

## IDC SYLLABUS OF DEPARTMENT OF BENGALI Inter Disciplinary Course (IDC) – 3 Credits.

- যে সমস্ত পড়ুয়া CC / MIN হিসাবে বাংলা গ্রহণ করছে তাদের জন্য এই কোর্স নয়। এই কোর্সটি প্রথম/ দ্বিতীয় /তৃতীয় সেমেস্টারে পড়া যাবে।
- ৩ ক্রেডিট – এর প্রতিটি কোর্সের পূর্ণমান ৭৫। এর মধ্যে ২৫ নম্বরের কোর্সভিত্তিক টিউটোরিয়ালের জন্য বরাদ্দ। বাকি ৫০ নম্বরের জন্য বিশ্ববিদ্যালয়ের সংশ্লিষ্ট কর্তৃপক্ষের তত্ত্বাবধানে লিখিত পরীক্ষা নেওয়া হবে।
- ৫০ নম্বরের লিখিত পরীক্ষায় ১০ নম্বরের ৩টি ব্যাখ্যামূলক, ৫ নম্বরের তিনটি বোধমূলক এবং ১ নম্বরের ৫ টি সংক্ষিপ্ত উত্তরভিত্তিক / তথ্যমূলক প্রশ্নের উত্তর দিতে হবে। নিচের তালিকায় প্রশ্নপত্রের ধারণা পাওয়া যাবে।

প্রশ্ন নং	প্রশ্নের ধরন ও বিকল্প সংক্রান্ত নিয়ম	প্রশ্নের মান
১	মডিউল -১ থেকে একটি ব্যাখ্যামূলক প্রশ্ন। ১টি বিকল্প থাকবে।	১০
২	মডিউল -২ থেকে একটি ব্যাখ্যামূলক প্রশ্ন। ১টি বিকল্প থাকবে।	১০
৩	মডিউল -৩ থেকে একটি ব্যাখ্যামূলক প্রশ্ন। ১টি বিকল্প থাকবে।	১০
৪	মডিউল -১ থেকে একটি বোধমূলক প্রশ্ন। ১টি বিকল্প থাকবে।	৫
৫	মডিউল -২ থেকে একটি বোধমূলক প্রশ্ন। ১টি বিকল্প থাকবে।	৫
৬	মডিউল -৩ থেকে একটি বোধমূলক প্রশ্ন। ১টি বিকল্প থাকবে।	৫
৭	প্রত্যেকটি মডিউল থেকে কমপক্ষে ১টি করে প্রশ্ন নিয়ে মোট ৫টি সংক্ষিপ্ত উত্তরভিত্তিক / তথ্যমূলক প্রশ্ন দেওয়া হবে। এক্ষেত্রে কোনো বিকল্প থাকবে না।	১ x ৫

### BNG-MD-IDC-1-1/2/3-TH-TU

#### কথাসাহিত্য ও নাটক

**উদ্দেশ্য** – অন্যান্য বিভাগের পড়ুয়াদের জন্য এই কোর্সটির পরিকল্পনা করা হয়েছে। এই কোর্সে যে সাহিত্যকর্মগুলি পাঠ্য হিসাবে রাখা হয়েছে সেগুলির পাঠ ইতিহাস, রাজনীতি বিজ্ঞান, সমাজবিদ্যা, অর্থনীতি এবং দর্শন বিভাগের পড়ুয়াদের বিদ্যাচর্চার পরিপূরক হয়ে উঠবে বলে মনে হয়।

#### মডিউল- ১ঃ উপন্যাস

পল্লীসমাজ – শরৎচন্দ্র চট্টোপাধ্যায়

#### মডিউল- ২ঃ ছোটগল্প

একালের গল্প সঞ্চয়ন (কলিকাতা বিশ্ববিদ্যালয় সংস্করণ)

পাঠ্য গল্প ঃ চোর– জ্যোতিরিন্দ্র নন্দী, রেকর্ড– নারায়ণ গঙ্গোপাধ্যায়, অন্তঃসলিলা– সাবিত্রী রায়, আদাব– সমরেশ বসু, টোবাটেক সিং– সাদাত হোসেন মন্টে

এবং

স্ত্রীর পত্র– রবীন্দ্রনাথ ঠাকুর

#### মডিউল- ৩ঃ নাটক

নবান্ন– বিজন ভট্টাচার্য

#### সহায়ক গ্রন্থ ( নির্বাচিত )

১) বাংলা ছোটগল্পঃ প্রসঙ্গ ও প্রকরণ – বীরেন্দ্র দত্ত

৩) বাংলা নাটকের ইতিহাস– অজিতকুমার ঘোষ

৫) গণনাট্য নবনাট্য সংনাট্য ও শব্দ মিত্র–শাঁওলী মিত্র

৭) শরৎচন্দ্র–সুবোধচন্দ্র সেনগুপ্ত

৯) শরৎচন্দ্রঃ পুনরবিচার–অরুণকুমার মুখোপাধ্যায়

২) বাংলা থিয়েটারের ইতিহাস– দর্শন চৌধুরী

৪) গণনাট্য আন্দোলন– দর্শন চৌধুরী

৬) বাংলা নাট্যমঞ্চের রূপরেখা–দুর্গাশঙ্কর মুখোপাধ্যায়

৮) নাট্যমঞ্চ নাট্যরূপ–পবিত্র সরকার

## **IDC (INTER-DISCIPLINARY COURSE)**

(3 Credits – Th 2, Tu 1)

### Poetry

William Shakespeare: Sonnet 18

William Wordsworth: 'Strange fits of passion'

P.B. Shelley: 'To a Skylark'

John Keats: 'To Autumn'

### Short Story

James Joyce: 'Araby'

Katherine Mansfield: 'The Fly'

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# UNIVERSITY OF CALCUTTA

## Notification No. CSR/13/2023

It is notified for information of all concerned that in terms of the provisions of Section 54 of the Calcutta University Act, 1979, (as amended), and, in exercise of his powers under 9(6) of the said Act, the Vice-Chancellor has, by an order dated 11.07.2023 approved the Syllabi of the under mentioned subjects for semester wise Four-year (Honours & Honours with Research) / Three-year (Multidisciplinary) programme of U.G. courses of studies, as applicable under CCF,2022 . under this University, as laid down in the accompanying pamphlet.


### **Name of Subject:**

1. Anthropology
2. BBA
3. Bengali
4. BFAD
5. Bio Chemistry
6. Botany
7. Chemistry
8. Commerce
9. Economics
10. Education
11. English
12. Geology
13. Hindi
- ✓ 14. History, Islamic History & Culture
15. Home Science
16. Human Rights
17. Journalism & Mass Communication
18. Mathematics
19. Microbiology (Honours)
20. Molecular Biology
21. Philosophy
22. Physiology
23. Political Science
24. Psychology
25. Social Science
26. Sociology
27. Urdu
28. Women's Studies
29. Zoology

The above shall be effective from the academic session 2023-2024.

SENATE HOUSE

KOLKATA-700 073

 12/7/2023  
Prof. (Dr.) Debasis Das

Registrar



1. Sekhar Bandyopadhyay, From Plassey to Partition and After, Orient Blackswan
  2. Bipan Chandra ,et. al, India ` s Struggle for Independence, Penguin 1988
  3. Sugata Bose and Ayesha Jalal, Modern South Asia History, Culture, Political Economy ,Oxford 1999
  4. Rudrangshu Mukherjee et.al. A New History of India, Aleph 2023.
  5. বন্দ্যোপাধ্যায় শেখর, পলাশি থেকে পার্টিশান ও তারপর (From Plassey to Partition and after), ওরিয়েন্ট লংম্যান
  6. চন্দ্র বিপান এবং অন্যান্য, ভারতের স্বাধীনতা সংগ্রাম, (India's Struggle for Independence) কে পি বাগচি এন্ড কোং, কলকাতা
  7. চন্দ্র বিপান এবং অন্যান্য, ভারতবর্ষ – স্বাধীনতার পরে, (India after Independence), আনন্দ পাবলিশার্স, কলকাতা
  8. দেশাই এ আর, ভারতীয় জাতীয়তাবাদের সামাজিক পটভূমি, (Social Background to Indian Nationalism) কে পি বাগচি এন্ড কোং, কলকাতা
  9. জয়া চ্যাটার্জী, বাংলা ভাগ হলঃ হিন্দু সাম্প্রদায়িকতা ও দেশ-বিভাগ, ১৯৩২-১৯৪৭ (Bengal Divided : Hindu Communalism and Partition 1932 – 1947) এল আলমা পাবলিকেশনস, কলকাতা, ২০০৩
  10. দত্ত রজনী পাম, আজিকার ভারত (India Today)
  11. সরকার সুশোভন, বাংলার রেনেসাঁস, (Notes on Bengal Renaissance), দীপায়ন, কলকাতা
  12. ত্রিপাঠী অমলেশ, ভারতের মুক্তিসংগ্রামে চরমপন্থী পর্ব, (The Extremist Challenge) আনন্দ পাবলিশার্স, কলকাতা
  13. সুর নিখিল, ভারতীয় জাতীয়তাবাদী আন্দোলনের পটভূমি, পশ্চিমবঙ্গ রাজ্য পুস্তক পর্ষদ, ১৯৮৯
  - চট্টোপাধ্যায় প্রণবকুমার, আধুনিক ভারত (১৮৫৮-১৯২০) (১ম খন্ড) পশ্চিমবঙ্গ রাজ্য পুস্তক পর্ষদ, ১৯৯৮
  14. চট্টোপাধ্যায় প্রণবকুমার, আধুনিক ভারত (১৯২০-১৯৪৭) (২য় খন্ড) পশ্চিমবঙ্গ রাজ্য পুস্তক পর্ষদ, ১৯৯৯
  15. সেন সুনীল, ভারতে কৃষিসম্পর্ক (১৭৯৩-১৯৪৭) (Agrarian Relations in India (1793-1847)) পশ্চিমবঙ্গ রাজ্য পুস্তক পর্ষদ, ১৯৮৫
  16. ত্রিপাঠী অমলেশ, স্বাধীনতা সংগ্রামে ভারতের জাতীয় কংগ্রেস, আনন্দ পাবলিশার্স, কলকাতা
  17. চন্দ্র বিপান, আধুনিক ভারতঃ ঔপনিবেশিকতাবাদ ও জাতীয়তাবাদ (Nationalism and Colonialism), কে পি বাগচি এন্ড কোং, কলকাতা .
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Department of Journalism and Mass Communication  
For Sem 1 and 2 as well  
IDC : TH:**Introduction to J&MC** (2TH+1T)

#### UNIT-1

News: Definition; Elements of news; News Sources; Different types of news; Structure of news: inverted pyramid; Intro; Lead; Language of news writing; Objectivity; Feature: Definition, Types; Editorial: Importance, Choice of subjects; Column and Columnist; Interviewing: Research, planning, framing questions, The News Agencies: functions; various international News Agencies;

#### UNIT-2

Communication: Definition, Process and Semiotic school; Forms of Communication (verbal, non-verbal, paralanguage, iconic, semiotic etc.), Levels of Communication (intrapersonal, interpersonal, group, public, mass communication), Functions of communication and mass communication (surveillance, correlation, transmission, entertainment, validation, mobilization)

#### UNIT-3:

offline survey by a group of (minimum 5 students to maximum 10students) on a particular topic decided by the department.

Or

An individual presentation on any IDC topic.

- *The Second Sex* : Simone De Beauvoir
- A Companion to Feminist Philosophy (ed.): Alison, M. Jaggar and Iris Marion Young
- *Feminist Knowledge* (RLE Feminist Theory) Critique and Construct (ed.) : Sneja Gunew)
- Representing Reason- Feminist Theory and Formal Logic : Rachel Joffe Falmagne and Marjorie Hass
- A short introduction to Feminist Theory: Rinita Majumder

## **Bengali**

- Narivad: Rajasree Basu
- Naitikata o Narivad: Shefali Moitra,
- Neeti o Nyajyata : Amartya Sen (Anirban Chattopadhyay o Kumar Rana sampadita)

## **Interdisciplinary Course (IDC) (Who will study a course from Philosophy)**

### **Philosophy of Peace and Conflict Resolution (45 credits)**

#### **A. Understanding Peace**

- Concept of Peace; Meaning of Peace
- Positive and Negative Peace
- Typologies of Peace
- Sustainable Peace

#### **B. Peace Building: Different Theories**

- Realist Theory
- Idealist Theory
- Liberalist Theory

#### **C. Gender and Peace**

- Gender-Equality and Peace
- Gender, Conflict and Peace

## **D. Some Philosophical Approaches to Peace and Conflict Resolution**

- Kantian Perspective – Morality and Peace; Pre-condition and Condition of Perpetual Peace
- Gandhian Perspective – Non-Violence, Truth, Satyagraha
- Tagore’s Perspective –Spiritual Idealism and Humanism

### **Suggested Readings:**

English

- Handbook of Peace – (eds.) Charles Webel and Johan Galtung, Oxon, Routledge, 2007, <https://www.mk gandhi.org/ebks/handbook-of-peace-and-conflict-studies.pdf>.
- Philosophical Perspectives of Peace – Howard P. Kainz
- Peace, War and Defence – (ed.) Johan Galtung
- The Moral and Political Writings of Mahatma Gandhi—(ed.) R. Iyer
- Conflict Resolution and Gandhian Ethics --Thomas Weber, Gandhi Peace Foundation, New Delhi, 1991.
- Gandhi, Gandhism and Gandhians – Thomas Weber, Roli Books, 2006.
- Peace Education: The Concept, Principles and Practices around the World – (eds.) Gabriel Solomon and Baruch Nevo, .
- Comprehensive Peace Education—Betty Reardon, Teachers College Press, 1988.
- Peace, Culture and Society—(eds.) Elise Boulding, Clovis Brigagao, and Kevin Clements
- ‘Perpetual Peace’ – Immanuel Kant, in Immanuel Kant, Political Writings of Kant, (ed.) Hans Reiss, Cambridge, Cambridge University Press, 1977.
- Kant’s Political Writings –(ed.) Hans Reiss, 1977.
- Three Decades of Peace Education Around the World – (ed.) Robin J. Burns and Robert Aspeslagh, New York and London, garland Publishing, 1996.
- Conflict: Resolution and Prevention – J.W. Burton, New York, Martin’s Press, 1990.
- Peace by Peaceful Means: Peace and Conflict, Development and Civilization –Johan Galtung, London, Sage, 1996.
- Gender, War and Peacebuilding –Academy for International Conflict Management and Peacebuilding ([www.usip.org/npec](http://www.usip.org/npec))
- Women, War and Peace—Elizabeth G. Ferris, Life and Peace Institute, (<http://www.lifepeace.org>)
- Nationalism – Rabindranath Tagore, London, Macmillan &Co. Limited, 1950.



- ‘The Nation’, in R. N. Tagore, Creative Unity, EBook, Release Date - October, 21, 2007, <http://manybooks.net/>
- The English Writings of Rabindranath Tagore, (Volume 3), (ed.) Sisir Kumar Das, New Delhi, Sahitya Academy, 1996.
- Rabindranath Tagore and Universal Humanism – Saumyendranath Tagore, Published by M. Chatterjee, 1961.
- The Religion of Man (‘Spiritual Union’)– Rabindranath Tagore.
- Man the Universal: A Socio-Cultural Exploration of Tagore’s Creative Vision of Humanity –Santi Nath Chattopadhyay, 2017.

## Bengali

- Sabhyatar Sankat: Rabindranath Thakur
- Svadeshisamaj: Rabindranath Thakur
- Swarajsadhan: Rabindranath Thakur
- Rabindra Darshan: Hiranmoy Bandyopadhyay (Sahitya Samshad)
- Biswa Sankat o Shantir Path: Hajrat Mirza Masrur Ahmed(I) (Pancham Khalifa)

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- Neeti o Nyajyata : Amartya Sen (Anirban Chattopadhyay o Kumar Rana sampadita)

## **PHI MD Interdisciplinary Course (IDC) (45 credits)**

### **Philosophy of Peace and Conflict Resolution**

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- Philosophical Perspectives of Peace – Howard P. Kainz
- Peace, War and Defence – (ed.) Johan Galtung
- The Moral and Political Writings of Mahatma Gandhi—(ed.) R. Iyer
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- Gandhi, Gandhism and Gandhians – Thomas Weber, Roli Books, 2006.
- Peace Education: The Concept, Principles and Practices around the World – (eds.) Gabriel Solomon and Baruch Nevo, .
- Comprehensive Peace Education—Betty Reardon, Teachers College Press, 1988.
- Peace, Culture and Society—(eds.) Elise Boulding, Clovis Brigagao, and Kevin Clements
- ‘Perpetual Peace’ – Immanuel Kant, in Immanuel Kant, Political Writings of Kant, (ed.) Hans Reiss, Cambridge, Cambridge University Press, 1977.
- Kant’s Political Writings –(ed.) Hans Reiss, 1977.
- Three Decades of Peace Education Around the World – (ed.) Robin J. Burns and Robert Aspeslagh, New York and London, garland Publishing, 1996.
- Conflict: Resolution and Prevention – J.W. Burton, New York, Martin’s Press, 1990.
- Peace by Peaceful Means: Peace and Conflict, Development and Civilization –Johan Galtung, London, Sage, 1996.
- Gender, War and Peacebuilding –Academy for International Conflict Management and Peacebuilding ([www.usip.org/npec](http://www.usip.org/npec))
- Women, War and Peace—Elizabeth G. Ferris, Life and Peace Institute, (<http://www.lifepeace.org>)
- Nationalism – Rabindranath Tagore, London, Macmillan &Co. Limited, 1950.
- ‘The Nation’, in R. N. Tagore, Creative Unity, EBook, Release Date - October, 21, 2007, <http://manybooks.net/>
- The English Writings of Rabindranath Tagore, (Volume 3), (ed.) Sisir Kumar Das, New Delhi, Sahitya Academy, 1996.
- Rabindranath Tagore and Universal Humanism – Saumyendranath Tagore, Published by M. Chatterjee, 1961.
- The Religion of Man (‘Spiritual Union’)– Rabindranath Tagore.
- Man the Universal: A Socio-Cultural Exploration of Tagore’s Creative Vision of Humanity –Santi Nath Chattopadhyay, 2017.

## Bengali

- Sabhyatar Sankat: Rabindranath Thakur
- Svadeshisamaj: Rabindranath Thakur
- Swarajsadhan: Rabindranath Thakur
- Rabindra Darshan: Hiranmoy Bandyopadhyay (Sahitya Samshad)
- Biswa Sankat o Shantir Path: Hajrat Mirza Masrur Ahmed(I) (Pancham Khalifa)

- G. Followings are suitable for the **IDC** for **Semester I & II** :
1. (a) Medical Science; (b) Music, Painting, Dance - **Semester I.**
  2. (a) Mathematics & Astronomy; (b) Architecture - **Semester II.**

## **IDC Paper:**

### **BCM-H-IDC/BCM-MD-IDC**

#### **Biochemistry of Cell (Theory)**

**2 credits**

##### **Unit 1 Biomolecules in their cellular environment**

The cellular basis of life. Cellular structures – prokaryotes and eukaryotes. Chemical principles in biomolecular structure. Major classes of biomolecules. Role of water in design of biomolecules.

##### **Unit 2 Amino acids and peptides**

Types of amino acids and their chemistry, derivatives of amino acids and their biological role. Introduction to biologically important peptides.

##### **Unit 3 Sugars and polysaccharides**

Basic chemistry of sugars, optical activity. Disaccharides, trisaccharides and polysaccharides - their distribution and biological role.

##### **Unit 4 Nucleosides, nucleotides and nucleic acids**

Structures and chemistry, DNA structures and their importance, different types of RNA. Unusual DNA structures, other functions of nucleotides.

##### **Unit 5 Lipids**

Various classes of lipids and their distribution, storage lipids, structural lipids in membranes, lipids as signals, cofactors and pigments.

##### **Unit 6 Vitamins, coenzymes and metal ions**

Occurrence and nutritional role. Coenzymes and their role in metabolism. Metal ion containing biomolecules - heme, porphyrins and cyanocobalamin; their biological significance.

##### **Unit 7 Signalling molecules**

Second messengers - cAMP, cGMP, IP<sub>3</sub>, diacyl glycerol, Ca<sup>2+</sup>, NO. Brief account of their importance and role in signalling and signal transduction.

#### **IDC paper: Biochemistry of Cell (Practicals)**

**1 credit**

- General safety procedures in a laboratory. Use of auto pipettes. Making solutions and buffer preparation - acetate and tris buffers.
- Qualitative tests for biomolecules - carbohydrates, lipids, amino acids, proteins, bases and nucleic acids.
- Separation of amino acids by paper chromatography.
- Separation of sugars/bases by TLC and their identification.
- Estimation of ascorbic acid in fruit juices.

#### **SUGGESTED READINGS**

1. Lehninger: Principles of Biochemistry (2013) 6th ed., Nelson, D.L. and Cox, M.M., W.H. Freeman and Company (New York), ISBN:13; 978-1-4641-0962-1 / ISBN:10-14641-0962-1.
2. Textbook of Biochemistry with Clinical Correlations (2011) 7th ed., Devlin, T.M., John Wiley & Sons, Inc. (New York), ISBN:978-0-470-28173-4.

## Interdisciplinary Course (IDC)

**Course Name: Fundamentals of Electronics**

**[Credits: 3 (2Th + 1Tu); Lecture Hours: 30 (Th) + 15 (Tu)]**

### **ELT-IDC-TH**

**Course Name: Fundamentals of Electronics**

**[Credits: 2; Lecture Hours: 30]**

#### **Unit-I [9 Hours]**

**Basic Circuit Components:** Circuit Elements: Resistors, Inductors, Capacitors, Transformers, concept of voltage and current sources, Kirchhoff's current and voltage laws, concept of impedance, equivalent impedance of series and parallel combinations of R, L and C.

**Operational Amplifiers and Its Applications:** Op-Amp and its Characteristics (Ideal and practical), Open and Closed Loop Configuration, Concept of virtual ground, Inverting, Non-Inverting, Summing and Difference Amplifiers.

#### **Unit-II [11 Hours]**

**Semiconductor Devices and Circuits:** Intrinsic and Extrinsic Semiconductors, Direct and Indirect Bandgap Semiconductors, Basic Concept of P-N Junction, P-N Junction Diode, Zener Diode, Solar Cell, LED and their I-V Characteristics, Use of Diode as Half-Wave and Full-Wave (Center Tapped) Rectifier.

**Bipolar Junction Transistors (BJT): NPN and PNP Transistors,** Energy Band Diagram, Working Principle of Transistor as Amplifier and Switch, CE, CB, CC Configurations, Input and Output Characteristics of NPN Transistor in CB and CE modes, Cut-off, Active and Saturation Regions, Current Components in Active Mode, Need for Biasing and Bias Stability, Operating (Q) Point, Small Signal h-Parameter Model of CE Transistor.

**Field Effect Transistor:** MOSFET Structure, Depletion and Enhancement Modes, Complimentary MOS (CMOS).

#### **Unit-III [10 Hours]**

**Digital Logic Circuits:** Number Systems (Binary, Decimal, Hexadecimal), Addition and Subtraction (using 1's and 2's complement method) of Binary Numbers, Basic Postulates and Fundamental Theorems of Boolean Algebra, De Morgan's Theorems, Logic Symbol and Truth Tables of Basic Logic Gates (AND, OR, NOT), Derived Logic Gates (NAND, NOR, XOR and XNOR), Universal Property of NOR and NAND gates, Karnaugh Map Simplification (up to 4 Variables), Half-Adder and Full-Adder Circuits, Multiplexer, de-Multiplexer, SR, JK, D and T Flip Flops (Truth Table Only).

**Electronic Communication:** Introduction to Communication, Need for Modulation, Concept of AM and FM (Qualitative Discussions, No Derivations).

**Reference Books:**

- Boylestad, Essentials of Circuit Analysis, Pearson.
- Chattopadhyay and Rakshit, Fundamentals of Electric Circuit Theory, S. Chand.
- Sadiku, Musa and Alexander, Applied Circuit Analysis, Tata McGraw-Hill.
- Boylestead and Nashelsky, Electronic Devices and Circuit Theory, Pearson.
- Bell, Electronic Devices and Circuits, Oxford.
- Chattopadhyay and Rakshit, Electronics: Fundamentals And Applications, New Age.
- Rashid, Electronic Devices and Circuits, Cengage.
- Gayakwad, Op-Amps and Linear Integrated Circuits, Pearson.
- Coughlin and Driscoll, Operational Amplifiers and Linear Integrated Circuits, Pearson.
- Malvino, Electronic Principals, Tata McGraw-Hill.
- Kishore, Operational Amplifiers and Linear Integrated Circuits, Pearson.
- Jacob, Analog Integrated Circuits Applications, Pearson.
- Flyod, Digital Fundamentals, Pearson.
- Raychaudhuri, Digital Circuits, Vol. 1&2, Platinum.
- Gothmann, Digital Electronics: An Introduction to Theory and Practice, PHI.
- Kumar, Fundamentals of Digital Circuits, PHI.
- Comer, Digital Logic and State Machine Design, Oxford.
- Salivahanan and Kumar, Digital Circuits and Design, Vikas.



# **ECONOMICS**

## **Interdisciplinary Course (IDC)**

### **Elementary Economics (ECON-H-IDC-1/2/3-Th)**

**Marks: 50 Credits: 2**

**No. of Lecture hours (Th): 30**

**[For Semester-I/ II/ III]**

#### **1. Elementary Microeconomic Concepts: 10 Lecture Hours**

- 1.1 Theory of Demand and Supply--Determinants, Law of demand and supply, Demand and supply curves
- 1.2 Elasticity of Demand and Supply--Concepts of Price and income elasticity and implications
- 1.3 Theory of Production and Cost—Production function--Concepts of TP, AP, MP, short run-long run and different cost curves-social and external costs
- 1.4 Market--Different forms-TR, AR and MR-- Pricing and Output Decisions under Perfect competition and monopoly--features and equilibrium ( diagrammatic representation only)

#### **2. Elementary Macroeconomic Concepts: 10 Lecture Hours**

- 2.1 National Income Accounting –Circular flow-- concepts of GNP, GDP, NNP, NDP, National Income
- 2.2 Money and Banking--Different measures of money supply, Difference between central and commercial bank and their functions
- 2.3 Inflation --Definition, types and anti-inflationary policy
- 2.4 Fiscal Policy & Monetary Policy -Objectives and Instruments
- 2.5 International Trade and contemporary issues--Balance of Payments (BOP)--Concepts autonomous and accommodating transactions, Functions of IMF, World Bank, WTO Exchange Rates—PPP (Concepts only)

#### **3. Elementary Economic Development Concepts: 5 Lecture Hours**

- 3.1 Growth vs. Development
- 3.2 Development Indicators - Human Development Index (HDI), Gender (GDI), Poverty (MPI), Inequality (GINI) Indices—India's rank
- 3.3 Sustainable development--concepts and Goals

#### **4. Elementary Concepts of Indian Economics: 5 Lecture Hours**

- 4.1 Economic Reforms in India—Background, Basic steps of trade, industry and financial sector reforms
- 4.2 NITI AYOOG-Structure and objectives

**Interdisciplinary Course (IDC)  
Elementary Economics (ECON-H-IDC-1/2/3-Tu)**

**Marks: 25 Credit: 1**

**No. of Lecture hours (Tu): 15**

**[For Semester-I/ II/ III]**

**Mode of Tutorial Examination: Viva or Presentation plus viva**

**References:**

**Unit-1**

1. G.Mankiw. 2007, Economics: Principles and Applications, India edition by South Western, Cengage Learning
2. R.G. Lipsey. An Introduction to Positive Economics, ELBS (6th edition)
4. Pindyck, Rubinfeld and Mehta, Microeconomics, Pearson
5. G.S.Maddala and E. Miller, 1989, Microeconomics, Prentice Hall, McGraw Hill International Editions
7. Ferguson, C.E. and Gould, J.P. : Microeconomic Theory, Aitbs Publishers and Distributors, New Delhi.

**Unit-2**

1. Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010.
2. N. Gregory Mankiw. Macroeconomics, Worth Publishers, 2010.
3. Branson, William, Macroeconomic Theory and Policy, East West Press
4. Salvatore, D, International Economics, John Wiley and sons
5. Sikdar Soumyen, Principles of Macroeconomics, Oxford University Press.
6. <https://www.imf.org/en/Home>
7. <https://www.worldbank.org/en/home>
8. <https://www.wto.org/>

**Unit-3**

1. Thirlwall, A.P, Growth and Development, Fourth Edition, ELBS
2. Todaro, M.P, Economic Development, Sixth Edition, AWL

**Unit-4**

1. Puri, V.K & Mishra, S.K, Indian Economy, Himalaya Publishing House
2. Dutt & Sundharam, Indian Economy, S. Chand

**MCB-IDC: INTRODUCTION AND SCOPE OF MICROBIOLOGY  
[FOR BOTH HONOURS (MAJOR & MINOR) AND MULTIDISCIPLINARY]**

**MCB-IDC-TH (THEORY)**

**Full Marks : 50**

**Credit : 2**

**Unit 1 History of Development of Microbiology**

Development of microbiology as a discipline, Spontaneous generation vs. biogenesis.

Contributions of Anton von Leeuwenhoek, Louis Pasteur, Robert Koch, Joseph Lister, Alexander Fleming

Role of microorganisms in fermentation, Germ theory of disease, Development of various microbiological techniques and golden era of microbiology, Development of the field of soil microbiology: Contributions of Martinus W. Beijerinck, Sergei N. Winogradsky, Selman A. Waksman Establishment of fields of medical microbiology and immunology through the work of Paul Ehrlich, Elie Metchnikoff, Edward Jenner

**Unit 2 Diversity of Microorganisms**

Systems of classification : Binomial nomenclature, Whittaker's five kingdom and Carl Woese's three kingdom classification systems and their utility

General characteristics of different groups: Acellular microorganisms (Viruses, Viroids, Prions) and Cellular microorganisms (Prokarya: Archaea and Bacteria, Eukarya: Algae, Fungi and Protozoa) giving definitions and citing examples

Protozoa : Methods of nutrition, locomotion & reproduction - Amoeba, *Paramecium* and *Plasmodium*

**Unit 3 Microscopy**

Bright Field Microscope, Dark Field Microscope, Phase Contrast Microscope, Fluorescence Microscope, Transmission Electron Microscope, Scanning Electron Microscope

**Unit 4 Sterilization**

Moist Heat, Autoclave, Dry Heat, Hot Air Oven, Tyndallization, Filtration.

**Unit 5 Microbes in Human Health & Environment**

**Medical microbiology and immunology:** List of important human diseases and their causative agents of various human systems. Definitions of immunity (active/passive), primary and secondary immune response, antigen, antibody and their types

**Environmental microbiology:** Definitions and examples of important microbial interactions – mutualism, commensalism, parasitism, Definitions and microorganisms used as biopesticides, biofertilizers, in biodegradation, biodeterioration and bioremediation (e.g. hydrocarbons in oil spills)

**Unit 6 Industrial Microbiology**

Definition of fermentation, primary and secondary metabolites, types of fermentations and fermenters and microbes producing important industrial products through fermentation.

## **Unit 7 Food and Dairy Microbiology**

Microorganisms as food (SCP), microorganisms in food fermentations (dairy and non dairy based fermented food products) and probiotics. Microorganisms in food spoilage and food borne infections.

### **SUGGESTED READING**

1. Tortora GJ, Funke BR and Case CL. (2008). Microbiology: An Introduction. 9<sup>th</sup> edition, Pearson Education
2. Madigan MT, Martinko JM, Dunlap PV and Clark DP. (2014). Brock Biology of Microorganisms, 14<sup>th</sup> edition. Pearson International Edition
3. Cappuccino J and Sherman N. (2010). Microbiology: A Laboratory Manual. 9<sup>th</sup> edition. Pearson Education Limited
4. Wiley JM, Sherwood LM and Woolverton CJ. (2013) Prescott's Microbiology. 9<sup>th</sup> Edition. McGraw Hill International.
5. Atlas RM. (1997). Principles of Microbiology. 2<sup>nd</sup> edition. W.M.T. Brown Publishers.
6. Pelczar MJ, Chan ECS and Krieg NR. (1993). Microbiology. 5th edition. McGraw Hill Book Company.
7. Stanier RY, Ingraham JL, Wheelis ML, and Painter PR. (2005) General Microbiology, 5<sup>th</sup> edition. McMillan.

### **MCB-IDC-TU (TUTORIAL)**

**Full Marks : 25**

**Credit : 1**

Students will have to submit a writeup within 3000 words for internal evaluation and viva voce.

### **Recommended Texts & sites:**

1. LATEX- A Document Preparation System , Leslie Lamport , 1994, Addison-Wesley
2. Walking with LATEX, Suman Bandopadhyaya, Techno World
3. LATEX Tutorials A PRIMER, Indian TEXuser group, E. Krishnan
4. Practical LATEX, George Gratzer, Springer
5. Official LATEX site: <https://www.latex-project.org>
6. The Not So Short Introduction to LATEX: <http://mirror.iopb.res.in/tex-archive/info/lshort/english/lshort.pdf>
7. LATEX Wikibook <https://en.wikibooks.org/wiki/LaTeX>
8. TEX Live <http://www.tug.org/texlive/>

### **PAPER: IDC (INTERDISCIPLINARY): FRONTIERS IN PHYSICS**

1. Nature of Science: Role of proper reasoning and experiments, with examples. Inductive and deductive logic. The character of physical laws, including universality. Difference between science and pseudoscience.
2. Universe: The Copernican revolution, Kepler's laws and the Solar system, Galileo and birth of Telescopic Astronomy, Modern observations: Stars and galaxies, Life cycle of stars. Birth of the Universe, Big Bang and Hubble expansion, Dark matter and dark energy. Origin of life & exoplanets.
3. Matter:  
Atoms and molecules: The physical basis of the Periodic table.  
Heat and Thermodynamics: Basic idea about the kinetic theory of gases; Distinction between ideal and real gases; The three laws of thermodynamics. Concept of Entropy.  
Radioactivity: Alpha, beta & gamma decay; X-Rays – Properties.  
Structure of the atom: Electron, Nucleus: proton and neutron. Mention of the Standard Model of particles & interactions.
4. Forces: Laws of falling bodies, Inertia, Gravitation, Electricity and Magnetism, Light and its dual property.  
The microscopic world of Quantum Mechanics.  
Special and General Theory of Relativity (brief and qualitative ideas only)

[No Mathematical derivation beyond simple algebra should be used]

### **Suggested Texts:**

1. Six Easy Pieces – Richard P. Feynman
2. The first three minutes – Steven Weinberg
3. The character of physical laws – Richard P. Feynman
4. Introduction to Astronomy: From Darkness to Blazing Glory – J. W Scott, JAS Educational Publications
5. আধুনিক বিজ্ঞানের ক্রমবিকাশ, সম্পাদনা সুশান্ত মজুমদার, ভূপতি চক্রবর্তী, অনুষ্ঠান প্রকাশনী।

**DETAILED SYLLABI OF THE COURSES OF SEMESTERS III-VIII WOULD BE PROVIDED AFTERWARDS.**

COURSE STRUCTURE- CCF, 2022

INTERDISCIPLINARY COURSE (IDC)

SEMESTER 2: HUMAN RESOURCE MANAGEMENT

THEORY: 50 Marks

PRACTICAL: 25 Marks

**Unit 1a:** Introduction to Human Resource Management (HRM): HRM and HRD, Context and issues in HRM (8 Hours)

b) Human Resource Practices Job analysis; Recruitment and selection; Training (7 hours)

**Unit 2:** International human resource management (IHRM) The context of Globalization, Role of culture in IHRM, Dimensions of Cultural difference (Hofstede). (15 hours)

**Practicum: 25 hours**

**Objectives:** For each practicum, students are expected to know about the underlying theoretical constructs, be able to conduct the practicum and justify the method used, know about the instrument used, if any, and be able to explain the findings and link the findings with the theory.

## I. Administration of Organizational Role Stress Scale

### Readings:

Aamodt, M.G. (2001) *Industrial/ Organizational Psychology*. Thompson Wadsworth, a division of Thompson learning Inc.

Bhatnagar, J. & Budhwar, J.(2009). *The changing face of people management in India*. London: Routledge.

Briscoe, D. R., Schuler, R. S. & Claus, L. (2009). *International human resource management: Policies and practices for multinational enterprises* ( 3rd Ed). New York: Routledge.

Chadha, N.K. (2005) *Human Resource Management-Issues, case studies and experiential exercises*. (3<sup>rd</sup> ed.) New Delhi: Sai Printographers.

DeCenzo, D.A.& Robbins, S.P.(2006). *Fundamentals of human resource management*.(8th Ed). NY:Wiley.

## Structure of Statistics Interdisciplinary Course

Semester	Course / Paper Code	Course Name
1	STAT-H-IDC1-1-Th / P	Statistics for Practitioners
2	STAT-H-IDC2-2-Th / P	
3	STAT-H-IDC3-3-Th / P	

### STAT-H-IDC1-1-Th / STAT-H-IDC2-2-Th / STAT-H-IDC3-3-Th (Statistics for Practitioners)

**2 Credits**  
**THEORY**

Understanding univariate data: Variable, notion of population and sample, different types of data, methods of collecting primary and secondary data, presentation of data, summary measures on data with central tendency (arithmetic mean, median, mode), dispersion (range, quartile deviation, standard deviation, coefficient of variation), ideas of skewness and kurtosis (only through diagrams), Exploratory Data Analysis.

(8)

Understanding bivariate data: Paired data and ideas (without mathematical details) of different measures of associations, primarily Pearson's correlation coefficient, Spearman's Rank correlation (no tie), measures of association of attributes through contingency table, two-variable linear regression and multiple (three-variable only) linear regression (without derivation of the regression coefficients' formulae).

(8)

Statistical Inference (testing of hypothesis): Basic idea of binomial and normal populations (graphical idea only, derivation of the properties excluded). Concepts of hypotheses, knowledge on test statistic and decision making in terms of critical value and p-value for some standard testing problems like test for proportion/proportions, mean based on single (normal) sample, test on comparing means based on two-sample and paired sample data.

(7)

Miscellaneous discussion: Applications of one-way and two-way ANOVA with one observation per cell (without derivation and details) assuming normality, Kruskal-Wallis test (without derivation and details), sample size determination, estimation of population mean and variability for finite population, idea and application of logistic regression for binary response data.

(7)



# ***Inter Disciplinary Courses (IDC)***

Semester 1

## **IDC    Studies in Fundamentals of Librarianship**

**LBST-H-IDC1-2-TH/TU**

**2TH+1P/TU**

**100 = (TH:80 + TU:20)**

Librarianship & Libraries : Concept, Need, Scope, Growth and development, types; Books – Readers, Reading and Future;  
Library Philosophers in Bengal and India

Library materials / Sources: Concepts, types; Reference Services : Types, and queries; Print and non-print reference tools.

Library Activities: Technical Processing, concept of library classification and cataloguing, arrangements/organization of sources;.

Library Services: Circulation – lending of books,

Library Use – Facilities in libraries, Reading habits, Librarian – User- Society relationship; Outreach activities; Future opportunities