



INFORMATION BROCHURE

**FOR ADMISSION TO THE FIVE YEAR'S EVENING PROGRAMMES FOR
BACHELOR'S DEGREE IN CIVIL / ELECTRICAL / MECHANICAL ENGINEERING
UNDER**

FACULTY OF ENGINEERING & TECHNOLOGY (FET)

FOR THE SESSION 2022-2023

JADAVPURUNIVERSITY

KOLKATA – 700 032

1. GENERAL INFORMATION FOR APPLICANTS:

The Information Brochure is for admission to the Five Year's Evening Programmes for Bachelor's Degree in Civil / Electrical / Mechanical Engineering under Faculty of Engineering & Technology (FET), Jadavpur University for the session 2022-2023. All the programmes are 10-semester evening programmes with the classes to be conducted from 6:00pm to 9:00pm from Monday to Friday and 2:00pm to 5:00pm on Saturday. Field works / Academic Tours of Civil Engineering to be conducted on Sundays as and when stipulated in the curriculum.

2. ELIGIBILITY CRITERIA:

A] The candidates must have Passed Diploma Examination from the UGC recognized Indian University or Government / Statutory Body in the same branch to which he/she opts for application with at least 60% marks or equivalent grade point in aggregate for general category and 45% for SC, ST, OBC-A, OBC-B, PwD candidates.

In case final result is published in the Grade Point system only, then the same must be converted to equivalent percentage marks. Conversion of Grade Point to Percentage of Marks, if required, should be done by the applicant during filling up of the form using, either –

- a) The conversion formula of the concerned board/university, if any such is available, OR
- b) By the AICTE advised formula, as Percentage marks = (Grade Point – 0.75) × 10 when Grade Point is in a scale of 10.

In case, the Grade Point is not in a scale of 10, the obtained Grade Point is to be converted to Grade Point in a scale of 10 in a pro rata basis.

B] Final year students may also apply, but their admission (if selected) will not be confirmed unless they submit their final result by the **30th October 2022**.

3. RESERVATION OF SEATS:

Reservation of Seats for Scheduled Cast (SC), Scheduled Tribe (ST), Other Backward Class (Category A) (OBC-A) and Other Backward Class (Category B) (OBC-B) are as per Government of West Bengal Circular No. 267-Edn (U)/1U-89/13 dated 04.03.14 read with the West Bengal State Higher Educational Institutions (Reservation in Admission) Act 2013 (West Bengal Act X of 2013) gazetted on 30th April 2013 and the West Bengal State Higher Educational Institutions (Reservation in Admission) Rules 2013 gazetted on 4th January 2014. The candidate shall have to furnish copies of valid SC/ST/OBC-A/OBC-B certificate in his/her name issued by the competent authority as listed in Annexure-1.

OBC Certificates must have the category A or B mentioned without which the certificate will be considered as invalid. All OBC Certificates should have proper validation of Non Creamy Layer criteria conforming to Government of West Bengal Memorandum No. 1204-SBCW/MR-67/10 dated 27-07-2015. They have to produce any ONE of following two options:

1. OBC certificate issued after 01.01.2022
2. Old OBC certificate and Current (after 31.03.2022) Non Creamy Layer Statement as per proforma mentioned in the Annexure -2 through the issuing authority as mentioned in the Annexure -1.

As per circular no. BC-16014/1/82-SC dt. 06/08/1984 & BCD-I, D.O.12017/11/89-SCD (R.CELL) dt. 08/01/1990 and letter no. 1510-SCW dt. 31/05/2007 of the Government of West Bengal, **Candidates with reservation certificates (SC/ST/OBC-A/OBC-B/PwD) issued by any State other than West Bengal, are not entitled for reservation in such seats in Higher Educational Institutions in West Bengal.**

Reservation of seats for PwD candidates:

- a) According to Section 2(r) of the RPWD Act, 2016, “persons with benchmark disabilities” means a person with not less than forty percent (40%) of a specified disability where specified disability has not been defined in measurable terms and includes a person with disability where specified disability has been defined in measurable terms, as certified by the certifying authority.
- b) Accordingly, reservation in PWD seats will be available for the following types of disabilities, percentage of disability being not less than 40%.
 - i. Locomotor disability as specified in the Schedule of RPWD Act, 2016.
 - ii. Visual impairment as specified in the Schedule of RPWD Act, 2016.
 - iii. Hearing impairment as specified in the Schedule of RPWD Act, 2016.
 - iv. Speech & language disability as specified in the Schedule of RPWD Act, 2016
 - v. Intellectual disabilities as specified in the Schedule of RPWD Act, 2016
 - vi. Mental illness.
 - vii. Disabilities caused due to chronic neurological conditions and blood disorder.
 - viii. Multiple disabilities including deaf blindness.
- c) The “specified disabilities” are included in the Schedule of the RPWD Act.
- d) PWD certificates are to be issued by any of the authorities as given in the Order No. 289-HF/O/PHP/IR-05/2017 dated 29.08.2018 by the Government of West Bengal, Health & Family Welfare Department (PHP Branch)

4. ENTRANCE EXAMINATION AND PREPARATION OF MERIT LIST

Entrance Examination:

Entrance examination will be conducted at Kolkata, Durgapur and Siliguri in physical mode.

Exam method: MCQ based questions & OMR based evaluation.

Exam date and time: 21st August, 12:00 noon to 1:30 p.m.

Marking scheme: 50 MCQ questions (100 marks)- Each question will carry 2 marks. Negative marking for each question will be 0.5.

Calculator, Electronic gadgets, Mobile or, any Digital device will not be allowed in the examination hall.

Syllabus for the entrance examination: the details are provided below. (Annexure- 3)

Merit List:

Merit List will be prepared on the basis of the performance in the Entrance Examination.

The modalities of entrance examination will be published / informed in due time.

In case of any tie in the merit list prepared on the basis of the above criteria, the following parameter may be used in the given order to break such tie.

- Percentage aggregate marks of secondary or equivalent examination (in case of the mark sheet having the marks in grade system, it MUST be converted to equivalent percentage marks by using the formula of the respective board)
- Date of Birth (Person born earlier will get higher preference)

5. DOCUMENT VERIFICATION AND ADMISSION:

Scanned copies of the following documents (150 dpi colour in pdf format) are to be mandatorily uploaded along with the application. The maximum size of the uploaded file should not exceed 500KB. In case any such is of multiple pages the same should be scanned as a single pdf. All scanned documents should be properly legible. Illegible supporting document may lead to cancellation of the candidature without any further communication.

- a) Valid Photo ID card issued by the Government or ID card of last attending College.
- b) Admit-card / Certificate of Secondary (or equivalent) Examination for Date of Birth Proof, Mark sheet of Secondary (Class-X) or equivalent Examination.
- (c)Mark-sheet of Higher Secondary or equivalent (Class-XII) Examination, if applicable
- (d)Final Mark-sheet of Diploma in Engineering Examination.

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- (e) Mark sheets of last five semesters in case the result of the sixth semester is not published.
 - (f) Valid SC / ST / OBC(A) / OBC (B) Certificate issued by the Government of West Bengal in case 'candidate category' is SC / ST / OBC(A) / OBC (B) respectively. All OBC Certificates should have proper validation of Non Creamy Layer criteria conforming to Government of West Bengal Memorandum No. 1204-SBCW/MR-67/10 dated 27-07-2015. They have to produce any ONE of following two options:
 - 1. OBC certificate issued after 01.01.2022
 - 2. Old OBC certificate and Current (after 31.03.2022) Non Creamy Layer Statement as per proforma mentioned in the Annexure -2 through the issuing authority as mentioned in the Annexure -1.
 - (g) Valid PwD (Person with Disability) Certificate issued by the competent authority in case 'PwD category' is 'Yes'
 - (h) Recent Passport Photograph of the candidate (same as used for online application)
 - (i) Signature of the candidate
 - (j) Admit card of Entrance Examination duly signed by the Invigilator.
 - (k) A declaration by the appearing candidates that final Diploma mark sheets must be submitted by **30th October 2022 otherwise admission/studentship will be cancelled.**
- a) **Provisional merit list will be published on the basis of marks obtained in the entrance test following tie-breaking rules and candidates will be invited for participating in admission procedure (off line) according to provisional merit list.**
- b) Provisional admission will be offered after verification of relevant original documents only in the admission procedure (offline). During the admission procedure the original of the following documents will be checked for verification of relevant verified.
- i. Family Income Certificate from the competent authority
 - ii. 5 (five) copies of passport size photograph with full frontal view (same as used for online application)
- And**
self-attested copies of –
- iii. Admit-card / Certificate of Secondary (or equivalent) Examination for Date of Birth Proof
 - iv. Mark sheet of Secondary or equivalent (Class-X) Examination
 - v. Mark-sheet and Certificate of Higher Secondary or equivalent (Class-XII) Examination, if applicable
 - vi. Final Mark-sheet and Certificate of Diploma in Engineering Examination
 - vii. Valid SC / ST / OBC(A) / OBC (B) Certificate issued by the Government of West Bengal in case 'candidate category' is SC / ST / OBC(A) / OBC (B)
 - viii. Valid PwD (Person with Disability) Certificate issued by the competent authority in case 'PwD category' is 'Yes'
 - ix. Admit card of Entrance Examination duly signed by the Invigilator.
 - x. Diploma mark sheets of appearing candidates are to be submitted by **30th October 2022.**
- c) If at any point of time it is found that the candidate have not fulfilled any of the required criteria or have suppressed any information/document or have submitted wrong information/document, his/her admission as well as studentship may be cancelled without any communication.
- d) After successful submission of the application, the applicant must take a printout of the form and this has to be provided as documentary evidence for all subsequent communication, if any.

6. **FEES:**

An application fee of Rs. 400/- (four hundreds only) has to be paid at the time of application for admission to UG (Evening) Engg. programmes of Jadavpur University.

The candidates found eligible for admission need to pay Rs. 3860.00 (Rupees Three Thousand Eight Hundred and Sixty only) as Admission Fee and charges for the First Year of study.

7. **IMPORTANT INFORMATION:**

- All information regarding the admission will be notified online and through the designated admission portal which may be accessed by the following link (<https://jeeedec.formflx.com>), which is also provided in the university website.
- Individual communication with the candidates, if required, will be made through their e-mail id registered during application.
- The admission schedule will follow the chart as given in the Brochure. In case of any unavoidable change, the same will be notified on admission portal only.
- An incomplete application may be rejected without any communication.
- Any wrong information furnished or suppression of information, if detected at any point of time, may lead to cancellation of the application or admission without any correspondence.
- Submission of application or fulfillment of eligibility criteria or rank in the merit list to be published does not confer any right of the applicant to be considered for admission.
- The Admission Committee reserves the right of not selecting any candidate who is found ineligible after verification of original document or physically unfit or otherwise unsuitable. The decision of the competent authority of the university in the matter of admission is final and binding. For any query and/or grievances mails may be sent to the following helpdesk email id with the subject matter “Query regarding Admission to 5-Year Evening UG Degree Programme”. Communication of any other form including telephone or mails sent to any other address or with different subject heading will not be entertained.

Helpdesk email: dpsnrb@gmail.com

All J.U. courses are non-residential. Hostel seats are not guaranteed.

8. **Anti-Ragging:**

The student and his/her guardian have to produce anti ragging declaration after admission as per existing rules and regulations after filling up the anti-ragging declaration form in the following url:

https://antiragging.in/affidavit_university_form.php

After filling-up the form online successfully, a student will receive an E-MAIL with his/her registration number and a web link from UGC Anti-Ragging Cell. The student will forward the link to the following e-mail address of Jadavpur University:

antiraggingaffidavit@jadavpuruniversity.in

(Please note that the hard copy of Anti-Ragging affidavits no longer needs to be submitted to the University manually).

Follow University website for notification in this regard, time to time.

9. **Withdrawal & Refund :**

1) If any admitted student chooses to withdraw from the programme of study in which he/she is enrolled, he/she must fill up the Withdrawal Form available in Keeper of Muster Roll (KMR) section.

2) **He/she has to submit the filled up form (physically) along with the supporting documents to the KMR section within ONE month from the last date of admission.**

3) Refund will be made as per UGC guideline.

4) Documents required during withdrawal application:

i) Original admission Money receipt from Jadavpur University (to be submitted along with the Application form)

ii) **Original Bank Passbook (Candidate’s own bank account for verification)**

iii) Photocopy of the 1st Page of the bank passbook (containing the account details).

iv) Photo ID Proof (Aadhar Card/Voter card/Passport/Driving License/Pan Card)

10. **Seat Matrix for 5-Year Evening UG Degree Programmes:**

Course	General	OBC- A	OBC- B	SC	S T	Total
Civil Engg.	28+1(PWD)	5	4	11+1(PWD)	3	53
Electrical Engg.	28+1(PWD)	5	4	11+1(PWD)	3	53
Mechanical Engg.	28+1(PWD)	5	4	11+1(PWD)	3	53

11. **Tentative schedule of the Admission Process**

[The schedule may be changed under unavoidable circumstances and will be notified online]

Sl. No.	Activity	Date
01	Opening of online Application form on Admission Portal	02/08/2022
02	Last date of online submission of Application Form	11/08/2022
03	Publication of the list of applicants submitting the application form	15/08/2022
04	Grievances, if any, regarding missing of application, with documentary evidence of submission	16/08/2022
05	Issuance of Admit Card for Entrance examination	18/08/2022
06	Date of Entrance examination	21/08/2022 (12:00 noon to 1:30 p.m.)
07	Uploading the answer keys	21/08/2022 (After examination by 4:00 p.m.)
08	Challenging the answer keys by the candidates	22/08/2022 (till 5:00 p.m.)
09	Uploading the final answer keys	25/08/2022 (by 4:00 p.m.)
10	Publication of Provisional Merit List and notification for Physical verification–cum- Provisional Admission	03/09/2022
11	Physical verification–cum- Provisional Admission for selected candidates	06/09/2022 (11:00 a.m. to 4:00 p.m.) and 07/09/2022(11:00 a.m. to 1:00 p.m.)
12	Declaration of vacancies	07/09/2022 (by 4:00 p.m.)
13	Physical verification–cum- Provisional Admission for waitlist candidates (if any)	09/09/2022
14	Date of Commencement of classes	19/09/2022

List of competent authorities to issue SC / ST / OBC-A / OBC-B certificates

SC/ST Certificates are to be issued by any of the following authorities:

- i. Sub-Divisional Officers for all districts except Kolkata
- ii. District Welfare Officer, Kolkata & Ex-Officio Joint Director, B.C.W. in case of Kolkata Municipal Area (as defined in clause (9) of Section 2 of K.M.C Act, 1980

OBC-A / OBC-B Certificate issuing authority for candidates claiming under such reserve category of seats are as per Notification vide No. 374(71)-TW/EC/MR-103/94 dated 27/7/1994, read with Memorandum No. 1204-SBCW/MR-67/10 dated 27/7/2015 issued by Backward Classes Welfare Department. Govt. of W.B., the Sub Divisional Officer of a Sub- Division in a District is t h e certificate issuing authority. In Kolkata such certificate is issued by such an officer as the State Government by modification authorizes. Accordingly, the District Welfare Officer, Kolkata, and Ex-Officio Joint Director, BCW has been notified to act as the certificate issuing authority in respect of Kolkata covering the jurisdiction of the Kolkata Municipal Corporation.

FORM OF CERTIFICATE TO BE PRODUCED BY NON CREAMY LAYER (NCL) OTHER BACKWARD CLASSES

Certificate No. -

Date:

This is to certify that _____ Son /daughter of _____ of village _____ P.O. _____

P.S. _____ in the district of _____ the state of _____ belongs to the community which is recognised as a Backward Class (Other Backward Class - Category A/B) by the Government of West Bengal, under:

_____ a
nd as a Backward Class by the Government of India for the State of West Bengal, under:

_____ and his/her family ordinarily reside(s) in the District of _____ of the State _____

This is also to certify that he does not belong to the category of persons/section (Creamy Layer) to whom reservation shall not apply as provided in Schedule II under Section 4 of the West Bengal backward Classes (other than Scheduled Castes and Scheduled Tribes) (Reservation of Vacancies in Services and Posts) Act, 2012 or in Column No. 3 of the Schedule to the Govt. of India, Department of Personnel & Training O.M. No. 36012/22/93-Estt (SCT) Dated 8-9-93, last revised vide O.M.No. 36033/1/2013 dated the 27th May, 2013.

Place:

Date:

Attach Applicant's recent passport size photograph duly attested



Signature of District Magistrate/Executive Magistrate/Add.DistrictMagistrate/S.D.M./Tehsildar/SubDivisional Officer

Dist.- State- West

Bengal

The date of issue of OBC (NCL) certificate should be after 31st March

OBC-A / OBC-B Certificate issuing authority for candidates claiming under such reserve category of seats are as per Notification vide No. 374(71)-TW/EC/MR-103/94 dated 27/7/1994, read with Memorandum No.1204-SBCW/MR-67/10 dated 27/7/2015 issued by Backward Classes Welfare Department. Govt. of W.B., the Sub Divisional Officer of a Sub- Division in a District is the certificate issuing authority. In Kolkata such certificate is issued by such an officer as the State Government by modification authorizes. Accordingly, the District Welfare Officer, Kolkata, and Ex-officio Joint Director, BCW has been notified to act as the certificate issuing authority in respect of Kolkata covering the jurisdiction of the Kolkata Municipal Corporation.

Syllabus

- The syllabus is different for different branches of engineering.
- The detailed syllabus of different branches are given below:

A] Electrical Engineering

Electrical Circuit & Network: Basic Concepts, Series and Parallel AC circuits, Series and Parallel resonance, AC and DC circuits analysis, Network Theorems, Transient in DC Circuit, Laplace Transform, Two port network

Electrical Machines: Mechanism of Electro-Mechanical energy conversion, DC Generator and Motor, Single phase Transformer, Three phase Transformer, Auto transformer, Scott Connection,

Open Delta Connection, Three-Phase Induction Motor, Alternator, Synchronous Motor, Single phase motors, Special Motor.

Transmission and Distribution of Power: Basics of Power Transmission, Layout, Transmission Line Components, Transmission Line Parameters, Underground Cables, Performance of Transmission Line, Extra High Voltage Transmission, Components of Distribution System, Substations.

Switchgear and Protection: Necessity & functions, Circuit interrupting devices, Circuit breakers, Auto-reclosing, Protective Relaying, Over current relay, Directional Relay, Distance Protection Scheme, Differential Relay, Static over current relays, Generator protection, Transformer protection, Protection of Busbar & transmission line, Over voltage Protection.

Electrical Measuring Instruments: Fundamentals and Basic Requirements, Measurement of single phase and three phase Current, Voltage, Power and Energy, Measurement of Resistance, Single phase and three phase Power Factor Meter, Digital Multimeter, Synchronoscope. Instrument Transformer: CT and PT.

Electrical Measurement & Control: Transducers: Types, Classification, Transducer for measurement of Temperature, Pressure, Velocity, Speed, displacement; Capacitive and Piezoelectric transducer, load cell, Tachometer, Electromagnetic and turbine flow meter; Signal conditioning: Concept, AC and DC signal conditioning, Instrumentation Amplifier, Filters, Digital instruments and Display Devices; Pilot Devices: Push Button, Limit Switch,

Float Switch, Electromagnetic Relay, Pressure switch, Thermostats plugging switch, Proximity switch; Control System: Classification, Feedback control system, idea on stability, Control system components, Concept of transfer function, poles and zeroes, transfer function of first & second order system, time response characteristics of first and second order system to unit step excitation, Block diagram representation of control system, Stability concept, ON/OFF, P, PI, PD, PID controller.

Utilization, Traction, Heating and Drives: Illumination: Terms Used in Illumination, Laws of Illumination, Different types of lamps, Electric Heating, Resistance Heating, Arc Heating, Induction Heating, Dielectric Heating, Electric Welding, Electric Drives, Electric Traction, Traction Mechanics, Traction Motors, Economic Aspects of Utilising Electrical Energy

Power Plant Engineering: Basics of Power Generation, Thermal Power Stations, Nuclear Power Stations, Hydro Power Stations, Diesel Electric Power Stations, Gas Turbine Power Plants, Non-Conventional Energy Sources, Solar Energy, Wind Energy, Economics of Power Generation, Interconnected Power Systems.

Basic Electronics: Semiconductor Diode, Zener Diode, Rectifiers & Filters, Bipolar Junction Transistor (BJT), Field effect transistor (JFET), Unijunction transistor (UJT), Biasing of BJT, Regulated Power Supply, Small Signal Amplifiers.

Power Electronics & Drives: Thyristor (SCR), Switching & Timer Circuits, AC to DC Converter, Inverter, DC Chopper, DC & AC Drives, Uninterrupted power supply.

Applied and Digital Electronics: Power Amplifiers, FET Amplifier, Operational Amplifier, Feedback Amplifiers & Oscillators, Boolean Algebra & Combinational Logic Circuits, Sequential Logic Circuits, Data Converters & Memory Devices.

Microprocessor and microcontroller: Microprocessor Basics, Microprocessor Programming, Application of microprocessor, Microcontroller Basics, 8051 addressing modes and instructions, 8051 interrupts, Application.

B] CIVIL ENGINEERING

Part A: Strength of Materials and Engineering Mechanics- 20 marks (10 questions)

Part B: Civil Engineering Subjects (80 Marks, 40 questions) comprising of:

Syllabus:

Part – A: Applied Mechanics:

Friction between solid bodies; equilibrium of rigid bodies; centre of mass and centre of gravity; work, power and energy; principle of virtual work. Direct and shear stresses, strain elasticity, Hooke's law, Poisson's ratio, Young's modulus, modulus of rigidity and bulk modulus, working stress, factor of safety.

Structural elements, BM and SF diagrams theory of simple bending. distribution of bending stresses and shear stresses, Principal stresses and principal planes, Mohr's circle, Moment of internal section modulus, radius of gyration, torsion of circular shafts.

Use of simple column formula.

Solution of determinate trusses.

Fluid Mechanics - pressure at a point, Pascal's law of pressure within a static fluid, buoyancy, stability of submerged and floating bodies; Steady and unsteady flow, uniform and nonuniform flow, laminar and turbulent flow. Reynolds number.

Part – B: General Civil Engineering:

Surveying:

Surveying Correction for measured length by chain and tape. Field problems and their solutions, Com pass Traversing. Closing error in com pass traverse and Its correction, Levelling. Cross - section Long section, measurement of areas, plane table surveying, Contouring.

Planning and Construction:

Brick bonding, types of ordinary foundations, shoring and timbering. D.P.C. Flooring. Plastering, White washing. Skirting, Dado, Layout of water and sanitary lines In residential building. Water closets, intercepting chambers.

Connection of house drains to streets sewers.

Irrigation:

Methods of Irrigation, water requirement of crops, ground water – well hydraulics, Design of Irrigation canal systems.

Sanitary Engineering:

Sewers, sewer appurtenances, different system of sewerage, sewage BOO of sewage, Aerobic and Anaerobic process fundamentals of septic tanks, activated sludge and trickling niters. Demand of water, potable water, source of water. development of ground water sources, impurities in natural waters. water works Intake, slow sand filter, rapid sand filters. disinfection of public water supplies, causes and removal of hardness.

Soil Mechanics:

Formation, identification and classification of soils. Three phase system Water content, void ratio, degree of saturation, Bulk density etc. Limits of consistency. Total and effective stress.

Roads and Railways:

Roads and Railways Survey. Construction and maintenance, Road permanent way structures with formation, Road and Railway crossings road Intersections and Railway Track connections of various types road signs, Railway signals, Railway yards, road metals and their specifications, parts of Culverts.

Syllabus: 5th Years Part Time Degree Course (Evening) Mechanical Engineering, JU.

I. Applied Mechanics and Machine Design:

Sl.No.	Subject	Course Content
1.	Engineering Mechanics	Basic engineering mechanics, statics, vectors, kinematics and kinetics, work-power-energy.
2.	Strength of Materials	Stress-Strain relations, bending & shear stress, deflection of beam, torsion, column & struts, Spring.
3.	Theory of Machines	Kinematic pair, links, mechanisms, inversions, velocity and acceleration analysis, Cam follower, Power Transmission: Belt, Gear, Flywheel, Governor, Brakes, Dynamometers, Clutch, Balancing and Vibration.
4.	Design of Machines Elements	Introduction, Static & Dynamic loads, Theories of Failure, Cotter Joint, Knuckle Joint, Shafts, Keys and Couplings, Spur Gears, Pulley, Fasteners, Bearings.
5.	Mechanical Engineering Drawing	Projection, orthographic views, Development of Surfaces, Intersection of Solids, Drawing conventions, Limit-Fit-Tolerances-Surface Roughness, Sectional views, Assembly drawing, Part Drawing and detailing. AutoCAD basics.

II. Fluid Mechanics-Hydraulics and Heat Power:

Sl.No.	Subject	Course Content
1.	Fluid Mechanics	Properties of Fluid, Fluid pressure and pressure Measurement, Types of Fluid Flow, Flow Through Pipes.
2.	Hydraulic Machines	Impact of Jets, Turbines, Centrifugal pumps, Reciprocating Pumps.
3.	Hydraulic System	Components of Fluid Power Systems (pump/compressor, pipe fittings, etc).
4.	Thermodynamics	Laws of Thermodynamics, Properties of Perfect Gas, Properties of Steam, Carnot Gas Power Cycle and Carnot Vapour Power Cycle, Rankine Cycle.
5.	Boilers & Steam Condenser	Boiler types, accessories & mountings, Performance, Draught, feed water treatment, high pressure boiler. Condenser Type, Working Principle, Efficiency, Leakage, Draught and Cooling Towers.
6.	Refrigeration	Measurements of refrigeration, Refrigerant, Air Refrigeration cycles, Vapour Compression Refrigeration, Applications.
7.	IC Engine	Air-standard cycles, 2-stroke & 4-stroke engines, Valve Timing Diagram, Scavenging, Preignition, Detonation, Supercharging, Turbo-charging, Simple Carburettor, M.P.F.I. and Fuel Injection.
8.	Gas Turbine	Gas Turbine Cycle & Processes, Thermal Efficiency, Classification and Applications, Closed Cycle & Open Cycle Gas
9.	Hydraulic Turbines:	Water Turbines, Velocity Diagrams, Work done, Power and Efficiency of turbine.
10.	Power Plant Engineering	Steam, Nuclear, Gas turbine - power plant, non-conventional power.

IV. Production:

Sl.No.	Subject	Course Content
1.	Manufacturing Processes	Classification of manufacturing processes - Shaping process, Joining & Finishing process, Casting, Forging, Rolling & Extrusion, Machine Tools – Lathe, Drilling, Milling, Welding, Shaping.
2.	Mechanical Engineering Materials	Engineering Materials, Crystal Structures, Phase Transformation & Heat treatment, Surface hardening, Alloys, Polymers and Composites.
3.	Jigs Fixtures, CNC	Jig and fixture, principle of location. Concept of NC & CNC, Advantages & Disadvantages.
4.	Metal Cutting	Metal cutting, Tool wear, Machinability, Tool materials, Cutting Tool Geometry.
5.	Industrial Management	Types of Business, Management Principles, Organizational Structure, Human Resource, Materials Management, Safety Engineering
6.	Material Handling	Material handling Systems & Selection, Hoisting & Conveying Machinery, Surface Transportation Equipment.
7.	Production Management	Production System, Plant location, Plant layout, Process Planning, Production Planning and Control, Work Study, Maintenance of machine Tools, Quality Control.