



**MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE,  
GWALIOR - 474005**

(A Govt. Aided UGC autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

**Value Added Courses**  
**January-March 2019**

MITS Gwalior is offering Value Added Certificate Courses that are being conducted by various departments to complement students' knowledge and skills in their field of study. Courses offered are chosen based on current trends, relevance and value in the job-market. The last date is 17/01/2019.

**Duration:** 30 hours

**Timings:** 17:30 to 19:00

**Date of Commencement:** 19h January 2019

**Fee:** Specified with each course; Registration fee Rs.100/- per course for students of colleges other than MITS.

**Registration & other details:** Registration will open from **13.01.2019** till **17.01.2019** through a link on website [www.mitsgwalior.in](http://www.mitsgwalior.in). Students should contact Prof Prabhakar sharma, I/c, EDC for further queries.

**Mode of payment for registration fee:** Through Demand Draft in favour of Director, MITS Gwalior. Deposit the draft to the Course Coordinator directly after the Course Coordinator will mail/contact you.

**Course Certificate:** Certificate mentioning acquired grade will be provided as per performance in test at the end of Course.

**Participants:** Students from MITS and other Institutes may apply.

**Dr.R.K.Pandit**

**DIRECTOR**

Please visit [www.mitsgwalior.in](http://www.mitsgwalior.in) for further updates.

<b>Course Title</b>	<b><i>C Language: Placement Preparation &amp; Programming</i></b>		
<b>Course Details</b>	Problem identification, analysis, design, coding, testing & debugging, implementation, modification & maintenance; characteristics of a good program, data types, operators, control constructs, loops modular programming, recursion, arrays; pointers, dynamic memory management functions, string; structure; enumerated data type, basics of stream and files preprocessor directives. Practice of MCQ questions and programming asked in placement tests.		
<b>Faculty</b>	Prof. Prabhakar Sharma, 9425339330, EDC	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>C++ Programming</i></b>		
<b>Course Details</b>	Object Oriented Approach, Basic concepts: Abstraction, Encapsulation, Inheritance, Polymorphism Classes and Objects: Encapsulation, information hiding, abstract data types, Object & classes. Constructors and destructors, dynamic memory allocation, Operator overloading, Files and Exception Handling.		
<b>Faculty</b>	Prof. Sheo Kumar, 8860313922, CSE & IT	<b>Course Fee</b>	Rs.1000.00
<b>Course Title</b>	<b><i>Programming with Python</i></b>		
<b>Course Details</b>	Basic principles of computers, Python interpreter, Control Structures, Dictionaries, Data types, Functions, Designing and Debugging, Numpy Module, NetworkX Module.		
<b>Faculty</b>	Prof. Ram Parvesh, 9402013944, CSE & IT	<b>Course Fee</b>	Rs.1000.00
<b>Course Title</b>	<b><i>Linux System Programming</i></b>		
<b>Course Details</b>	Introduction to Linux System Programming and Shell Scripting, Process creation and threading, Inter-process communication, Synchronization, Simulation of Shell commands using system calls, File allocation strategies		
<b>Faculty</b>	Prof. Lav Upadhyay, 8054041270, CSE & IT	<b>Course Fee</b>	Rs.1000.00
<b>Course Title</b>	<b><i>Machine Learning</i></b>		
<b>Course Details</b>	Basic concept of machine learning. Introduction to R. Machine learning model building using R and Python. Working with classification, Regression and Clustering problem. Research topic in machine learning.		
<b>Faculty</b>	Prof. Arun, 8826708753, CSE & IT	<b>Course Fee</b>	Rs.1000.00
<b>Course Title</b>	<b><i>Android App Development</i></b>		
<b>Course Details</b>	Basic programming with Java, Arrays, Strings, Inheritance, Introduction to android studio, Project Structure, Sample Application, Layouts and Basic UI Design, Event Listener, Calculator App, Activities, Services, Intents, Generating apk file Basic Queries, Post data to Google sheets, SQLite Database, php Basics, Working with xampp and wamp server, Working with Online database and conclusion		
<b>Faculty</b>	Prof. Modigari Narendra, 7200353496, CSE & IT	<b>Course Fee</b>	Rs.1000.00

<b>Course Title</b>	<b><i>Internet of Things</i></b>		
<b>Course Details</b>	Introduction to IoT, Sensing, Actuation, Basics of Networking, Communication Protocols and Sensor Networks, Machine-to-Machine Communications, Interoperability in IoT, Introduction to Arduino Programming, Introduction to Raspberry Pi, Overview to SDN, Cloud Computing and Fog Computing		
<b>Faculty</b>	Prof. Pooja Agrawal, 8178265221, CSE & IT	<b>Course Fee</b>	Rs.1000.00
<b>Course Title</b>	<b><i>Scientific Writing using LaTeX</i></b>		
<b>Course Details</b>	Environment Setup for LATEX, Basic component of LATEX, formatting and layouts, figures and tables, basic mathematics, Resume & Report Writing, Thesis Writing, Paper Writing, PPT preparation		
<b>Faculty</b>	Prof. Julie, 8299379760, CSE & IT	<b>Course Fee</b>	(Rs.1000.00)
<b>Course Title</b>	<b><i>Data Structure Using C</i></b>		
<b>Course Details</b>	Array, Pointers, Dynamic Memory Allocation, Stack, Queue, Linked List, Graph, Tree.		
<b>Faculty</b>	Prof. Mohit Jain, 6377236857, CSE & IT	<b>Course Fee</b>	Rs.1000.00
<b>Course Title</b>	<b><i>Multimedia Systems</i></b>		
<b>Course Details</b>	Introduction to multimedia, its Components, Multimedia: Hardware and Software, O.S., Databases, systems architecture; Video Frame Grabber Architecture; RAID, Optical Media, CD-ROM Standards Media Data Types Text Representation and Operations Graphics Representation. Image processing, Analog to digital video conversion. Sound Media Data: Generation and Analysis; Animation Techniques. Integration and development of multimedia titles.		
<b>Faculty</b>	Prof. R.S. Jadon, 9425122675, CSE & IT	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>MATLAB for Engineers</i></b>		
<b>Course Details</b>	Basic Mathematical Operations, Hands on Training on: Simulation; Optimization and Genetic Algorithm, Artificial Neural Network and Fuzzy Logic; Signal and Image Processing Toolboxes		
<b>Faculty</b>	Prof. V. Chaudhary, 9926245805, Electrical Engg,	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>Circuit Design Using LTSPICE</i></b>		
<b>Course Details</b>	Spice, Basic components: resistors, capacitors, Inductors, Designing of basic circuits using spice schematic editor. Characteristics of Diode, BJT MOSFETs. Designing of Rectifier, Clipper, Clamper, Voltage limiter; RC Coupled amplifier, Basic Op-amp Circuits; RC. Phase shift Oscillator, Multivibrator; Schmitt trigger, Window detector; precision half and full wave rectifier; Half/Full adder, Flip Flops; Counter, Analog to Digital and Digital to Analog converter.		
<b>Faculty</b>	Prof. Rishabh Shukla, 8140427346, Electronics Engg	<b>Course Fee</b>	Rs.1500.00

<b>Course Title</b>	<b><i>MATLAB for Electronics Engineers</i></b>		
<b>Course Details</b>	Introduction to MATLAB tool box. Plotting operations. Waveform generation. Signal operations and system analysis using MATLAB, Fourier analysis. Digital filter design. Signal Sources. Analog and Digital modulation/ demodulation. Performance evaluation. Pulse shaping, filters and channel modelling. System interconnections, gain and dynamics. Compensator design. Image display and exploration, GUI tools.		
<b>Faculty</b>	Prof. Awadhesh Gupta, 9198670096, Electronics Engg	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>Computer Aided Designing of Microwave Circuits &amp; Components</i></b>		
<b>Course Details</b>	CST Microwave Studio and IE3D software simulations of printed microwave Circuits, Microwave filters, microwave Tee networks, Directional Coupler, AMC, HIS, and Phased array, wire and printed microwave antennas, Antenna array, microwave circuit measurements		
<b>Faculty</b>	Dr. Sarthak Singhal, 7376157421, Electronics Engg	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>AutoCAD in Architecture</i></b>		
<b>Course Details</b>	Utility of AutoCAD in architecture to develop 2D and 3D models and working drawings.		
<b>Faculty</b>	Prof. Alok Sharma, 9425109986, Dept of Architecture	<b>Course Fee</b>	Rs.5000.00
<b>Course Title</b>	<b><i>Tire Engineering</i></b>		
<b>Course Details</b>	Evolution of tire, Tire characteristics and technology, also explores nomenclature, materials, testing, and manufacturing of tires. Vulcanization and the industrialization, rubber tube to a complex fabric, steel, and elastomeric composite. consumer awareness, vehicle application- radial and bias, tubeless and tube type. FMEA-Failure Mode Effects and analysis, Technical Standard, tire engineering jobs. Tire companies case studies		
<b>Faculty</b>	Prof. Aslam Sher Khan, 7970118201, Chemical Engineering	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>Nano Technology For Engineering Application</i></b>		
<b>Course Details</b>	Introduction to Nanotechnology, Synthesis and Characterization of Nanomaterials. Nanotechnology to Various Engineering Prospects such as Wastewater Treatment, Chemical Sensor, biosensor, Electronics, Applications in Displays and other Devices, Building Materials, Nanotechnology for Sustainable Energy, Solar energy, batteries. Nano carbon Technology and Applications, carbon nanotube, graphene etc.		
<b>Faculty</b>	Prof. Sachin R Geed, 9140596505, Chemical Engineering	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>Soft Skills &amp; Personality Development</i></b>		
<b>Course Details</b>	The module aims at adding requisite elements of personality development for industry readiness. It is a combination of sub-skills fitting well with contemporary industry requirement of soft skills and personality development.		
<b>Faculty</b>	Dr. Sanjeev Khanna, 9826804951, Dept of Humanities	<b>Course Fee</b>	Rs.1500.00

<b>Course Title</b>	<b><i>Introducing Digital Humanities</i></b>		
<b>Course Details</b>	Digital Humanities (DH) is an emerging interdisciplinary field in the academic pursuits which tends the learners to study the comparative perspectives of data, information, and knowledge related to Art, Literature, History, Archaeology, Architecture, Film, Media, Theology, Mythology, Folk and Culture that maintain the power of epistemological cosmopolitanism of Humanities and languages. Through the awareness of the changing methodologies and pedagogies in Humanities, the DH asserts to encourage researches in the light of the growing intersection of Humanities with Digital Technology. With this objective, the department of English proposes to establish a department of Digital Humanities (DH) that imagines to develop an ability in the learner communities to create the archives for Humanities like epistemic archives, discourse archives, encyclopedic archives, archives related to text in its context of fibers, fissures and interstices of historical, cultural, interpretative changes through certain processes of data mining (i.e. discovery, investigation, interrogation, collection and visualization of data or knowledge) and analysis.		
<b>Faculty</b>	Dr Valiur Rahaman, 9521245125, Dept of Humanities	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>2-D Drawing &amp; Drafting using CADD tool</i></b>		
<b>Course Details</b>	Introduction to CAD, Coordinate system, Draw and modify tool bar, Layers, Object properties, Drafting setting, Object snaps, Creating text and tables, Dimensioning, Plotting drawing, Introduction to 3-D, Exercise: Real industrial application based drawing & drafting.		
<b>Faculty</b>	Prof. Dinesh Kumar Kasdekar, 9752201523, Mechanical Engineering	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>Material Testing &amp; Measurement</i></b>		
<b>Course Details</b>	This course gives grounding in the range of mechanical properties and associated metrics measured for metals together with detailed descriptions of the test methods and equipment used. This course highlights the basics of static testing including mechanical properties, load/elongation test curves, different types of testing, stress and strain, modulus, yield, preset point calculations, and application testing with live demonstrations on computerized materials test instruments.		
<b>Faculty</b>	Mr. Vaibhav Shivhare, 7771940007, Mechanical Engineering	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>Life Skill for Engineer</i></b>		
<b>Course Details</b>	The contents of the program are aimed at creating a confident, mature individual and address those other skills, attitudes, behavior, emotions and leadership and learning that ensure success in normal as well as corporate life. Topics: Cross cultural skills, Personal grooming, dining etiquette, falling in love with oneself and body language and Self branding. Handling change, under this, the subsets are overcoming fear, understanding and handling failure, creating alternatives, accepting new situations and embracing change. Habits for Happiness, Health, Productivity, and Success		
<b>Faculty</b>	Prof. Vishal Kumar Ranjan, 7010934981, Dept of Biotech	<b>Course Fee</b>	Rs.500.00

<b>Course Title</b>	<i>Discover Creativity for Engineer</i>		
<b>Course Details</b>	The course will help them understand that creativity is simple and can be used effectively in industry and everyday life. Above all, the workshop will reinforce the belief that everyone can be creative. Many times, it is important to understand creativity by discovering it within and without. Topics: Method of generating idea: top of head, Empathy, breaking the pattern, alternative, concept generation process. Out of Box thinking. Type of creativity: Design, Artistic, Deliberate, every day creativity, Dire need creativity. Steps and path of creativity.		
<b>Faculty</b>	Prof. Vishal Kumar Ranjan, 7010934981, Dept of Biotech	<b>Course Fee</b>	Rs.500.00
<b>Course Title</b>	<i>Optimization Techniques</i>		
<b>Course Details</b>	Basic Concept of Linear and Non Linear Programming problem, Application of linear and Nonlinear programming problem, Evaluation of critical Path, project evaluation and review techniques, Queueing Models and it application, Game theory and its application, Deterministic and Probabilistic inventory models.		
<b>Faculty</b>	Dr. D K Jain, 9340714871, Applied Science (Mathematics)	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<i>Basic Concepts of Mathematics</i>		
<b>Course Details</b>	Introduction of Differential and Integral Calculus, Basic Concepts a of Ordinary and Partial Differential equation and its applications, Linear Algebra and Matrix Theory and it applications, Basic Concept of Complex Number and Complex Trigonometry, Boolean algebra and Graph Theory		
<b>Faculty</b>	Prof. A.S. Ojha 9425793122, Applied Science (Mathematics)	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<i>Soil Exploration and Ground Improvement Techniques</i>		
<b>Course Details</b>	Vibrofloatation- Compaction pile- Vibro Compaction Piles- Dynamic Compaction- Blasting, Soil Reinforcement, Grouting, soil exploration, Field Tests: Standard Penetration Test (SPT), Plate Load Test (PLT), Tri-axial Test, Permeability, Compaction, CBR.		
<b>Faculty</b>	Dr. M. K. Trivedi, 9893009680, Dept of Civil Engg	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<i>Pre-Engineered &amp; Prefabricated Structures</i>		
<b>Course Details</b>	Pre-Engineered concept involves the building systems which are predesigned and prefabricated. In this module we covers introduction to the concept of Pre-Engineered Buildings & PreFabricated Structures– Components, Design Principles, Different Connections & joints between members, Applications.		
<b>Faculty</b>	Prof. Archana Tiwari, 748884150, Dept of Civil Engg	<b>Course Fee</b>	Rs.1500.00

<b>Course Title</b>	<b><i>Structural Analysis and Design Using STAAD</i></b>		
<b>Course Details</b>	Theoretical Background of Structural Analysis, Matrix Displacement Methods, Direct Stiffness Method, Generation of Model, Different aspects of Modelling, Support Specification, Member Properties Specification in STAAD, Grouping of Members, Creating Load Cases as Dead load, Live load, wind load, snow load, area load, floor load etc., Analysis of Models with Shear Force, Bending Moment diagram and Stress contours, Designing of RC structures using STAAD		
<b>Faculty</b>	Dr. Pankaj Kumar, 9968270408, Dept of Civil Engg	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>Food Chemistry</i></b>		
<b>Course Details</b>	Introduction of different food ingredients, Storage and processing, Preservation of food, Chemicals used and their effect on health, Adulteration and contamination, Testing of common food adulteration.		
<b>Faculty</b>	Prof Anjula Gaur, 9425187478, Applied Science(Chemistry)	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>Natural Health (Nutrition)</i></b>		
<b>Course Details</b>	Introduction of Nutrition, Food and energy levels, Protein, vitamins, minerals, water, nutrients, carbohydrates and fats, Obesity Preventative measures, Weight loss, Diets and planning diets ,Treatments, Medical conditions ,Digestion and absorption, Assessing nutritional needs ,Natural Food ,Detoxification Creating plans, Providing consultations to client.		
<b>Faculty</b>	Prof Anjula Gaur, 9425187478, Applied Science(Chemistry)	<b>Course Fee</b>	Rs.1500.00
<b>Course Title</b>	<b><i>Materials Science</i></b>		
<b>Course Details</b>	The course is intended to impart the knowledge to students on the fundamental principles of technologically important materials such as LEDs, high field permanent magnets, high k dielectric materials, electrode materials for Li/Na-ion batteries etc. Topics to be covered; Crystal structures; Different methods of synthesis; Electronic Properties; Magnetic properties; Optical properties; Current developments in the field of materials science		
<b>Faculty</b>	Dr. Hansnath Tiwari, 9444904832, Applied Science(Chemistry)	<b>Course Fee</b>	Rs.1200.00
<b>Course Title</b>	<b><i>Lasers and Their Application</i></b>		
<b>Course Details</b>	The course is intended to impart the knowledge of lasers and their application to various fields of science and technology. The course contains following topics: Basics of Lasers; Classifications of Lasers; Writing the Lasers Rate Equation; Power Analysis; Parametric Analysis; Advanced Laser System; Construction and Working of Some Lasers; Application of Lasers in Different Fields.		
<b>Faculty</b>	Dr. Abhay Mishra, 9425338149, Applied Science(Physics)	<b>Course Fee</b>	Rs.1200.00



<b>Course Title</b>	<i>Quantum Mechanics</i>		
<b>Course Details</b>	Introduction, Correspondence principle, Complementarity, Uncertainty, Dynamical variables as operators, Hermitian operators and their properties, Wave function, parity of wave function, Orthonormality, Schwarz inequality, Schrödinger's wave equation, Eigenfunctions and eigenvalues, Stationary states, Probability density, Normalisation, Expectation value, commutator algebra, Ehrenfest's theorem, Free particle solution, Boundary and Continuity conditions, One-dimensional step potential, Particle in a one-dimensional square potential well, The rectangular potential barrier, Linear harmonic oscillator, Particle in a three-dimensional box, The Dirac delta-function, angular momentum operators, orbital angular momentum, Commutation relations, Eigenfunctions and Eigenvalues of $L^2$ and $L_z$ , Bra and Ket notations		
<b>Faculty</b>	Prof. Deobrat Singh, 9560374619, Applied Science(Physics)	<b>Course Fee</b>	Rs.1200.00
<b>Course Title</b>	<i>Special Theory of Relativity</i>		
<b>Course Details</b>	Inertial and non-inertial frames, Invariance of Newton's laws under Galilean transformation, Newtonian Relativity, Maxwell's equations. Under Galilean transformation, Michelson-Morley Experiment, Postulates of the special theory of relativity, Lorentz Transformation. Time dilation, Length contraction, Relativity of simultaneity, synchronization of clocks. Velocity transformation. Relativistic mass, redefining linear momentum, Expressions of kinetic energy, Relation between total energy and momentum.		
<b>Faculty</b>	Dr. Prachi Sharma, 8882139505, Applied Science(Physics)	<b>Course Fee</b>	Rs.1200.00
<b>Course Title</b>	<i>Linux Server Administration</i>		
<b>Course Details</b>	Demonstrate the basics concepts of Linux environment; Create & Install the Linux Environment; Demonstrate the basics concepts of commands; networks and servers administration; Demonstrate and install the file servers; webserver; DHCP server; DNS Server; and Proxy server; Demonstrate and hands on practice for installation and backup.		
<b>Faculty</b>	Mr. Atul Chauhan, 8770257818, Central Computer Center	<b>Course Fee</b>	Rs.2000.00