
This module will be delivered over 10 interactive sessions (1.5 hrs each)

(II) Introduction to Sustainable Development in the context of India’s Energy & Environment Policies
Course Instructor: R Srikanth

Brief description:
This is one of the two modules of the 2-credit Foundation Course offered by the School of Natural Sciences & Engineering) to all PhD students in NIAS. This module focusses on key statutes, policies, and guidelines, policies related to the Energy and Environment sectors in India. With respect to these specific statutes/policies/guidelines, this module appraises the role of different stakeholders in their formulation, approval, and implementation. It draws comparisons to policies and best practices elsewhere, and will involve 10 inter-active sessions, reading assignments, and a final term paper.
Learning objectives:

(i) Sustainable Development Goals with specific reference to Energy
(ii) To grasp the intricacies of the ongoing transition to a more sustainable mix
(iii) To understand the key statutes and policies of India in the energy and environment.
(iv) To understand the actors who frame policies related to environment in India.
(v) To discover and analyze areas for improvement in some of these key statutes and policies
(vi) Electric Vehicles – Policies, Challenges and Prospects for India – for Term Paper

Number of credits:

This module will be delivered over 10 interactive sessions (90 minutes each).

Pre-requisites for registering:

Interest in learning about the broader policy-level issues related to Energy & Environment in India

A selection of key topics from the following Acts/Policies/Guidelines will be covered, along with corresponding International Statutes/Practices/Guidelines, wherever applicable:

- Sustainable Development in the Indian context
- Environment Protection Act and Rules framed under this Act
- Forest Conservation Act and Rules/Guidelines framed under this Act
- Sustainable Development Goals

Learning Materials

Suitable links to various judgements of the Hon Supreme Court of India and other Courts in relation to Environment Protection, and key Acts and Government Notifications related to Environment Protection will be provided as supplementary reading material.
Course Title: Energy Modelling

Number of Credits: Three

Total Credit Hours: 30 Lectures x 1.5 hours each i.e. 45 hours

Course Instructor(s): Tejal Kanitkar

Objectives of the Course:

The student of this course will

1. Study techniques used for energy modelling and energy-environment-economy modelling
2. Receive basic training in undertaking energy modelling exercises
3. Understand the linkages between energy and development and the methods to evaluate the impacts of various energy options
   (Basic quantitative understanding required)

Course Requirements

1. Students opting for this course should have basic understanding of maths and quantitative analysis
2. The course will include lab work/exercises that require individual students to have laptops to work on
3. While new tools and programming languages will be taught, students are expected to have a basic understanding of and comfort with Excel

Course Contents

Section I – Introduction

2. Introduction to modelling approaches
3. Context and background for the use of different modelling approaches

Section II – Statistical models and index decomposition

4. Bivariate and multivariate regression models
5. Methods used in energy demand forecasting

Section III – Introduction to optimisation

6. Theory of optimisation
7. Computational methods for optimisation
8. Introduction to GAMS
9. Introduction to TIMES/MarkAl

Section IV – Introduction to Input-Output (IO) Models and Techniques

10. Theory of IO and planning models
11. Extended IO models
12. Energy environmental analysis using Computational General Equilibrium (CGE) models
13. Energy-IO models using hybrid units
14. Life cycle analysis using IO techniques

Section – V – Review of Indian energy-environment models

15. Overview of CGE models for India  
16. Overview of partial equilibrium models for India  
17. Overview of energy accounting models for India  
18. Review of IESS – India’s Energy Security Scenarios

Method of Teaching

1. Classroom lectures and Lab-work/Exercises

Method of Assessment

Assignment 1: 40% (Theoretical)  
Assignment 2: 60% (Model Building)

Recommended Readings


MoEF, GoI. *India’s GHG Emissions Profile, Results of Five Climate Modelling Studies*, 2009.


Ang, Beng W. "Decomposition analysis for policymaking in energy: which is the preferred method?." *Energy policy* 32, no. 9 (2004): 1131-1139.
(2) Course title: Introduction to Animal Cognition

Level: Basic

Number of Credits: One

Course instructors: V V Binoy and Vishwanath Varma

Prerequisites: NIL

Assignments: Lectures, reviewing research papers, group discussion, individual presentation, writing a term report on a research topic.

Brief description and Aims

Are animals intelligent like human beings? Are they able to solve problems and take decisions considering cost and benefits? From time immemorial human beings were curious to learn about the behaviour and cognitive abilities of various kinds of animal species sharing their habitats. Cognitive revolution and the discovery of modern tools of neuroscience made it possible to understand the cognitive capacities of taxa ranging from invertebrates to primates and its biological basis. Recent studies revealed that many cognitive capabilities once thought to be unique to human beings are also possessed by various animals and such knowledge could be utilised in the conservation, cultivation and control of various animal species. This course aims to introduce concepts and methodologies popular in the field of animal cognition research keeping selected animal species as example.

Topics of Discussion

1. Introduction to animal cognition
2. From behaviour to cognition
3. Learning and memory in animals
4. Decision making in animals
5. Cognitive flexibility and individual variation
6. Social cognition
7. Animal cognition and artificial intelligence
8. Animal cognition and its application
9. Animal cognition and human cognition: is there any evolutionary continuity?
Reading list: Full list will be given once the course begins

(3) Course title: Bridging Science with Society: Understanding the Role of Communication

Number of Credits: One

Course instructor: V V Binoy

Level: Basic

Prerequisites: Interest in communicating new knowledge produced by the researchers with various stakeholders of the society.

Assignments: Lectures, reviewing research papers, group discussion, individual presentation etc.

Brief description and Aims

Understanding dynamics of the relationship between science and society and reaching new knowledge generated by the researchers without any distortion to various stakeholders is essential to empower the public to make informed decision making and avoid science – society conflict. However, in a multicultural and democratic society where members are divergent in their knowledge, attitude, behavior, and values making people aware of the impact of the discoveries and novel technologies and hence eliminating baseless fear and misconception is a mammoth task. In this ‘post-truth era’ where rumors and fake news compete with scientific information maintaining trust of the public in science requires a transdisciplinary approach converging knowledge from science, social science, and humanities. The current course aims to introduce theories, conventional and modern tools of communication and success stories of bridging science with society to the participants.

Topics of Discussion

1. Science-society relationship: Understanding the role of communication
2. Exploring the interplay between cognition, culture and communication
3. ‘Making sense’ of scientific information
4. Designing science based messages for conventional and modern media
5. Trust in science: Could filter bubbles, fake news and social media impact it?
6. Communicating risk
7. Citizen science projects
8. Strategic communication
9. Bridging science with society: Future challenges

Reading list: Full list will be given once the course begins

Course Title: Power Generation Technologies – Pros and Cons

Course Instructor: Sheela K. Ramasesha and select experts

Course Credits: One

Prerequisites: None

Brief description:
This course deals with India’s present energy scenario and way forward to achieve sustainable growth in the electricity sector along with the atmospheric pollution issues. The conventional and non-conventional sources of energy will be discussed in the course. This course will also involve lectures and interactions with selected experts in relevant fields.

All students who take this course for credit must write a term paper at the end of the course and take a couple of written tests during the term. While this course is mandatory for EEP students, non-EEP students are also welcome to take the course.

Learning objectives:
(vii) To develop a basic understanding of the key technologies deployed for generating electricity.
(viii) To understand the pros and cons of these technologies.
(ix) To assess the environmental impacts of conventional and renewable sources of electricity and their mitigation technologies/strategies.
(x) New technological developments in the renewable sector and their implications.

Study material in the form of references will be provided during the course.
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(1) Course Title: Social Psychology

Number of credits : One

Course Instructor(s): Shalini Dixit

Course Description:
This course is designed to enable students to give a social psychological perspective to look at social-scientific problems and Human behaviour. The broad purpose of the course is to introduce the ideas raised and questions asked in social psychology. Following are the broad themes covered in the course:

**Social Cognition, Self and Identity**
Questions like ‘how we think about the social world’, ‘how we perceive another person and ourselves’ would be discussed in this section. Issues like social categorization and its effect on Social Identity formation would be an important aspect of understanding self and others.

**Group Behaviour**
The process of social influence, formation of stereotype, prejudice and discrimination would be discussed in this section. This will enable the students to understand the group dynamics and intergroup conflicts.

**Applied Social Psychology**
This section would discuss the above-mentioned principles of social psychology with specific reference to areas like, health, law, education and business.

Pre-requisites for registration/auditing:
Observation and sensitivity towards human behaviour and conditions

Expected Student Workload:
Students will have 1.5 hours lecture/contact hours each week, along with 3 hours for reading, exploring, thinking reflecting and writing.

Course Duration:
August-November 2019

Criteria for Grades
Out of the 1.0 credits following would be division of credits

- 25% for classroom participation in terms of attendance, critical engagement with the readings, getting additional information and insights about the topic under discussion,
- 75% for end term exam/ assignment

(The format of assignment may be modified depending upon students’ requirement)
Suggestive Reading List


(More to be added)
(2) Course title: Sociology of Education
Subject/discipline: Education
Level of course: PhD
Number of credits: Two
Type: lecture, seminar, guided reading, etc
Name of instructor: Jeebanlata Salam

Brief description:
Sociology is a hybrid discipline, rich in concepts and theories. Attempts to understand the complex phenomenon of education requires an understanding of both sociological concepts and theories, which will be introduced at the outset of the course. To avoid trappings from common sense knowledge and status quo, students would be directed to look anew at understanding education, its phenomenon and processes through the application of sociological imagination. Pre-requisite for taking the course is critical engagement and reflection.

Lecture Topics and Discussion

1. Sociological Concepts and Theoretical Perspectives
   - Social System
   - Structure and Function
   - Organic Solidarity and Social Order
   - Positivism
   - Functionalism and Conflict Model
   - Action Frame of Reference, Phenomenology and Symbolic Interactionism

2. Theorising the Significance of Education
   - Education and Social System
   - Education and Social Order
   - Education and Social Mobility
   - Education and Social Stratification
   - Social Exclusion and Education
   - Hegemony and Domination, Social and Cultural Reproduction, Habitus and Field

3. State, Citizenship Rights and Education
   - State and Education Policies
   - Democracy and Education
   - Education and Liberation
Probable starting date and schedule: August 6, 2019
Timings: 3.30-5.30 PM

Basis for Final Grades:
Class Participation: 5%
Take-home Assignments: 15%
Mid-Term Exam: 20%
Class Presentation: 10%
Term Paper: 20%
Final Exam: 30%

References

Select chapters from the below list of Readings:

Course Title: Paradigms of Research and the Research Process

Level of Course: PhD

Number of Credit(s): One

Name of Instructor: Jeebanlata Salam

Type: (Lecture, Seminar, Discussion/DIALOGICAL, Guided Reading etc)

Brief Description:

The purpose of this course, “Paradigms of Research and the Research Process” is a practice oriented research methods, aimed at enabling students to cultivate scientific modes of inquiry in social science domain; frame a research question by adopting appropriate methods and derive relevant conclusions.

Course Outline

1. Paradigms of Research
   i. Objectivity, Subjectivity, Understanding and Reflexivity
   ii. Theory and Research
   iii. Comparative Method

2. The Research Process
   i. Conceptualising & Formulating a Research Problem
   ii. Conceptualising a Research Design
   iii. Framing Research Instrument for Data Collection
   iv. Selecting Sample and Sampling Procedure
   v. Writing a Research Proposal
   vi. Data Collection & Processing Data
   vii. Writing a Research Report

Duration: 1 hour 30 Minutes
Start Date: August 5, 2019
Class Timing: 3:30-5:00 PM
Basis for Final Grade
Class Participation: 5%
Project Assignment: 15%
Mid-Term Exam: 20%
Class Presentation: 10%
Term Paper: 20%
Final Exam: 30%
References


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