



सत्यमेव जयते

Government of India
Ministry of Human Resource Development

ARPIT

Annual Refresher Programme in Teaching
(ARPIT)
through

National Resource Centres (NRCs)
under

Pandit Madan Mohan Malaviya
National Mission on Teachers and Teaching
(PMMMNMTT)

November, 2018



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Annual Refresher Programme in Teaching (ARPIT)

Under

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on

Teachers and Teaching (PMMMNTT)

Teachers are at the core of any education system and empowering them with access to latest developments, familiarizing them on the new & emerging trends, encouraging pedagogical improvements and methodologies is both a significant and critical need. The Ministry of Human Resource Development has launched Annual Refresher Programme in Teaching (ARPIT), a major and unique initiative of online professional development of 1.5 million higher education faculty using the MOOCs platform SWAYAM. For implementing ARPIT, **75 discipline-specific National Resource Centres (NRCs)** have been identified in the first phase, which are tasked to prepare online training material with focus on latest developments in the discipline, new & emerging trends, pedagogical improvements and methodologies for transacting revised curriculum.

In the inaugural year 2018, the NRCs are expected to cater to around 13 lakh faculty of the total 15 lakh faculty in higher education. The courses cover a diverse range of topics such as, *inter alia*, Indian culture & Heritage Studies, Pedagogical Innovations & Research Methodology, Latest Trends in Pedagogy and Assessment, Personal-Emotional Development and Counselling , Neural Networks and Deep Learning & Knowledge discovery, ICT in Science and Maths teaching, Innovation and

Best practices in Educational Skills, Leadership and Governance in Higher Education, Public Policy and Administration, English Language Teaching, Hindi Literature & Linguistics, Methodology of Teaching Sanskrit, Effective Creations and Innovative Researches in Medieval Gujarati Literature, Tribal and Regional languages, Urdu, French Studies, Tools, techniques and experiments in Earth Science, Mathematics, Statistics, Zoology, Chemistry, Physics, Biotechnology, Biomechanics, Marine Science, Calculus, Real Time Power Analysis and Smart Grid, Civil Infrastructure for Smart City Development, Engineering Mechanics, Design Spectrum, DIY Manufacturing Technology, Advanced Concepts in Fluid Mechanics, Energy Systems Engineering, Engineering Mechanics, Physics of Semiconductors and Devices, Internet of Things, Astronomy and Astrophysics, Electrical Engineering, Bio-Medical engineering, Metallurgical Engineering and Materials Sciences, Chemical Engineering, Aerospace Engineering, Tourism and Hospitality Management, Political Science, Economics, Psychology, Development Perspectives in Agriculture, Gender/Women's studies, Contemporary Laws, Disaster Management, Climate change, Library & Information Science, Ethics, Human Rights and Environment, Social and Rural Development, Anthropology etc.

Through ARPIT all in-service teachers, irrespective of their subject and seniority have been given an enabling opportunity to keep abreast of the latest developments in their disciplines through the technology based online refresher courses. The NRCs have initially developed 3 minute video(s) which have been assessed technically by AICTE and after having met the MOOC guidelines; the same have been approved and uploaded on SWAYAM Portal.

The training materials have now been uploaded and made available through SWAYAM to all the teachers from 1st November, 2018. Currently, registrations are open for the online refresher courses on SWAYAM platform, India's own indigenous MOOC's education engine and can be accessed <https://swayam.gov.in/courses/public>

The course is a 40 hour module with 20 hours of video content and 20 hours of non-video content. They are offered in a highly flexible format and can be done at one's

own pace and time. There are built-in assessment exercises and activities as part of the academic progression in the course. At the end of the course, they will be a terminal assessment which can be either online or a written examination. All faculties who have successfully completed the online refresher course will be certified. The courses will be open from 1st November, 2018 to 28th February, 2019. All in-service teachers, irrespective of their subject and seniority are requested to register and complete these refresher courses which will help them in career advancement. UGC has recognised them in their latest regulations under Minimum Qualifications For Appointment Of Teachers And Other Academic Staff In Universities And Colleges And Measures For The Maintenance Of Standards In Higher Education 2018.

A varied set of institutions such as, Centres under the Ministry's Pandit Madan Mohan Malviya National Mission on Teachers and Teaching (PMMMNTT) located in Central Universities, IISc, IUCAA, IITs, IISERs, NITs, State Universities; UGC's Human Resource Development Centres(HRDCs), National Institutes for Technical Teachers Training (NITTTRs), IIITs, Open Universities have been notified as NRCs. These NRCs cover wide ranging disciplines of Social Sciences, Sciences, Engineering and Technology, Design & Manufacturing, Humanities, Language Teaching, Commerce, Management, Education Planning and Administration, Public Policy, Leadership & Governance, Library & Information Science, Astronomy & Astrophysics, Assessment and Evaluation, Pedagogy and research methods , cutting edge areas of Nano-sciences, Internet of Things, etc.

Faculty can benefit from this initiative as it is highly flexible and can be done at one's own pace and time. The NRCs will revolutionize professional development of faculty by catering to massive numbers by leveraging ICT and online technology platform of SWAYAM.

Details of discipline specific courses through ARPIT

Name & Address: National Institute of Educational Planning and Administration
(NIEPA) 17-B, Sri Aurobindo Marg, New Delhi -110 016 (India)

Course Name: Refresher Course on Educational Planning and Administration

Discipline: Educational Planning and Administration

NRC Coordinator: Prof. K. Biswal
Department of Higher & Professional Education, NIEPA
kkbiswal@niepa.ac.in
+91-11-26544844 (O) / 9811082022



About the Course: The overall objective of the course is to acquaint the faculty of HEIs to recent developments in key areas related to educational policy making, planning, administration and financing. It is expected that a threshold level of prior knowledge and skills in educational planning and administration would help the participating faculty to effectively engage and appreciate the course. The online refresher course, therefore, has been designed to introduce the participants to foundations as well as practices of policy-making, planning, administration and financing of education. Besides, it attempts to provide an insight into the policy-making process; methods and techniques of planning; administrative structures and practices; and patterns, modes and sources of financing education in India.



Name & Address: RIE Mysore Manasa Gangothiri, Opp. Institute of Speech
Hearing, Mysuru, Karnataka 570006

Course Name: Internship in Teaching

Discipline: Teacher Education

NRC Coordinator: Prof Manjula P Rao
manjularem2014@gmail.com
9611882500



About Course: The course is developed based on the guidelines of NCF-2005, NCFTE-2009 and the Internship experiences and model of RIE, Mysuru. The course intends to facilitate the teacher educators to design internship in cooperative and partnership modes with the schools of multicultural contexts in the country. It also aims to help teacher educators to design various types of lessons in different school subjects based on constructivist principles and strategies as model lessons to initiate the student teachers into planning for teaching. The course will also help the teacher educators to plan different types of assessment tools and criteria to evaluate the performance of student teachers in the class room context and in various other contexts of school during the internship. It will enable them to identify and plan activities linked with the theory to be carried out by the student teachers in continuum under school attachment programmes in phased manner. The role of cooperative schools, teachers and teacher educators as mentors and facilitators in building up the professional capacities and teacher dispositions in student teachers in various multicultural and inclusive school contexts will be demonstrated through lessons. On the whole, this course intends to improve upon the standards of teacher preparation by strengthening the internship programme which is the main core of a teacher education programme.



Name & Address: Guru Jambheshwar University of Science & Technology, Hisar

Course Name: Pedagogical Innovations & Research Methodology

Discipline: Pedagogical innovations and Research Methodology

NRC Coordinator: Prof. Vandana Punia
Department of Bio & Nano Technology,
vbpunia@gmail.com
9896085433



About the Course: Information and communication technology has brought revolutions in pedagogical practices. When teachers effectively integrate technology into subject areas; teachers grow as an excellent teacher, content expert, and coach. Technology helps make teaching and learning more meaningful and enjoyable. Keeping in view the vital importance of these issues, an idea has been conceptualized to prepare a course that enables teachers to acquaint them with knowledge, skill and attitude for technology integration in pedagogical decisions and research methodology. The major thrust of this course is to explore Pedagogical Innovations to guide teachers and policy makers for quality concerns in higher education. This course has four credits and will require 40 hours of learning efforts from learners. This endeavor will prepare university and college teachers in acquiring 21 ST century skills and competencies along with technology supported pedagogical innovations based on different technologies, digital tools and techniques to enrich their educational and research experiences.



Name & Address: Aligarh Muslim University Department of Education
Aligarh Muslim University Aligarh

Course Name: ICT in Teacher Education

Discipline: Teacher Education

NRC Coordinator: DR.(Mrs) NASRIN Department of Education, AMU
nasrinamu@gmail.com
9897451671



About the Course: In this course the teacher educators will learn about a wide variety of ICT (information and communication) tools that can be used in teaching-learning process. It is also helpful for teacher educators to familiarize them with innovative ways for organizing their day to day activities, content presentation, assessments and communication. After going through this course the teacher educators will also be able to integrate ICT tools in classroom environment on daily basis.



Name & Address: Aligarh Muslim University Department of Education
Aligarh Muslim University Aligarh

Course Name: Environmental Education In Teachers Training Institutes

Discipline: Teacher Education

NRC Coordinator: Dr. (Mrs) Nasrin

Department of Education, AMU

nasrinamu@gmail.com

9897451671



About the Course: In this course the teacher educator will be able to understand the environmental changes that are causing damage to our planet. The field of environmental education is a valuable resource for learning about the natural issues of relevance and the means of managing ecosystem in a balanced way. Creating an awareness of the environment must be given due importance in teacher's training institutes.



Name & Address: Dr. B.A. Marathwada University, Aurangabad

Course Name: Bio medical Image processing Science and Technology

Discipline: Science and Technology

NRC Coordinator: Dr. Ramesh Manza

drbhartirokade@gmail.com

9823207519



About the Course: This course will provide you detailed insights of Biomedical image processing and you will be facilitated with know-how of basic biomedical image processing with special reference to diabetic retinopathy. Biomedical image processing has attained great heights now a days and contributed significantly in towards prognosis and diagnosis of issues similarly doctors are able to decide line of action for treatments.

As per surveys, the technology inceptions of medical image analysis software markets with special reference to biomedical image processing has turned in making this industry 3.88 billion by 2022 and expected to grow by 8.2% annually, so there is huge potential in biomedical instrumentation as well as image processing.

This course is useful for academicians, researchers and industry professionals working in the area of image processing, pattern recognition and biomedical image processing.



Name & Address: Banaras Hindu University, Varanasi

Course Name: Online Refresher course in EARTH SCIENCE and Allied

Discipline: Earth Science

NRC Coordinator: Dr. S. K. Tiwari

sktiwari.bhu@gmail.com

9453038452



About the Course: The Refresher course titled 'Tools, techniques and experiments in Earth Science' is an inter-disciplinary course for the researchers and teachers in the field of Geology, Geophysics and Geography'. The course is divided in to 6 hrs comprising each unit of six and half hours duration each. The course also includes four quadrants prescribed by SWAYAM i.e. E-text, Video, Assessment and discussion form. The first unit discusses about maps, tropic sheets, geological sheets and mapping techniques with the help of various types of compass. it also discusses about surveying types like plane table method, chain and tape method, daunt level method, differential GPS methods etc. it also deals with Arial photographs and remote sensing etc. The second unit deals with crystallographic, textural and Surficial studies with the help of Scanning Electron Microscope (SEM), Transmission Electron Microscope (TEM) and X-ray Diffraction Pattern Studies (XRD). The third unit deals with Geo-Chemical Studies as well as Atomic Absorption Spectroscopy (AAS). The unit four incorporates Rock Mechanics and Engineering Geology. Unit five deals with Petrographic studies of minerals rocks and fossils. Lastly Unit six deals with Petrological and Geo-Chemical studies of coal. The course is expected to enable teachers and researchers to have hand on experiences in various laboratories and institutions in the field of earth science and allied disciplines.



Name & Address: Banasthali Vidyapith
BANASTHALI VIDYAPIT P.O. Banasthali
Vidyapith – 304022



Course Name: Online Refresher Course in Management

Discipline: Management

NRC Coordinator: Prof. Harsh Purohit
deanwisdom@banasthali.in
9887886320

About the Course: The online refresher programme in management aims to bring in multiple perspectives to management discipline in terms of teaching pedagogy, future work skills, research, and 'self-management'. The programme would help the participants in understanding the new perspectives of management education in a holistic manner, improving quality of research and visualizing innovative approaches and emerging ideas in context to business management education. Experts from India and abroad have collaborated to formulate modules on developing integrative intelligence, innovation in pedagogy - shastrarth mode of learning, learning from gurukul approach, artificial intelligence, digital marketing, personal finance etc.



Name & Address: Central University of Haryana Jant-Pali Villages,
Mahendergarh District, Pali, Haryana 123029

Course Name: Personal Emotional Development and Counselling

Discipline: Personal-Emotional Development and Counseling

NRC Coordinator: Prof. Sarika Sharma
12123sarika@gmail.com
8222088814



About the Course: This course will focus on latest developments in the subject, pedagogical improvements and methodologies for transacting revised curriculum. Teens of higher education must learn how to respond to new and unfamiliar situations. At the same time they are experiencing increased demands on their physical, mental, and emotional resources. The role of a faculty of higher education needs to know how to counsel the adults. Counseling psychology is a psychological specialty that encompasses research and applied work in several broad domains: counseling process and outcome; supervision and training; career development and counseling; and prevention and health. Through SWAYAM platform, we would introduce to our teachers to those pedagogical tools that are locally rooted but globally relevant for their subject.



Name & Address: Central University of Rajasthan NH-8,
Bandarsindri Rajasthan-305817, INDIA

Course Name: Public Policy Administration

Discipline: Public Policy/Administration

NRC Coordinator: Dr. Jeevan Kumar Cheruku
jeevanckumar@gmail.com
8875799250



About the Course: The course is meant for teachers in universities and colleges across the country. It is interdisciplinary in nature with multi-faculty approach. The following are the objectives of the course:

It equips the participants with the scope, status and theories of public policy studies;
It empowers them with ideas and issues in public policy studies;
It also enables them to understand the links between policy studies and Public Administration;
It appreciates the legal and institutional bases of policymaking with reference to specific policy case studies
It also orients them about linkages between policy studies, law, management, social work, sociology, and administration.



Name & Address: Central University of South Bihar
Course Name: Latest Trends in Pedagogy and Assessment
Discipline: Education
NRC Coordinator: Dr. Kaushal Kishore
tkbasantia@gmail.com
9435724964



About the Course: The present course i.e. Latest Trends in Pedagogy and Assessment will be focussing on two educational headways that are latest trends in pedagogy and latest trends in assessment.

Under the head latest trends in pedagogy this course will cover topics like, Constructivist pedagogy, Critical pedagogy, Multicultural pedagogy, Culture specific pedagogy, Pedagogy of moral and value education in a secular class, etc.

The second content area of the course will cover latest trends in educational assessment, and, in this area it will cover topics like, Latest trends and principles of classroom assessment, Concept of alternative assessment, Preparing and using Rubrics, Using portfolio for classroom assessment, Peer and self-assessment, CBCS i.e. Choice Based Credit System etc.



Name & Address: Dr. H.S. Gour Vishwavidyalaya, Sagar
Course Name: Advances in Animal Diversity, Systematics & Evolution



Discipline: Zoology

NRC Coordinator: Prof. J. D. Ahi
ahijanak@gmail.com
9425671522

About the Course: The focus of this course is the plenary expansion of advancement in animal diversity, systematics and evolution. The first part of this simplified syllabi is the expansion of animal organization, convergence, and characteristics of living organisms. Whereas, the next part portrays the different expansions of animal systematic and phylogenetic resemblances. The third part of the syllabus depicts the origin of the living system, animal evolution and evolutionary relationships among organisms. The overall significance of expansion of syllabi is further manifested in the last part that entails the importance of and threats to diversity. The course content has been designed to update and create awareness about animal diversity and evolution with emphasis on (1) modern systematic and (2) role of biodiversity in maintaining a healthy ecosystem.



Name & Address: Goa University, Teleigao Plateau

Course Name: Marine Science

Discipline: Marine Science



NRC Coordinator: Prof. Harilal B. Menon
hbmenon@unigoa.ac.in
9422443237

About the Course: 1. The course includes Geopolitics and maritime domain, Observations in Oceanography, Ocean dynamics, Thermohaline circulation, Ocean thermal energy conversion, Gas hydrates, Geo-tracers, Impact of anthropogenic input on marine biodiversity and ecosystem function, Oxygen minima zone, Marine pollution, Antarctica in a changing world, Storm surge, Marine Seismic, Tsunamis, Fisheries and Biotechnology, drugs from the sea, Bio-invasion, Invertebrates, Bio-communication in the Ocean, Remote sensing of chlorophyll-a from optically complex coastal waters.



Name & Address: Gujarat University, Nairangpura, Ahmedabad
Course Name: Online Refresher Course in English Language Teaching
Discipline: English Language Teaching
NRC Coordinator: Prof Joshi Jagdish
joshijagdish@gmail.com
942658796



About the Course: This is for the first time that an Online Refresher Course in English Language Teaching is being by MHRD-National Resource Centre, HRDC, Gujarat University. This pioneering effort is being undertaken to train the trainers and to enhance the skills and Competences of in-service academic faculty members. This course is intended to transform us from good teachers to effective teachers.

Learning outcomes or objectives: We, being in the teaching profession for years, very well know that we need to learn, unlearned relearn as the society, knowledge and technology around us is constantly evolving. The course is to help us keep ourselves updated. It is just an effort to assist us to enhance our competence and to discover new areas of teaching, learning, research and enquiry in the field of English Language Teaching, Learning and Testing.



Name & Address: Hemvati Nandan Bahuguna Garhwal University, Srinagar
Course Name: Tourism and Hospitality Services Management
Discipline: Tourism and Hospitality Services
NRC Coordinator: Professor S.C.Bagri
prof.bagri@gmail.com
9027022816



About the Course: A four months duration NRC course on "Tourism and Hospitality Services management" has been developed by Centre for Mountain Tourism and Hospitality Studies, HNB Garhwal central University Srinagar Garhwal , Uttarakhand with the help of 35 resource persons identified both from the trade and academia. The study programme is divided into three parts covering contents from foundation, conceptual and application areas of the discipline. The Course coordinator is Prof. S.C.Bagri, having 40 years of teaching and experience in Tourism and Travel Management. He presently holds the post of Dean of Management.



Name & Address: Pondicherry University, Lawspet, Puducherry

Course Name: French Studies

Discipline: French

NRC Coordinator: Prof. Venkata Raghotham

joshijagdish@gmail.com

9442212885



About the Course: These 40 modules of MOOC on the vast area of French Studies will be organised so as to be not only interesting and motivating, but they will also have the objective of enriching knowledge by incorporating pertinent updated elements. The 40 modules planned for these massive online open courses in French by the nodal centre in Pondicherry University will rather elaborate on subjects in translation and interpretation, since the Department of French at the Pondicherry University offers a unique Master which focuses primarily on these two seminal aspects, most useful in the globalized era of today. It will also comprise of modules on the specificity of the French presence in Pondicherry (owing to its colonial past), on the Indian diaspora in the Francophone world, on French and Francophone Literatures, on Literary Theory and Criticism, on French Language Teaching and Didactics in India, and many other aspects enhancing the varied content of these 40 modules which will either be in the form of a video and/or text, as well as tests and quizzes for the auto-evaluation, or then, it will be a forum of discussion on a particular theme.



Name & Address: IIITD & M Jabalpur Dumna Airport Road, Dumna,
Jabalpur, Madhya Pradesh 482005

Course Name: DESIGN SPECTRUM

Discipline: Design

NRC Coordinator: Dr. PRABIR MUKHOPADHYAY

prabir@iiitdmj.ac.in

9425805511



About the Course: The course unfurls with an introduction to design as a subject and discipline, including its origin, global and Indian context and references to successful designers and design educators both internationally and in India. It then talks about the pluralistic approaches in design with emphasis on the different facets of design like culture, product, space, communication, services etc. Then the course leads to the different design methods and explains in detail with case studies how these methods are used in practice. The course ends with design interpretation by different professionals and ends with negative and positive interpretation of design.



Name & Address: IIITDM Kancheepuram Kancheepuram Melakottaiyur
Village, Off Vandalur-Kelambakkam Road, Nellikuppam,
Chennai, Tamil Nadu 600127

Course Name: DIY Manufacturing Technology

Discipline: Design and Manufacturing

NRC Coordinator: Dr S R Pandian
srp@iiitdm.ac.in
9940298725



About the Course: In this course, the students will learn the basics of open source Arduino microcontroller as applicable to do-it-yourself (DIY) manufacturing, computer-aided design (CAD), computer-aided manufacturing (CAM), subtractive and additive manufacturing, and how to design and develop their own very low-cost desktop computer numerical control (CNC) machines, 3D printers and robots, for innovative laboratory instruction. The interactive course is open to teachers of engineering colleges and universities, polytechnics, ITIs, as well as school teachers with interest in STEM education. It includes an optional hands-on kit or simulation for experiments, and a Virtual Laboratory for operation of NRC equipment over the Internet.



Name & Address: Indian Institute of Science Education and Research
Bhopal (IISER, Bhopal)

Course Name: ICT for Science, Technology, Engineering and
Mathematics Education

Discipline: Assessment & Evaluation

NRC Coordinator: Dr. Yogesh Velankar
creates@iiserb.ac.in



About the Course: This refresher training course will focus on the pedagogical basics as well as the latest developments, new and emerging trends to effectively integrate ICT in Science, Technology, Engineering and Mathematics (STEM) teaching and learning. This is a unique professional development opportunity as it is highly flexible and can be done at your own pace and time. Several key aspects of ICT will be explored, such as the fundamental principles and frameworks to effectively integrate technology in the teaching and learning process, various ICT based learning models, techniques and open source tools in the context of STEM Education.



Name & Address: Indian Institute of Science Education and Research (IISER) Pune

Course Name: Climate Change

Discipline: Climate change

NRC Coordinator: Prof. Rahul Chopra

rahul.chopra@iiserpune.ac.in

9604132352



About the Course: Climate Change is one of the most significant issues of our times. Educating forthcoming generations about the causes and effects of global climate change is imperative as implementing solutions depends on their scientific, technical and leadership abilities.

The online orientation course on Climate Change includes video lectures and associated material on the current understanding of climate science, latest developments in the field, and pedagogical methods of effective classroom instruction. It includes modules on the science of Climate Change, societal impacts of climate change, policies and governance, and impacts of climate change in India.



Name & Address: Indian Institute of Technology, Hyderabad

Course Name: Arduino for Electrical Engineers

Discipline: Electrical engineering

NRC Coordinator: Prof .G. V. V. Sharma

gadepall@iith.ac.in

9885013891



About the Course:

Module 1: Applied Digital Design: This module explains, the logic design and verification through Arduino.

Module 2: Assembly Programming using Arduino: This module explains, assembly programming for digital logic design by arduino.

Module 3: Embedded Programming using Arduino: This module explains, Embedded programming using arduino.

Module 4: GATE Exercise on Digital Design using Arduino: In this we collect the numerical from previous GATE examinations are collected and solved numericals and verify theoretical analysis using arduino.



Name & Address: IIT Kanpur

Course Name: Aerospace Engineering

Discipline: Aerospace Engineering

NRC Coordinator: Prof. S. Kamle
kamle@iitk.ac.in
8090043840



About the Course: The course will consist of Classical Aerospace Engineering including basics (50%), Advanced content included in IITs curriculum (20-30%) and Recent advancements in the respective fields (20-30%), using the recent and/or pedagogical improvements in each component.



Name & Address: Indian Institute of Technology, Kharagpur

Course Name: Advanced Concepts in Fluid Mechanics

Discipline: Mechanical Engineering

NRC Coordinator: Prof. Soumitra Paul
spaul@mech.iitkgp.ac.in
9434016989



About the Course: This course is targeted towards introducing fundamental concepts of fluid mechanics to the teachers of this subject as well as to prospective faculty members and researchers of the future. The undergraduate and postgraduate students may also benefit by following the pedagogical approach of this course.

The essential organization of the course is as follows. It starts with a brief pedagogical outlook of teaching fluid mechanics and essential mathematical foundations; a couple of issues which are grossly overlooked during the teaching-learning process of the subject. Subsequently, it discusses the kinematics of flows, dynamics of inviscid flows, integral and differential forms of conservation, dynamics of viscous flows, boundary layer theory, instability and turbulence. It also touches upon various aspects of scale effects in fluid mechanics, including fluid dynamics over atmospheric scales and microscopic scales.

After completing this course, the participant is expected to be thorough in the fundamental premises of fluid mechanics, leading to an enhanced ability in addressing advanced problems and research topics in the subject.



Name & Address: IIT Madras IIT P.O., Chennai 600 036, Tamil Nadu

Course Name: Cornerstone Ideas in Metallurgical Engineering and Materials Sciences



Discipline: Metallurgy

NRC Coordinator: Dr. Edamana Prasad
edamana20@gmail.com
9884187052

About the Course: The MOOC is for teachers who teach materials related topics. There will be 20 hours of video content which include,

- (i) Direct class room observations where faculty implementing suitable pedagogy to help students to achieve their learning outcomes.
- (ii) Faculty sharing cornerstone ideas in Materials sciences
- (iii) Faculty explaining general pedagogy and its use in course based education system

In addition to this, approximately, 20 hours of reading materials will be uploaded for the learners to improve their content and pedagogical knowledge.



Name & Address: IIT Bombay IIT Area, Powai, Mumbai, Maharashtra 400076

Course Name: Energy Systems Engineering

Discipline: Energy systems engineering

NRC Coordinator: Rangan Banerjee
rangan.banerjee@gmail.com
9820410135



About the Course: The refresher course on Energy Systems Engineering introduces the participants to the latest developments and challenges in energy systems engineering. It is divided into three modules: (1) Perspective, (2) Tools and techniques, and (3) Technology and systems. The course provides an overview of the basics of energy systems engineering along with a flavour of the state of the art developments in energy supply technologies and demand side options. The course can refresh concepts for existing faculty who are teaching energy courses, orient faculty members from mechanical, chemical and electrical engineering backgrounds who wish to specialise in energy systems engineering and introduce research challenges and opportunities in future energy systems.



Name & Address: IISc, Bangalore

Course Name: Physics of Semiconductors and Devices

Discipline: Physics

NRC Coordinator: Dr. Prerna Sharma
prerna@iisc.ac.in
876 208 3927



About the Course: This is an online refresher course in Physics for College Teachers. The pre-requisite for this course is under-graduate level of understanding of solid-state physics.



Name & Address: IIT Patna

Course Name: Components and Applications of Internet of Things

Discipline: Internet of Things

NRC Coordinator: Dr. Sanjoy Kumar Parida
sanjoy.sk@gmail.com
9631656188



About the course: Decades ago, we connected computers and got today's powerful Internet. Now we have started to connect everyday objects using internet, to create the Internet of Things. World will have 50 billion connected devices by 2020. As these IoT devices come online, the industry will face some formidable challenges, such as ensuring the security of its devices, powering billions of sensors and analyzing the data generated by these devices. Therefore it is important to understand underlying components and the entire eco- system and integration issues , various use cases or applications of IoT and its data analytics.

The objectives of this course is to learn about Basics of IoT, Components of IoT including Sensors and actuators, computing and communication systems. It will also cover IoT Protocols, Security of IoT, Cloud based design and AI/Deep learning based analytics.



Name & Address: Institute of Agricultural Sciences, Banaras Hindu University, Varanasi

Course Name: Development Perspectives in Agriculture

Discipline: Agricultural & Veterinary Education

NRC Coordinator: Dr. Basavaprabhu Jirli

bjirli@gmail.com

9450542832



About the course: The course is meant for faculty members of State Agricultural Universities and Scientists working in Indian Council of Agricultural Research Institutions. Upon successful completion of the course which is equivalent to Summer School or Winter School of ICAR or Orientation or Refresher Course of UGC, the professional can save time and learn more at his/her working place.



Name & Address: Inter University Centre for Astronomy and Astrophysics, Pune

Course Name: Astronomy and Astrophysics

Discipline: Astronomy & Astrophysics

NRC Coordinator: Prof Dhruba J Saikia

dhrubasaikia@iucaa.in



About the course: This course on Astronomy and Astrophysics consisting of eleven modules gives an overview of recent developments in different areas of Astronomy and Astrophysics, and some of the required pedagogy. The eleven modules identified for this course are: General theory of relativity; Gravitational waves; Quantum gravity; Cosmology and large-scale structure; Galaxies and clusters of galaxies; Physics of compact objects; Solar system astronomy; Observational astronomy; Astronomy from archival data; Time-domain astronomy and Astrostatistics. Each module has a number of presentations by some of the leading experts in their respective fields, which are arranged as Chapters. Each Chapter has a number of Sections highlighting different aspects for the convenience of those taking the course. Teachers may choose different modules depending on their areas of interest to meet the requirements of UGC/MHRD.

The course will help teachers keep abreast of current knowledge in the different areas, new and upcoming observational facilities in different parts of the electromagnetic spectrum, be aware of the rich archival data from observatories across the world which they may use in their research as well as teaching, and adopt some of the contents of this course in their regular teaching in their respective institutions. The details of the Modules offered and the resource persons are as follows.



Name & Address: Jamia Millia Islamia
Course Name: Gender/Women Studies
Discipline: Gender/ Women Studies
NRC Coordinator: Prof. Anisur Rahman
mkhan@jmi.ac.in
9868943284

About the Course: The proposed course on gender studies is an effort to comprehend the power relations defining the male and female relationship in a socio-cultural context, It will provide epistemological, ontological and theoretical understanding of gender studies. Themes under this programme are: Concepts and History of Gender Studies, Constructing Gender, Gender Rights, Development & Media, Feminist Research, Futures etc. The course will sensitize participants effectively towards gender justice, a gender sensitive teaching learning process can bring social change towards an egalitarian society. A faculty with an attitude of gender free would definitely inspire students to take their career decisions in an objective manner leading to judicious presence of male and female in all areas of studies and professions.



Name & Address: Kurukshetra University
Course Name: Contemporary Laws: Issues And Perspectives
Discipline: Law
NRC Coordinator: Prof. Amit Ludri
aludri@kuk.ac.in
9729374198



About the course: An endeavor has been made to cover up all the relevant areas of Contemporary Laws; resourcepersons from Central/,State/ National Law Universities tried their best to provide knowledge, content, contemporary issues on the subject areas of Constitutional Law, Intellectual PropertyRights, ADR, Criminal Law ,Women Issues, Cyber Law, Labor Law, Environmental Laws, Law of Disability, Company Law, Social Transformation, Data Protection , Human Rights, Law of Taxation, Consumer Laws, Muslim law, International Humanitarian Law, Administrative Law, Legal- Aid and other emerging areas. Apart from legal provisions care has been taken to consider case law study by citing examples also. The course will provide PPTS, E-Text, Video, MCQ and Essay Type questions with Web-links and references & self -study material. Hope Faculty members can update themselves on the above subject areas and also develop their legal acumen through this course.



Name & Address: Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya



Course Name: Hindi Literature & Linguistics

Discipline: Hindi Literature & Linguistics

NRC Coordinator: Prof. Akhilesh Kumar Dubey
akhileshdubey67@gmail.com
7588685864

About the course: यह एक ऑनलाइन पुनश्चर्या पाठ्यक्रम है जिसका केन्द्रीय विषय बीसवीं शताब्दी की हिंदी कविता के प्रमुख प्रस्थान है। यह पाठ्यक्रम उच्च शिक्षा में कार्यरत हिंदी के प्राध्यापकों के लिए उनके ज्ञान के विस्तार करने हेतु निर्मित किया गया है। इसका संचालन हिंदी का राष्ट्रीय संसाधन केंद्र, महात्मा गांधी अंतरराष्ट्रीय हिंदी विश्वविद्यालय वर्धा द्वारा किया जा रहा है। इस पाठ्यक्रम की अवधि अधिकतम चार माह की होगी, प्रतिभागियों को प्रतिदिन इस पाठ्यक्रम को पूर्ण करने हेतु 3 घण्टे देने होंगे।

उक्त पाठ्यक्रम में सम्मिलित प्रतिभागी बीसवीं शताब्दी की हिंदी कविता की विकास-यात्रा की पड़ताल कर पाएंगे और इसके बहाने से विगत शताब्दी की हिंदी की कविता की परंपरा, उसके बदलावों/विभिन्न प्रस्थानों और उसकी प्रगति को जानने, समझने और सुनने का अवसर प्राप्त कर सकेंगे।



Name & Address: Mohanlal Sukhadia University, Udaipur, Rajasthan

Course Name: Biotechnology

Discipline: Biotechnology

NRC Coordinator: Prof. Rajesh Kr. Dubey
directornrc8@gmail.com
9198218888



About the course: Biotechnology is the sunrise sector of 21st century & with billion-plus mouth to feed and counting green biotechnology is the natural winner in priority terms for a country like India. So, in the first cycle the focused theme chosen is "Green Biotechnology for Sustainable Development and Livelihood Security".



Name & Address: Motilal Nehru National Institute of Technology, Allahabad

Course Name: Biomechanics

Discipline: Biomedical Imaging

NRC Coordinator: ProfG.P. Sahu
ProfGPSahu@123
9444927022



About the course: Statics in Biomechanics: Biomechanics of Upper and Lower Extremity: Mechanics of Shoulder and elbow, Mechanics of spinal column, mechanics

hip knee and ankle, Deformable body biomechanics problems Kinesiology Loads and Motion in the Musculoskeletal System: Jumping, walking, running, gait analysis, Linear and angular kinematics and kinetics of human movement, human movement in a fluid medium, Kinematic and Kinetic Concepts for Analysing Human Motion, Computer simulation human locomotion, Biomechanical measurement and analysis methods Body segment parameters / segment inertia properties, Motion capturing techniques, Musculoskeletal Biomechanics Bone Morphology, structure and biomechanical properties of collagen, ligament, tendon and cartilage, bone/muscle fracture, fracture mechanics, functional adaptation and remodelling, skeletal muscle morphology and physiology, muscle constitutive Modeling, whole muscle mechanics, muscle/bone interactions, mechanobiology. Cellular and Tissue Mechanics Cell adhesion, migration and aggregation; Mechanics of biomembranes and cytoskeleton; Mechano transduction; rheology, motility and adhesion assays. Elastic, viscoelastic, and poroelastic (time-dependent) behavior of tissues; Continuum and microstructural tissue models; Constitutive laws; Electromechanical and physicochemical properties of tissues Sports Biomechanics Movement patterns – the essence of sports biomechanics, Qualitative analysis of sports movements, joint forces and muscular moments during an athletes movement, energy work and muscular power during an athletes movement, mechanics of bicycling, swimming, skating, rowing. Analysis of athletes movement : the rotational movements in gymnast, mechanics of sprint running, mechanics of throwing. Rehabilitation Biomechanics: Concept of Rehabilitation, Medical, Psychological and social issues influencing the rehabilitation, Therapeutic exercises and treatment techniques, Rehabilitation and assistive for physically challenged individuals, Design of smart prosthetic and orthotic devices, Application of finite element analysis in design and development of rehabilitation and assistive devices.



Name & Address: Nagpur University, Amba Vihar, Sout Ambazari Road

Course Name: Refresher Course in Disaster Management

Discipline: Disaster Management

NRC Coordinator: Dr. Vijay M. Tangde

vijaytn6@gmail.com

9545112555



About the Course: The National Resource Centre at UGC-HRDC, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur is hosting the Refresher Course in Disaster Management. This refresher course would be a good opportunity for the teachers of higher education across the country to get the awareness of the very vital and essential subject of Disaster Management. This course will enable them to inculcate the understanding of Disasters, Recovery, Response, Mitigation and preparedness. What are the Dos and Don't s in case of emergencies. How to respond to the situation? How to plan the events for evacuations like situations etc.

There are lectures by very eminent and experienced personalities who would share their experiences and would discuss the relevant subject matter. I hope the course would definitely be adding to the strength of the society in general and any Rescue team in particular in emergencies. Hope that your overwhelming participation makes it worth.



Name & Address: NIT Durgapur

Course Name: Fundamentals of Chemical Engineering

Discipline: Chemical Engineering

NRC Coordinator: Dr. Kartik Chandra Ghanta

kartikghanta@gmail.com

9434788020

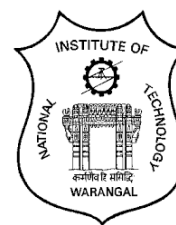


About the course: From dawn to dusk; from the time we wake up to the time we go to bed; think of any activity that we undertake; there is always some application of chemical engineering associated with it. The horizon of chemical engineering has expanded so enormously that it is quite difficult to comprehend and assimilate all these fully. However, as a teacher of chemical engineering we need to have a comprehensive overview of such a large domain. Keeping this in mind, an orientation program has been planned to enable the teachers to revisit the fundamentals of chemical engineering which will include pedagogical improvements, latest developments and e-learning materials.

The program will present five different modules on the core courses of chemical engineering as per their natural sequence in the chemical engineering curriculum. These are Chemical Process Principles, Heat Transfer, Mass Transfer, Chemical Reaction Engineering and Transport Phenomena. The outcome of the course is to enlighten with the essence of Chemical Engineering in the condensed form for the chemical engineering teachers.



Name & Address: NIT Warangal
Course Name: A Refresher Course on Calculus
Discipline: Mathematics
NRC Coordinator: Prof. D. Srinivasacharya
maths_hod@nitw.ac.in
9490165350



About the course : The objective of this course is to refresh the ideas, concepts and glimpses of different parts of calculus like differential calculus, integral calculus, vector calculus, differential equations and special functions. This course is spread over EIGHT modules and each module has four to six topics.

This course will be conducted through video lectures along with text, reading material, references and assessed with help of activity-based evaluation and tests.

This is an online refresher course is for the faculty members of Mathematics in Engineering Colleges and Technical Institutions at the undergraduate level.



Name & Address: NITTTR Chandigarh
Course Name: Real Time Power System Analysis and Smart Grid
Discipline: Electrical and Electronics Engineering
NRC Coordinator: Dr. Ritula Thakur
ritula.thakur@gmail.com
9888520284



About the Course: The course mainly deals with real time Simulation studies in Power Systems using Real time simulator from Opal-RT and MATLAB/SIMULINK. Various studies such as load flows, transient studies using FACTS devices have been explained using real-time environment. The concept of Power Hardware in Loop has been practically demonstrated on a microgrid using real-time load and sensors. The course also deals with Smart Grid concepts such as Vehicle-to-Grid, Advance Metering Infrastructure and Internet of Things, Big data management and smart grid analytics, machine learning and artificial intelligence in smart grid, cybersecurity for smart grid system, block chain for smarter energy market.

The course has been designed in collaboration with eminent industries such as Opal-RT, Mathworks and IBM. After attending this course, the participants will be able to understand the concept of real time power system analysis and smart grid using software such as MATLAB/SIMULINK and real-time hardware i.e. OP4510.



Name & Address: Guru Nanak Dev University, Amritsar Grand Trunk Road, Off NH1,
Amritsar, Punjab 143001

Course Name: Advances in Chemistry and Physics of Materials

Discipline: Advances in materials for health and energy

NRC Coordinator: Dr. Kamaljit Singh
nrcgndu@gmail.com
9914006662



About the Course: The contents are planned in such a manner that presents new insights in the properties of materials for applications in energy/light conversion, storage, charge transport, photocatalyst, bio-labeling, photothermal/ photodynamic therapy and detection of bio-analytes etc. The course starts with introductory classification of materials involving inorganic, organic and hybrid composition and their structure-property relationship with respect to the above applications. Genesis, advantages and superiority of organic materials w/r/t conventional materials for different applications in the guise of Organic Electronics, especially charge transportation and optoelectronic/photonic applications shall be discussed. The emphasis on π -conjugated materials including donor-acceptor dyads or triads will be given towards development of non-linear optical materials for applications ranging from frequency conversion, lasers, optical limiting, reverse saturation absorption and even two-photon absorption. The applications of the latter in medical diagnostics shall also be highlighted. The applications of

To tackle the problem of energy crisis and pollution, clean and renewable energy sources are required. In this direction, solar energy harvesting by utilizing the solar spectrum and the concept of different solar light harvesting devices shall be presented. The basic principle, different generation of solar cells and development of new materials to improve their stability and performance will be focussed. Further, materials for energy storage like Li-ion batteries, solid state batteries and fuel cells will be covered. The progress in two dimensional materials (MoS_2 , WS_2) for optoelectronic applications will also be highlighted. Further energy efficient materials like multichloric and Up-/down-converting will be covered. The course will conclude with the applications of ionic liquids in energy and medicine.



Name & Address: Mizoram University Aizawl, Mizoram 796004
Course Name: Online Refresher Programme on Educational Research

Discipline: Educational research

NRC Coordinator: Prof.Lokanath Mishra
mishra.lokanath70@gmail.com
9457115093



About the Course: This course is very useful for the inservice teachers, Teacher Educators Reserachers in the field of Education , This course is 40 hour duration,20 hour in the form of text and 20 hour in the form of videos. Teachers will be able to update their knowledge in the field of educational Research, This course will enhance the quality of teaching After this course teacher will able to apply the project in different organization and he will give proper guidance in the field of educational research.

National Resource Centre, Mizoram University is imparting on line refresher course on Educational Research which is important because of contributing knowledge development, practical improvement, and policy information. Therefore, educators can use those research findings to improve their competences and teaching and learning process. The course Coordinator is Prof. Lokanath Mishra. The programme Started from November 1st 2018



Name & Address: NITTTR, Bhopal NITTTR, Western Region,Shanti Marg, Shamla Hills, Bhopal - 462002

Course Name: Student assessment and Evaluation

Discipline: Assessment & Evaluation

NRC Coordinator: Dr. K. K. Jain
kkjain@nitttrbpl.ac.in
9425017472



About the Course: This programme is specially designed for faculty members of higher education institutes, keeping in view the unique academic, administrative, psychological, socio- economic and political problems faced by them in the assessment of their students in the Indian context.

This course intends to develop the competencies required to assess students in the cognitive domain of learning at higher education level in most of the disciplines such as, arts and humanities, commerce, science, pharmacy, engineering and others, according to the latest requirements of UGC and AICTE for outcome-based education.



Name & Address: University of Kashmir, Hazarat Bal, Srinagar - 190 006

Course Name: Arts and Humanities

Discipline: Arts and Humanities

NRC Coordinator: Prof. Lily Want
asc@kashmiruniversity.ac.in
9906523958



About the Course: The 40 modules to be prepared, presented and delivered by nationally reputed and erudite resource persons on a varied range of topics in the discipline of Arts and Humanities shall be governed by three broad objectives:

- Latest developments in the respective discipline
- Pedagogical improvements
- Methodologies for incorporating revised curriculum

The 40 modules include lectures on a diverse range of subjects like Western, Indian and Oriental Languages and Literatures, History, Political Science, Psychology and Anthropology with the objective to map the multidisciplinary nature of Arts and Humanities and lead the teaching faculty attending these lectures to a high degree of professional flexibility and adaptability. Some of the major themes include Modernism and Post modernism, Partition Literature, Minority Literature, Marxism and Neo-Marxism in the subject of English Literature. Preserving Linguistic Heritage: Documentation of Endangered Languages in the Global World, Gender and Language: A linguistic

Perspective and Machine Translation will be some of the topics taken care of in the subject of Linguistics. Similarly, Latest Trends in Arabic Fiction, Arab Response to Post-modern Aesthetics and Modern Arabic Fiction, Arab Response to Post-modern Aesthetics and Modern Arabic Literature and the Arab Diaspora will be dealt with in the subject of Arabic. Vedic and Later Vedic History, General Introduction to Indian Philosophy shall be deliberated upon in the subject of Sanskrit. In the Indian Languages and Literatures of Hindi and Urdu, topics like Medieval and Modern Hindi poetry and Urdu Adab Per Samaji Tabdeeliyon Ke Asaraat shall be taken up respectively. Topics like Nationalism, History and Memory, State and Marginalized Communities, Cultural Heritage, Settlements and Landscape, Development and Displacement will bridge the desperate fields of Social Sciences to demonstrate an understanding of the reciprocal relationship between social, political and psychological factors in their historical context and intellectual enquiry within Arts and Humanities.



Name & Address: Karnatak University Pavati Nagar, Dharwad - 580 003

Course Name: Sociology

Discipline: Sociology

NRC Coordinator: Dr. C. A. Somashekharappa

caskar319@rediffmail.com

09845570176



About the Course: Sociology as a social science discipline is one of the core disciplines that shape the ideas that contribute to the betterment of the society. Like many other social sciences by nature this is interdisciplinary in content.

This discipline emerged in the nineteenth century contributing to studying and classifying societies, analyzing various social factors that lead to discriminations of race, caste, crime, poverty, urbanization and a whole lot of issues that involve the study of the behavior of individuals, groups, gender and various orientations that have faced social wrath of a traditional society.

Thus this discipline is contemporary in its subject matter and approach aiding and advising governments on designing policies, institutional structures, supporting social movements, and warning societies of the ill effects of global influences.

Karnatak University, being the second oldest in the state of Karnataka with UPE status and NAAC 'A' grade H index is 73 is proud to be a part of the Union Government's flagship programme of National Resource Centre for Sociology –offering a Certificate and Refresher Course on SWAYAM platform we aim at nothing less than excellence. Our motto is 'Excellence is the Best – Rest no compromise'. We look forward for qualitative online education and call for registration with passion.



Name & Address: IIIT, Pune Talegaon-Chakan Road, Sudumbre, Maharashtra 412109

Course Name: Knowledge Discovery using Data Mining and Soft Computing

Discipline: Computer Science Engineering

NRC Coordinator: Dr. Joydip Dhar

jdhar.iiitmg@gmail.com

9425117063



About the Course: Data Mining is an interdisciplinary field of study about scientific methods, processes, and systems to extract knowledge or insights from data in various forms, either structured or unstructured. Data mining is one of the most widely used methods to extract information from large datasets. Soft computing today may be portrayed as a massively dynamic concept whose pace of development presents a promising picture of the future world. In this course, classical data mining techniques as well as soft computing techniques for knowledge extraction will be discussed.



Name & Address: IIIT, Pune Talegaon-Chakan Road, Sudumbre,
Maharashtra 412109

Course Name: Neural Network and Deep Learning

Discipline: Electronics & Communication

NRC Coordinator: Prof. Laxmidhar Behera

lbehera@iitk.ac.in

8318968101



About the Course: The course will cover basics of neural network architectures both feedforward and feedback. Learning algorithms for each architecture will be discussed along with convergence analysis. Simple examples through MATLAB simulations will be demonstrated. Students will be able to write their own codes and will be able to derive data driven models using neural networks. Many examples from Robotics, Language and speech will be used to educate students in this subject.



Name & Address: IIITM Gwalior

Course Name: Operations Management

Discipline: Operations management, Project management, Innovation management

NRC Coordinator: Dr. Gyan Prakash

gyanprakasha@yahoo.com

9406581635



Name & Address: Guru Ghasidas Vishwavidalya (Bilaspur)

Course Name: Inter-disciplinary approach of Education & Research in
Life Sciences

Discipline: Life Sciences

NRC Coordinator: Professor B.N. TIWARY

nrclifescienceggv@gmail.com

tiwarybn8@gmail.com

9406034535



About the Course: The proposed Refresher course is structured to suit the need of updating information to impart updated knowledge in the classrooms by faculty members. Our Mission is to spread awareness among faculty members about the new course structure giving emphasis on major thrust areas, so that same could be uniformly adapted and shared with students by most of the institution teaching life science courses.



Name & Address: Dr. Harisingh Gaur Vishwavidyalaya
Sagar, M.P.

Course Name: Social & Rural Development

Discipline: Social & Rural Development

NRC Coordinator: Prof. Diwakar Singh Rajput
drdiwakarraajput@rediffmail.com
9425171858



About the Course: This course provides an overview of the social-economic-political aspects of development in rural areas. It examines the social characteristics of rural areas, the nature and scope of 'social development', the relationship between social and economic development, and the political aspects of social development. Its aim is to introduce the scholar to the nature and types of issues which need to be considered when looking at matrix of the development planning from a social point of view.

The content of this course will be facilitating to teacher in broader perspective for developing rural life in multifaceted cognizance.

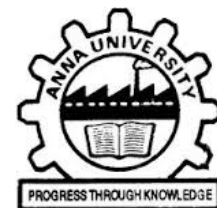


Name & Address: Coimbatore Institute of Technology Avinashi Road, Civil Aerodrome
Post, Coimbatore, Tamil Nadu 641014 (Anna
university, Chennai)

Course Name: Structural Engineering

Discipline: Structural Engineering

NRC Coordinator: Dr. V. G. Srisanthi
srisanthi@cit.edu.in
9843768080



About the Course: This course is designed for the undergraduate level and will enable them to complete the comprehensive Analysis and Design of Building Structures with a case study followed by advanced topics on the subject.



Name & Address: Central University of Kerala
Course Name: Refresher Course - Curriculum Design and
e - content development
Discipline: Curriculum design & e- Content Development
NRC Coordinator: Dr M N Mohamedunni
musthafedn@gmail.com
9447596952



About the Course: This course focuses on the faculty member of higher education to provide both theoretical as well as the practical demonstration on curriculum on curriculum design and e-content development.



Name & Address: Aligarh Muslim University, Aligarh
Course Name: Urdu Refresher Course
Discipline: Urdu
NRC Coordinator: Prof. Ziaur Rahman Siddiqui
swayam.urduamu@gmail.com
7018979058



About the Course: This course entitled Urdu Refresher Course has been commenced for University / College Teachers consists on 14 weeks, 26 modules including along videos and course material will also be uploaded.



Name & Address: Utkal University Vani Vihar, Bhubaneswar - 751 004
Course Name: Anthropology
Discipline: Anthropology
NRC Coordinator: Dr. Snigdha Das
snigdhas@gmail.com
9437491306



About the Course: The particular course has a unique structure because Anthropology is not one but a combination of multiple disciplines. Keeping that flexibility in mind the course has been designed in a dynamic way. The theme of the course for this year is "Challenges for Anthropology in 21st Century".

This course has been designed and developed by the Human Resource Development Centre, Utkal University with the help of subject experts from all over the country. It has highly multimedia-enriched videos along with texts, reading materials, references and online quizzes. It will be a blend of e-text, self-check exercises, tasks, activities, audio-video contents and assignments with both continuous & term end evaluation. We will also provide a Discussion Forum where we all can discuss, comment, suggest and empower ourselves.



Name & Address: University of Mumbai Vidya Nagari, Mumbai - 400 098

Course Name: Refresher Course In Economics

Discipline: Economics

NRC Coordinator: Dr. Anuradha Patnaik
apatnaik@economics.mu.ac.in
9422122733



About the Course: The course aims to acquaint the teacher participants with some of the major issues and challenges facing the Indian Economy. In this pursuit, some of the leading economists and researchers will be sharing their insights and research experiences. In the process, they will highlight the problems and hurdles that need to be resolved, so that the Indian Economy attains inclusive growth and development.



Name & Address: University of Madras (Madras University)
Centenary Building, Chepauk, Chennai - 500 005

Course Name: Political and International Studies

Discipline: Political and international Studies

NRC Coordinator: Prof. M. Uma Maheswari
nrc.unom.uma@gmail.com
9840324924



About the Course: This course provides an insight of the academic study of Politics and International Relations. The modules in the course would enhance the understanding of the important Political issues, ideas, policies and actors which influence Local, National and International agendas. Further, it also provides a critical understanding of the Political Systems in the World today. The emphasis of the study is also to highlight the historical, legal, economic and philosophical approaches to the study of Political Thought and National and International Politics.



Name & Address: University of Hyderabad, Hyderabad - 500 046



Course Name: Research Methodology for Social Science Teachers

Discipline: Research Methodology for Social Sciences

NRC Coordinator: Prof. B. Raja Shekhar
nrcsc.uoh@gmail.com
9866699983

About the Course: This course will help the faculty members and scholars from the social science domain to understand the process of conducting research in a scientific way and help them to publish their papers in top-tier journals related to their field of research. This course will also provide an opportunity to identify different tools, techniques and software programs to do the data analysis and draw inferences and arrive at numerous conclusions.



Name & Address: Sri Guru Tegh Bahadur Khalsa College, Delhi
University, North Campus, New Delhi-110007



Course Name: Online Refresher Course in Chemistry for Higher
Education Faculty

Discipline: Chemistry

NRC Coordinator: Vimal Rarh
vimalrarh@gmail.com
9810094703

About the Course: This highly multimedia enriched and interactive Online Refresher Course in Chemistry has been innovatively designed and developed with the help of expertise from all over the country. **ChemNews module** covers news from the chemistry world. **ChemTalks** which focus on latest developments in chemistry and popular Chemistry Talks. **ChemSafeLabs** focus on 3R's and Safe Disposal of Chemicals, Do's and Dont's in a Chemistry Lab, Greener Alternatives to Reduce Use of Chemicals, etc. **ChemNobelLaureates** focus on interesting biographies of Nobel Laureates. **ChemPedagogy** focus on the Pedagogical methods and some examples for improving the Chemistry teaching. **ChemSimplified** aims to simplify some difficult concepts of chemistry. **ChemICTTools** focus on ICT tools which can be embraced by chemistry teachers. Other modules are **ChemMisconceptions**, **ChemAnalogy**, **ChemApplications** and **ChemQuest**.



Name & Address: Ramanujan College ,University of Delhi

Course Name: Human Rights, Environment and Ethics

Discipline: Human Rights, Environment and Ethics

NRC Coordinator: Dr. Nikhil Rajput
nikhil@ramanujacollege.ac.in
9650965984



About the Course: Overall, the Course incorporates the recent developments and intends to upgrade the knowledge of the academicians, practitioners and individuals by highlighting future challenges and prospects in the respective discipline. It endeavors to sensitize the participants towards evolving into responsible and empathetic citizens. Consequently, bringing creativity and happiness in their lives.

This Course encapsulates three extremely pertinent and interrelated disciplines, namely, human Rights, Environment and Ethics.

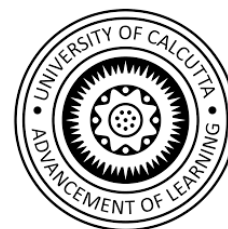
The Module on Human Rights incorporates its relationship with development and environment (migration induced due to development projects and climate change), rights of minorities (manual scavengers, differently-abled people and sexual minorities), gender violence, surrogacy, security laws, citizenship rights, rights of people living at borders, and technology.

The Module on environment focuses on the real time problems related to biodiversity, climate change, and over consumption of natural resources in order to obtain a sustainable environment. It will employ use of modern technology and recent trends in research in restoring biodiversity for environmental sustainability and management of degraded ecosystems. It will examine how formulation and implementation of green policies helps in combating environmental threats.

The Module on Ethics encompasses ethical foundation and disposition, in which the learner will experience the importance of ethics in the contemporary society and how it profoundly impacts the lives of the people. In addition to this, it will also discuss various practical issues in applying ethics in real life situations. The Module will investigate into Role of Ethics in Teaching, Gandhian Ethics, Existential Ethics, Environmental Ethics, Ethics of Governance, Business Ethics, Ethics of Technology, medical Ethics and the Question of Choice.



Name & Address: University of Calcutta
A.P. Chandra Road, Calcutta- 700 009



Course Name: Computational Mathematics and Statistics with
Data integration and Analysis

Discipline: Mathematics & Statistics

NRC Coordinator: Dr. Sanjoy Kumar Parida
akcstat@gmail.com
9831985850



Name & Address: Pt. Ravishankar Shukla University
Raipur Chhattisgarh



Course Name: Refresher Course in Psychology

Discipline: Psychology

NRC Coordinator: Prof. Promila Singh
singhpromi@gmail.com
8839245902

About the Course: The course will cover following major areas:

- Health Psychology
- Industrial Psychology and organizational Behaviour
- Social Psychology
- Psychopathology
- Research Methodology
- Developmental Psychology
- Cognitive Psychology
- Sports Psychology
- Emerging trends in Psychology



Name & Address: Shri Lal Bahadur Shastri Rashtriya
Sanskrit Vidyapeetha B-4, Qutub
Institutional Area, New Delhi-110016

Course Name: Online Refresher Course in Methodology of
Teaching Sanskrit

Discipline: Methodology of Teaching Sanskrit

NRC Coordinator: Prof. Amita Pandey Bhardwaj
tlc@slbsrsv.ac.in
9811580640



About the Course: This course intends to develop insight in enhancing pedagogical competencies for planning, designing, implementing and evaluating various lessons of Sanskrit. The themes covered in this course will focus on language and teaching skills, traditional and modern methods of teaching Sanskrit, methodology of teaching various lessons of Shastra and Sanskrit, evaluation and innovative practices in Sanskrit teaching. The various modules pertaining especially to pedagogy are designed in accordance with the constructivist approach as advocated by NCF-2005 which will help the learners for taking-up the pedagogical processes of various types of lessons of Sanskrit in this regard. The course consist of 40 modules which includes 20 hours video lecture, 20 hours e-content, assessment questions, assignment and references along with weblinks.



Name & Address: Savitribai Phule Pune University
Course Name: Refresher Course on Leadership and
Governance in Higher Education

Discipline: Leadership and Governance

NRC Coordinator: Prof. Sanjeev Sonawane
sonsanjeev63@gmail.com
9850628944



About the Course: This course, transacted through videos and assessed with help of activity based evaluation and tests, will help you to develop Leadership Skills and generate awareness about good governance skills required for implementation of effective governance in higher education.

Experts from different sectors and fields will share their experiences on different topics covered in the program. The program is interactive in nature covering activities and assignments to improve skills and update knowledge.



Name & Address: Saurashtra University Rajkot - 360 005

Course Name: Effective Creations and Innovative Resear ches in Medieval Gujarati Lit

Discipline: Language & Literature (Gujrati-Hindi)

NRC Coordinator: Prof. Kaladhar Arya
info@ascrajkot.org
90999 74757



About the Course: મધ્યકાલીન ગુજરાતી સાહિત્યના સર્વાંગીણ પરિચયથી આરંભ પામીને સાહિત્ય સંશોધનોમાં સર્જકલક્ષી સંશોધનો, કૃતલિક્ષી સંશોધનો, સ્વરૂપલક્ષી સંશોધનોની છણાવટ સાથે આખ્યાન, ક્ષાગુ, પદ્યવાર્તા, રાસ, પ્રબંધ અને અન્ય સ્વરૂપોની સમજ ઉપરાંત મધ્યકાલીન સર્જકો ભક્ત કવિ નરસિંહ મહેતા, અખો ભગત, પ્રેમાનંદ અને શામળના પદ્ય સાહિત્ય પૈકી અનુક્રમે કૃષ્ણભક્તિ પદ્યો, જ્ઞાન વેરાગ્ય પદ્યો, આત્મકથનાત્મક પદ્યો, ચિત્ત-વિચાર સંવાદ, છાપ્પા, અખેગીતા, નળાખ્યાન, સુદામા ચરિત્ર, કુંવરબાઈનું મામેરું, સિંહાસન ભત્રીસી, મદનમોહના, પંચદંડનીનાં રસાસ્વાદ ના અંતે લોકસાહિત્ય અને સંત સાહિત્યને આવરી લઈ અંતમાં સમગ્ર વિષયની ઊંડાણ પૂર્વકનો વિમર્શ કરાવતો ચાલીસ કલાકનો આ સર્વપ્રથમ online refresher course ગુજરાતી ભાષાના અધ્યાપકશ્રીઓના સાહિત્યિક જ્ઞાનને વધુ સમૃદ્ધ કરાવશે.



Name & Address: Sant Gadge Baba Amravati University
Amravati - 444 602



Course Name: Innovation and Best Practices in Educational Skills

Discipline: Skill Development

NRC Coordinator: Suhas Pachpande
suhaspachpande@sgbau.ac.in
9423162448

About the Course: The course aims at:

- empowering the teachers by augmenting their traditional teaching skills with modern educational skills through innovative and best practices
- transforming the learners by trained and equipped teachers to ensure sustainable quality of outcome

This course being interdisciplinary in nature can be opted by all in-service teachers irrespective of their subjects.



Name & Address: Rani Durgawati Vishwavidyalaya
Jabalpur - 482 001

Course Name: Refresher Course in Political Science on
"Jammu And Kashmir: Reflections And Insights"

Discipline: Political Science

NRC Coordinator: Prof. Ram Shankar
hrdcjabalpur@gmail.com
9993861321



About the Course: Jammu and Kashmir is an issue agitating the nation for long. There is however a dearth of authentic information and a rational national perspective on it. This course provides a comprehensive and meaningful discourse by resource persons who have devoted their whole lives for this cause. They are some of the most respected and authentic voices on the issue. The effort is to initiate and nurture a peace centric national discourse.



Name & Address: Ranchi University, Morabadi Campus
Ranchi - 834 008

Course Name: Refresher Course on Tribal & Regional
Language of Jharkhand

Discipline: Tribal and Regional Language

NRC Coordinator: Dr. Giridhari Ram Gaunjhu
giridhariramgaunjhu@gmail.com
9031795753



About the Course: यह पुनश्चर्या पाठ्यक्रम झारखण्ड के आदिवासी एवं क्षेत्रीय भाषा साहित्य, संस्कृति, जीवन व कला के साथ-साथ विविधतापूर्ण परंपराओं आदि की जानकारी देगा। इसके अलावा आदिवासी नृत्य, वाद्य में रुचि रखनेवाले शिक्षकों के लिए रोचक एवं प्रेरक होगा। यह पाठ्यक्रम आदिवासी व स्थानीय इतिहास के साथ-साथ झारखण्ड के जाने अनजाने प्रमुख व्यक्तित्वों व उनके द्वारा कृत महत्वपूर्ण कार्यों की जानकारी देगा। इस तरह यह पाठ्यक्रम शिक्षकों के ज्ञान-वृद्धि, शोध-कार्य, तुलनात्मक अध्ययन एवं शिक्षण संबंधी उनकी क्षमता में गुणवत्तपूर्ण कौशल वृद्धि में सहायक होगा।



Name & Address: NITTTR, Kolkata Eastern Region, Block FC,
Sector III, Salt Lake City, Kolkata-700106.

Course Name: Engineering Mechanics

Discipline: Mechanical Engineering

NRC Coordinator: Prof Samiran Mandal
samiran.mandal@nitttrkol.ac.in
7044076393



About the Course: Engineering Mechanics is one of the building block of technical knowledge. If the depth of knowledge of a student in Engineering Mechanics is adequate, he/she will be able to specialize in any branch of engineering. This course refers to teaching technique and learning of the principles required to solve engineering mechanics problems.



Name & Address: NITTTR Chennai Southern Region,
Taramani P.O. Chennai – 600113.



Course Name: Civil Infrastructure for Smart City Development

Discipline: Civil & Environmental Engineering

NRC Coordinator: Dr. E. S. M. Suresh
nrccivil.nitttrc@gmail.com
9445520968

About the Course: The major focus of this course will be towards exploring how civil infrastructure with digital innovation plays an important role in the development of Smart City. Transformation of cities in meeting the need of communities at par with the global standard pose great challenge to the civil engineers. More than 50% of the world's population lives in urban areas. By 2050, it will be nearly 70%. In our country, more than 52 urban agglomeration have a population of over 10 lakh and 63% of GDP generated in the cities. Hence, it is highly imperative to develop cities at par with global standard to make it livable. Civil Engineers make cities work and habitable through infrastructure development. There is no other profession that is in a better position to tackle the issue of how to manage the demands of a growing population than civil engineering. From water and sanitation to energy and transport, the way that infrastructure is designed, delivered, operated and maintained has a critical impact on everyone's lives. Urban cities reflect our aspirations and pose great challenges to the civil engineering profession to accommodate the social, political or technological transformations. Information and communication technologies (ICTs) offer the solution to many of these challenges. If there is proper blend of Civil Engineering and Digital innovations, then there will be new dawn of development towards sustainable and smart city. The great task lies before our faculty members is to mould the current graduating civil engineers to meet the societal needs and equip them to face the professional challenges. If we get it right civil engineers can proudly claim to have made life better for people across the globe. If we do not, society will look to others for solutions as the digital era makes it easier for new players to step up to the plate with innovative answers to the world's problems. To equip the students to meet the societal and industrial needs, our faculty members need to be aware of the transformation encountered in the civil engineering field and deepen their knowledge about smart cities. Ultimately this course aims to provide new perspective to the faculty members in understanding how civil engineering thrive in the smart city world.



Name & Address: National Institute of Technology, Silchar
Cachar, Silchar, Assam 788010



Course Name: Fluid Flow & Hydraulics

Discipline: Water Resources

NRC Coordinator: Prof. P S Choudhury
ps_chou@yahoo.com
9435372651

About the course: The present course discusses issues related to fluid flow and Hydraulics. Topics on basic concepts of fluid flow and hydraulics, flow categories, flow through rivers and channels etc. are covered in the course. Each module incorporated in the course includes numerical problems, description of associated real life problems and its analysis. Participants undergoing this course are expected to update their existing knowledge and develop clear understanding on various aspects of fluid flow and hydraulics.



Name & Address: IGNOU, New Delhi

Course Name: Refresher Course in Library
and Information Science



Discipline: Library & Information Science

NRC Coordinator: Uma Kanjilal
ukanjilal@ignou.ac.in
9810488895

About the Course: ICT developments have opened up opportunities for libraries and information Centres to develop innovative services. But implementing these services is a major challenge as this requires LIS professionals to have new competencies and strategic repositioning. This requires continuous training of the professionals in emerging areas and for this faculty themselves need to update with the latest development in the profession and pedagogy for transacting curriculum in the present digital era.

The Refresher Course is designed for the Faculty of Library and Information Science as well as Professionals working in Libraries and Information Centres.



Name & Address: IIT Ropar Rupnagar-140001 (Punjab) INDIA

Course Name: Refresher Course in Manufacturing for higher education Faculty

Discipline: Manufacturing

NRC Coordinator: Dr. Dhiraj K. Mahajan
dhiraj.mahajan@iitrpr.ac.in
7814252244



About the Course: This refresher course on manufacturing will focus on the requirements of the Indian industry by introducing the ongoing transition in the manufacturing sector using 40 separate modules. Each module will cover a specific topic by eminent faculty members supported by inputs from the industry. Based on these inputs, participating teachers shall be able to implement pedagogical transformation towards improved course content leading to the improved employability of their students. This course will also consist of a unique project for each participant wherein they will create and upload the need, design, manufacturing and marketing plan of a novel or local product.



Name & Address: Banaras Hindu University

Course Name: Indian Culture & Heritage Studies

Discipline: Indian Culture & Heritage Studies

NRC Coordinator: Dr. Prabhakar Upadhyay
prabhakarupadhyay.bhu@gmail.com
9450938762



About Course : India has been marked out by nature as a distinct geographical entity. Within this natural boundary, in the combination of different geographical elements and climatic conditions, originated a distinct culture which flourished through millennia, especially because of its accommodative, assimilative and adoptive nature. Therefore, beneath the manifold diversity, we can discern a certain underlying uniformity of life throughout India. It is reflected in its numerous social customs, traditions, religions, Language and literatures, different forms of arts and Indian thought process including social, political and philosophical thoughts that are primarily based on truth, spirituality and non-violence. Being at the forefront in trade and commerce and in the field of Science and technology the impact of Indian culture can be seen on many countries of ancient world. All these topics will be covered in this course.



Name & Address: Central University of Jammu

Course Name: Human Resources Management

Discipline: Human Resources Management

NRC Coordinator: Dr. Jaya Bhasin & Dr. Shahid Mushtaque
nrchrm2018@gmail.com



About the Course: The course on “Research Methods in HR and Data Analysis” will focus on the nuances of conducting research in the discipline of HRM and allied disciplines with an intense exposure to the application of latest software techniques in data collection and analysis. Tracing from the conceptualisation of research projects, preparation of research proposals, to intricate details of research methodology and winding up with the procedure of documenting and publishing research findings, the programme would attempt to provide a comprehensive orientation on HR/business research. Participants will be acquainted with theoretical and practical premises of empiricism in the domain of HR research primarily.



Name & Address: IIT Roorkee Haridwar Highway, Roorkee, Uttarakhand-247667

Course Name: Architectural pedagogy in the 21st century

Discipline: Architecture

NRC Coordinator: Prof PS Chani
chanifap@iitr.ac.in
9897855225



About the course: Modern architecture is constantly evolving, leading to a rapidly changing built environment. To meet this challenge, this series of modules is being launched under the title, ‘Architectural Pedagogy in the 21st Century’, to enable teachers to prepare students for designing contemporary architecture.

These modules will begin by highlighting the role of a teacher of 21st century architecture, followed by modules on the evolving curricular structure of architecture. Further modules will emphasize the need of allied disciplines in current architectural pedagogy, while a series of modules will discuss certain chosen topics, each topic being covered as – introduction and methodology of teaching, followed by model teaching of that topic. The modules will conclude with the study on architectural design, to enable teachers to conduct design studios with emphasis on various evolving attributes of architecture.



Name & Address: Tezpur University

Course Name: Online Refresher Course In Communication

Discipline: Mass Communication and Journalism

NRC Coordinator: Prof. Abhijit Bora

abhijitbora71@rediffmail.com

About the Course: Our NRC aims at providing comprehensive and updated courses on emerging and new areas of Communication and Media. This with an inclusive objective so that each and every relevant area of the greater domain are represented to the most appropriate level. We plan to prepare courses on various frontiers of the subject including Development Journalism, Communication for Development, Science Communication, Corporate Communication, Visual and Electronic Communication, Culture and Communication among others. While the department is endowed with a good resource pool of 10 faculty members representing different areas of expertise within the domain of Communication and Media, we would also rope in experts from other institutions and field practitioners to accord the courses a holistic approach.



Name & Address: IIIT Dharwad

Course Name: Applied Machine Learning

Discipline: Information Technology

NRC Coordinator: Dr. Arun Chauhan

aruntakur@gmail.com

9412886507



INDIAN INSTITUTE OF
INFORMATION
TECHNOLOGY

About the course: One of the most significant developments in current technological platform is the availability of huge volume of data. This is possible due to the devices that are enabled to automatically collect and store data. Availability of sufficient amount data brings the power to develop efficient algorithms for very complex tasks that is not possible otherwise. The process of making algorithm better based on data is typically called learning and is the subject matter of this course. Machine Learning as a discipline is devoted to design algorithms that allow itself to learn patterns and concepts from data without being explicitly programmed. This course will introduce some of the principles and foundations of Machine Learning algorithms along with their real world applications. The course would be introductory in nature, and would not assume any prior exposure of its audience towards Machine Learning.

The course will cover the major approaches to learning namely, supervised, unsupervised, and reinforcement learning. The course emphasizes various techniques, which have become feasible with increased computational power and our ability to produce and capture huge volumes of data. The topics covered in the course include regression, decision trees, support vector machines, artificial neural networks, Bayesian techniques, Hidden Markov models, genetic algorithms etc. Some advanced topics like active and deep learning will also be covered





**Government of India
Ministry of Human Resource Development**

Dr. N. Saravana Kumar
Joint Secretary (ICC)
Mission Director

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