CO (Course Outcomes)

Second Year Engineering SEM I (2019 Pattern)

Course code and Name: 201001 Building Technology and Architectural Planning	
201001.1	Identify types of building and basic requirements of building components
201001.2	Make use of Architectural Principles and Building byelaws for building construction.
201001.3	Plan effectively various types of Residential Building forms according to their utility, functions with reference to National Building Code.
201001.4	Plan effectively various types of Public Buildings according to their utility functions with reference to National Building Code.
201001.5	Make use of Principles of Planning in Town Planning, Different Villages and Safety aspects
201001.6	Understand different services and safety aspects
Course code and Name: 201002 Mechanics of Structures	
201002.1	Understand concept of stress-strain and determine different types of stress, strain in determinate, indeterminate homogeneous and composite structures.
201002.2	Calculate shear force and bending moment in determinate beams for different loading conditions and illustrate shear force and bending moment diagram.
201002.3	Explain the concept of shear and bending stresses in beams and demonstrate shear and bending stress distribution diagram.
201002.4	Use theory of torsion to determine the stresses in circular shaft and understand concept of Principal stresses and strains.
201002.5	Analyze axially loaded and eccentrically loaded column.
201001.6	Determine the slopes and deflection of determinate beams and trusses.

Course code and Name: 201003 Fluid Mechanics	
201003.1	Understand the use of Fluid Properties, concept of Fluid statics, basic equation of Hydrostatics, measurement of fluid pressure, buoyancy & floatation and its application for solving practical problems.
201003.2	Understand the concept of fluid kinematics with reference to Continuity equation and fluid dynamics with reference to Modified Bernoulli's equation and its application to practical problems of fluid flow
201003.3	Understand the concept of Dimensional analysis using Buckingham's π theorem, Similarity & Model Laws and boundary layer theory and apply it for solving practical problems of fluid flow.
201003.4	Understand the concept of laminar and turbulent flow and flow through pipes and its application to determine major and minor losses and analyze pipe network using Hardy Cross method.
201003.5	Understand the concept of open channel flow, uniform flow and depth-Energy relationships in open channel flow and make the use of Chezy's and Manning's formulae for uniform flow computation and design of most economical channel section
201003.6	Understand the concept of gradually varied flow in open channel and fluid flow around submerged objects, compute GVF profile and calculate drag and lift force on fully submerged body.
Course code and Name: 207001 Engineering Mathematics III	
207001.1	Solve Higher order linear differential equations and its applications to modelling and analyzing Civil engineering problems such as bending of beams, whirling of shafts and mass spring systems.
207001.2	Solve System of linear equations using direct & iterative numerical techniques and develop solutions for ordinary differential equations using single step & multistep methods applied to hydraulics, geotechnics and structural systems.
207001.3	Apply Statistical methods like correlation, regression and probability theory in data analysis and predictions in civil engineering.

207001.4	Perform Vector differentiation &integration, analyze the vector fields and apply to fluid flow problems.
207001.5	Solve Partial differential equations such as wave equation, one and two dimensional heat flow equations
Course code and Name: 207003 Engineering Geology	
207003.1	Explain about the basic concepts of engineering geology, various rocks, and minerals both in lab and on the fields and their inherent characteristics and their uses in civil engineering constructions.
207003.2	Exploring the importance of mass wasting processes and various tectonic processes that hampers the design of civil engineering projects and its implications on environment and sustainability
207003.3	Recognize effect of plate tectonics, structural geology and their significance and utility in civil engineering activities.
207003.4	Incorporate the various methods of survey, to evaluate and interpret geological nature of the rocks present at the foundations of the dams, percolation tanks, tunnels and to infer site / alignment/ level free from geological defects.
207003.5	Assess the Importance of geological nature of the site, precautions and treatments to improve the site conditions for dams, reservoirs, and tunnels.
207003.6	Explain geological hazards and importance of ground water and uses of common building stones.

Second Year Engineering SEM II (2019 Pattern)

Course code and Name: 201008 Geotechnical Engineering	
201008.1	Identify and classify the soil based on the index properties and its formation process
201008.2	Explain permeability and seepage analysis of soil by construction of flow net
201008.3	Illustrate the effect of compaction on soil and understand the basics of stress distribution
201008.4	Express shear strength of soil and its measurement under various drainage conditions.
201008.5	Evaluate the earth pressure due to backfill on retaining structures by using different theories
201008.6	Analysis of stability of slopes for different types of soils.
Course code and Name: 201009 Surveying	
201009.1	Define and Explain basics of plane surveying and differentiate the instruments used for it**.**
201009.2	Express proficiency in handling surveying equipment and analyze the surveying data from these equipment.
201009.3	Describe different methods of surveying and find relative positions of points on the surface of earth**.**
201009.4	Execute curve setting for civil engineering projects such as roads, railways etc.
201009.5	Articulate advancements in surveying such as space based positioning systems
201009.6	Differentiate map and aerial photographs, also interpret aerial photographs.
Course code and Name: 201010 Concrete Technology	
201010.1	Able to select the various ingredients of concrete and its suitable proportion to achieved desired

	strength
201010.2	Able to check the properties of concrete in fresh and hardened state.
201010.3	Get acquainted to concreting equipments, techniques and different types of special concrete.
201010.4	Able to predict deteriorations in concrete and get acquainted to various repairing methods and techniques.
Course code and Name: 201011: Structural Analysis	
201011.1	Understand the basic concept of static and kinematic indeterminacy and analysis of indeterminate beams
201011.2	Analyze redundant trusses and able to perform approximate analysis of multi-story multi-bay frames
201011.3	Implement application of the slope deflection method to beams and portal frames.
201011.4	Analyze beams and portal frames using moment distribution method.
201011.5	Determine response of beams and portal frames using structure approach of stiffness matrix method.
201011.6	Apply the concepts of plastic analysis in the analysis of steel structures.
Course code and Name: 201012 Project Management	
201012.1	**Describe** project life cycle and the domains of Project Management.
201012.2	**Explain** networking methods and their applications in planning and management
201012.3	**Categorize** the materials as per their annual usage and also **Calculate** production rate of construction equipment
201012.4	**Demonstrates** resource allocation techniques and **apply** it for manpower planning.

201012.5	**Understand** economical terms and different laws associated with project management
201012.6	**Apply** the methods of project selection and **recommend** the best economical project.

Third Year Engineering SEM I (2019 Pattern)

Course code and Name: 301001: Hydrology and Water Resource Engineering	
301001.1	Understand government organizations, apply & analyze precipitation & its abstractions
301001.2	Understand, apply & analyze runoff, runoff hydrographs and gauging of streams.
301001.3	Understand, apply & analyze floods, hydrologic routing & Q-GIS software in hydrology.
301001.4	Understand, apply & analyze reservoir planning, capacity of reservoir & reservoir economics.
301001.5	Understand water logging & water management, apply & analyze ground water hydrology
301001.6	Understand irrigation, piped distribution network and canal revenue, apply and analyze crop water requirement.
Course code and Name: 301002: Water Supply Engineering	
301002.1	Define identify, describe reliability of water sources, estimate water requirement for various sectors
301002.2	Ascertain and interpret water treatment method required to be adopted with respect to source and raw water characteristics
301002.3	Design various components of water treatment plant and distribution system.
301002.4	Understand and compare contemporary issues and advanced treatment operations and process available in the market, including packaged water treatment plants.
301002.5	Design elevated service reservoir capacity and understand the rainwater harvesting
301002.6	Understand the requirement of water treatment plant for infrastructure and Government scheme.

Course code and Name: 301003: Design of Steel Structures	
301003.1	Demonstrate knowledge about the types of steel structures, steel code provisions and design of the adequate steel section subjected to tensile force.
301003.2	Determine the adequate steel section subjected to compression load and design of built up columns along with lacing and battening.
301003.3	Design eccentrically loaded column for section strength and column bases for axial load and uniaxial bending.
301003.4	Design of laterally restrained and unrestrained beam with and without flange plate using rolled steel section.
301003.5	Analyze the industrial truss for dead, live and wind load and design of gantry girder for moving load.
301003.6	Understand the role of components of welded plate girder and design cross section for welded plate girder including stiffeners and its connections.
Course code and Name: 301004: Engineering Economics and Financial Management	
301004.1	Understand basics of construction economics..
301004.2	Develop an understanding of financial management in civil engineering projects.
301004.3	Prepare and analyze the contract account.
301004.4	Decide on right source of fund for construction projects
301004.5	Understand working capital and its estimation for civil engineering projects
301004.6	Illustrate the importance of tax planning & understand role of financial regulatory bodies
Course code and Name: 301005 c: Construction Management (Elective-1)	
301005 c.1	Understand the overview of construction sector.

301005 c.2	Illustrate construction scheduling, work study and work measurement
301005 c.3	Acquaint various labor laws and financial aspects of construction projects.
301005 c.4	Explain elements of risk management and value engineering.
301005 c.5	State material and human resource management techniques in construction.
301005 c.6	Understand basics of artificial intelligence techniques in civil engineering.
Course code and Name: 301005 d : Advanced Concrete Technology (Elective-1)	
301005 d.1	Understand the chemistry of cement and its effect on properties of concrete
301005 d.2	Apply the knowledge of supplementary cementitious materials to produce sustainable concretes
301005 d.3	Understand the mechanism of working of admixtures and their effect on properties of concrete
301005 d.4	Evaluate the characteristic properties of fiber reinforced concrete
301005 d.5	Understand the durability properties of concrete
301005 d.6	Interpret the properties of concrete through advance testing methods

Third Year Engineering SEM II (2019 Pattern)

Course code and Name: 301012: Waste Water Engineering	
301012.1	Recall sanitation infrastructure, quantification and characterization of wastewater, natural purification of streams
301012.2	Design preliminary and primary unit operations in waste water treatment plant
301012.3	Understand theory and mechanism of aerobic biological treatment system and to design activated sludge process
301012.4	Understand and design suspended and attached growth wastewater treatment systems
301012.5	Explain and apply concept of contaminant removal by anaerobic, tertiary and emerging wastewater treatment systems
301012.6	Compare various sludge management systems and explain the potential of recycle and reuse of wastewater treatment
Course code and Name: 301013: Design of Reinforced Concrete Structures	
301013.1	Apply relevant IS provisions to ensure safety and serviceability of structures, understand the design philosophies and behavior of materials: steel & concrete.
301013.2	Recognize mode of failure as per LSM and evaluate moment of resistance for singly, doubly rectangular, and flanged sections.
301013.3	Design & detailing of rectangular one way and two-way slab with different boundary conditions
301013.4	Design & detailing of dog legged and open well staircase
301013.5	Design & detailing of singly/doubly rectangular/flanged beams for flexure, shear, bond and torsion.
301013.6	Design & detailing of short columns subjected to axial load, uni-axial/bi-axial

	bending and their footings
Course code and Name: 301014: Remote Sensing and Geographic Information System	
301014.1	Articulate fundamentals and principles of RS techniques.
301014.2	Demonstrate the knowledge of remote sensing and sensor characteristics
301014.3	Distinguish working of various spaces-based positioning systems.
301014.4	Analyze the RS data and image processing to utilize in civil engineering
301014.5	Explain fundamentals and applications of RS and GIS
301014.6	Acquire skills of data processing and its applications using GIS
Course code and Name: 301015 e: Architecture and Town Planning	
301015 e.1	Apply the principles of architectural planning and landscaping for improving quality of life
301015 e.2	Understand the confronting issues of the area and apply the acts
301015 e.3	Evaluate and defend the proposals.
301015 e.4	Appraise the existing condition and to develop the area for betterment.

Final Year Engineering SEM-I (2019 Pattern)

Course code and Name:401001: Foundation Engineering	
401001.1	Perform subsurface investigations for foundations using different methods.
401001.2	Estimate the bearing capacity of shallow foundations.
401001.3	Calculate immediate and primary consolidation settlement of shallow foundations.
401001.4	Decide the capacity of a pile and pile group.
401001.5	Understand the steps in geotechnical design of shallow foundations and well foundations.
401001.6	Analyze problems related to expansive soil and overcome them using design principles, construction techniques in black cotton soil.
Course code and Name:401002: Transportation Engineering	
401002.1	Understand principles and practices of transportation planning.
401002.2	Demonstrate knowledge of traffic studies, analysis and their interpretation.
401002.3	Design Geometric Elements of road pavement.
401002.4	Evaluate properties of highway materials as a part of road pavement.
401002.5	Appraise different types of pavements and their design.
401002.6	Understand the fundamentals of Bridge Engineering and Railway Engineering
CoursecodeandName:401003 a Elective III: Coastal Engineering	
401003a.1	Understand basic of ocean waves including wave generation, classification, propagation, wave theories, wave diffraction, wave refection and wave breaking.

401003a.2	Understand and apply short term and long-term wave analysis.
401003a.3	Understand basic characteristics of tides, tide producing forces, dynamic theory of tides.
401003a.4	Understand coastal process of erosion/accretion due to waves, bed forms, long shore transport(Littoral drift) and estimation of wave induced sediment quantity.
401003a.5	Understand the coastal structures and shore protection methods.
401003a.6	Understand coastal zone management activities, issues related to integrated coastal zone management and regulation of coastal zone.
Course code and Name:401 003 b Elective III: Advanced Design of Concrete Structures	
401003b.1	Understand yield line theory and apply it to analyze and design slabs of different shapes having different edge conditions
401003b.2	Understand the concepts of ductile detailing
401003b.3	Analyze and design of flat slab.
401003b.4	Analyze and design of retaining walls.
401003b.5	Analyze and design of liquid retaining structures.
401003b.6	Analyze and design of RC frames and shear walls.
Course code and Name 401 003 c Elective III: Integrated Water Resources Planning and Management	
401003c.1	Understand concerned organizations, IWRP & M objectives, principles, challenges, application& analysis of IWRP&M approaches & principles in a case study.
401003c.2	Understand PIM, WDS, WALMI, agriculture in the concept of integrated water resources, apply and analyses water requirements for food production

401003c.3	Understand assessment of surface and ground water quality, EIA, CPCB regulations, application & analysis of effluent quality standards as per CPCB
401003c.4	Understand water economics and funding, application & analysis of planning for a sustainable water future
401003c.5	Understand legal regulatory settings of IWRP & M, application & analysis of inter-basin water transfers and IWRP & M
401003c.6	Understand flood control & power generation for IWRP & M, application QIGIS for analysis of a basin for IWRP & M
Course code and Name:**401 003 d: Elective III: Finite Element Method**	
401003d.1	To understand the basics of solid mechanics prior to learn finite element analysis.
401003d.2	Solve simple Engineering problems using 1D, 2D and 3D elements
401003d.3	Write shape functions of 1D, 2D and 3D elements
401003d.4	Determine the stresses in three dimensional finite elements using isoparametric formulation.
401003d.5	Analyze the truss and beam elements using stiffness matrix and finite element procedure.
401003d.6	Evaluate the forces and stresses in rigid jointed portal frame and grid elements using stiffness
Course code and Name:**401003 e Elective: Data Analytics in Civil Engineering**	
401003e.1	Understand the basic concepts of Statistics and its analysis and applications
401003e.2	Solve the problems related to probability and various probability distributions.
401003e.3	Apply the concept of sampling and distribution and interpret problems using correlation

401003e.4	Analyze and test of hypothesis
401003e.5	Examine and prepare the data and use develop regression
401003e.6	Understand and Apply machine learning algorithms for Regression, Classification and
Course code and Name: 401003 f Elective III: Operation Research	
401003f.1	Correlate applications of Operations Research in Civil Engineering field
401003f.2	Solve the problems related to stochastic programming
401003f.3	Optimize transportation and assignment problems
401003f.4	Optimize linear problems
401003f.5	Optimize non-linear problems
401003f.6	Suggest solution for the problems related to dynamic models, games theory and replacement of
Course code and Name: **401 004 a Elective IV: Air Pollution and Control**	
401004a.1	Recall air pollution, legislation and regulations.
401004a.2	Evaluate air pollutant concentrations as a function of meteorology.
401004a.3	Interpret sampling results with prescribed standards.
401004a.4	Assess emission inventory and air quality models.
401004a.5	Compare the air pollution control equipment's.
401004a.6	Infer indoor air pollution and its mitigation.
Course code and Name: 401 004 b Elective IV: Advanced Design of Steel Structures	

401004b.1	Understand the behavior and design of members subjected to combined forces
401004b.2	Design moment resisting connection
401004b.3	Design component / structure using cold form light gauge section
401004b.4	Design members of truss and scaffolding using tubular section
401004a.5	Design castellated beam
401004b.6	Analyze and design components of industrial structure such as Portal frame and gable frame
Course code and Name: 401 004 c Elective IV: Statistical Analysis and Computational Methods	
401004c.1	Understand the basic concepts of Statistics and perform statistical data analysis
401004c.2	Understand the concept of probability and fit Binomial, or Poisson or Normal distribution to the given data
401004c.3	Understand concept of sampling and perform chi-square test, z test, Student T test
401004c.4	Perform hypothesis test
401004c.5	Carry out correlation and regression analysis for the given data
401004c.6	Calculate variance and perform K-S test for goodness of fit
Course code and Name: 401 004 d Elective IV: Airport and Bridge Engineering	
401004d.1	Understand the fundamental of airport.
401004d.2	Understand and design the runway and taxiway and drainage systems.
401004d.3	Understand the BIM, AR and VR in airport planning and pavement design.

401004d.4	Plan the lighting and marking of airport and heliport.
401004d.5	Estimate various components of bridge and loads on bridges.
401004d.6	Study and design of bridge structures.
Course code and Name: 401004 e Elective IV: Design of Prestressed Concrete Structures	
401004e.1	Know the prestressed members.
401004e.2	Determining the stresses and various losses in prestressed concrete members.
401004e.3	Design the prestressed concrete structures
401004e.4	Design the prestressed concrete slab
401004e.5	Design the prestressed concrete flat slab
401004e.6	Analysis and design the prestressed continuous beams
Course code and Name: 401004 f Elective IV: Formwork and plumbing Engineering	
401004f.1	Select appropriate material and type of formwork
401004f.2	Analyze the formwork for various loadings.
401004f.3	Illustrate the design aspects of formwork under various requirements.
401004f.4	Understand requirement of plumbing in a building.
401004f.5	Understand plumbing hydraulics and its components in plumbing system.
401004f.6	Illustrate the design aspects as per the requirement of Indian Standards.

Final Year Engineering SEM-II (2019 Pattern)

Course code and Name: 401011: Dams and Hydraulics Structures	
401011.1	Understand types of dams and instrumentation working
401011.2	Execute stability analysis of Gravity Dam
401011.3	Understand types of spillways & Design of Ogee spillway
401011.4	Illustrate the failures and analyze stability of earthen dam
401011.5	Design Canals and understand the canal structures
401011.6	Analysis of the Diversion headwork and Cross Drainage work
Course code and Name:401012: Quantity Surveying, Contracts and Tenders	
401012.1	Understand concept of estimates and prepare approximate estimate for various for Civil Engineering works.
401012.2	Describe tendering process, construction contracts, and aspects of Arbitration and prepare tender documents.
401012.3	Prepare detailed estimate of various items of work by different methods and calculate quantity of steel from Bar bending schedule.
401012.4	Apply engineering knowledge to prepare estimate for roads, culverts, and water tank (Elevate storage tank)
401012.5	Apply concepts of specification to draft brief specification, detailed specification and prepare detailed rate analysis report.
401012.6	Evaluate depreciation and valuation of property on the basis of present condition, specifications and market trend.
CoursecodeandName:401 013 a Elective V: Earthquake Engineering	

401013a.1	Define the concepts of earthquakes, seismology and vibrations.
401013a.2	Model physical structures and develop equations of motion.
401013a.3	Solve the equations of motion for SDOF systems.
401013a.4	Solve the equations of motion for MDOF systems.
401013a.5	Perform static seismic analysis for buildings.
401013a.6	Perform dynamic seismic analysis for buildings.
Course code and Name: 401013 b Elective V: Structural Design of Bridges	
401013b.1	Identify loads on bridges and selection of type of bridge for the site condition as per Indian standards.
401013b.2	Design the reinforced concrete deck slab, culvert slab and T beam deck slab for highway bridges.
401013b.3	Analysis and design of reinforced concrete and post tension prestressed concrete girders.
401013b.4	Classify the types of rail bridges and design the plate girder steel bridges
401013b.5	Analyze and design the steel trussed bridges.
401013b.6	Study different types of bearing and thereby design the bearings for reinforced concrete highway bridges.
Course code and Name: 401013 c Elective V:Irrigation and Drainage	
401013c.1	Summarize types of irrigation methods.
401013c.2	Estimate evapotranspiration and crop-water requirement.
401013c.3	Understand component parts and their design considerations of lift irrigation

	system.
401013c.4	Design drip and sprinkler irrigation systems.
401013c.5	Understand basics of salt affected soils and estimate leaching requirement.
401013c.6	Design surface and subsurface drainage systems.
Course code and Name: 401013 d Elective V: Design of Precast and Composite Structures	
401013d.1	Achieve knowledge of design and development of problem solving skills.
401013d.2	Explore the concept of precast construction.
401013d.3	Learn the principles and design of precast structures
401013d.4	Understand the need, advantages and limitations of composite material.
401013d.5	Apply basic mechanical principles in analysis of composite structures like beams, columns,
401013d.6	Understand and apply various provisions as per Indian standards in design of structural components using composite materials.
Course code and Name: 401013 e Elective V: Hydropower Engineering	
401013e.1	Understand the classification of power resources & trends in energy use patterns.
401013e.2	Identify the components of hydro power plant.
401013e.3	Analyze the load assessment for turbines.
401013e.4	Prepare the layout of power house based on the various structures need for it.
401013e.5	Design the turbines and surge tanks.

401013e.6	Understand the laws and regulatory aspects of hydroelectric power.
Course code and Name: 401013 f Elective V: Structural Audit and Retrofitting of Structures	
401013f.1	Identify causes of deterioration in RC and steel structures.
401013f.2	Explore entire process of structural audit.
401013f.3	Explore necessity and methods of structural health monitoring.
401013f.4	Explain method of retrofitting for RC, steel and historical structures.
401013f.5	Design retrofitting using FRP for RC column.
401013f.6	Design retrofitting using FRP for RC beams.
Course code and Name:401014 a Elective VI: TQM and MIS	
401014a.1	Recognize quality and contribution of quality gurus for evaluation of best practices
401014a.2	Relate the functioning and application of TQM & Six Sigma in the domain of construction
401014a.3	Recommend ISO 9001 principles in preparation of quality manual to construction business
401014a.4	Apply management control & certification systems for construction industry
401014a.5	Choose TQM process implementation and various quality awards for construction sector
401014a.6	Propose MIS for allied fields in construction sector
Course code and Name:401014 b Elective VI: Advanced Transportation Engineering	
401014b.1	Analyze travel demand model and forecasting.

401014b.2	Evaluate relative importance of various modes and their capacities.
401014b.3	Design facilities required for non-motorized transportation and pedestrians.
401014b.4	Estimate basic characteristics of traffic stream and signal design.
401014b.5	Design flexible pavements.
401014b.6	Design rigid pavements and overlays.
Course code and Name: 4010 14 c Elective VI: Geo-Synthetic Engineering	
401014c.1	Explain types of Geo-synthetic material and its application in construction industry
401014c.2	Define physical and engineering properties of geo-synthetics material
401014c.3	Describe function of geo-synthetics material and its application in geo environment engineering
401014c.4	Analyze effect of geo-synthetics in design of flexible pavements
401014c.5	Design the reinforced soil retaining structures
401014c.6	Explain mechanism of soil reinforcement to improve bearing capacity of soil
Course code and Name: 401 014 d Elective VI: Structural Design of Foundations	
401014d.1	Judge suitable type of shallow foundation based on the available soil category.
401014d.2	Decide suitable type of pile foundation for different soil stratum and evaluation of group capacity by formulation.
401014d.3	Design Raft foundations.
401014d.4	Design well and caissons Foundations.

401014d.5	Design different types of Machine foundations
401014d.6	Design Retaining Structures.
Course code and Name: 401014 e: Elective VI: Green Structures and Smart Cities	
401014e.1	Students should be able to describe the importance of energy and minimization by altering the building materials.
401014e.2	Students should be able to understand the importance green construction and green rating system
401014e.3	Students should be able to introduce the applications of energy conservation and efficiency practices in buildings.
401014e.4	Students should be able to understand phases and approval involved in smart city project.
401014e.5	Students should be able to assess the national and global experience of smart cities.
401014e.6	Students should be able to understand the importance of sustainable development and current protocol of sustainable development goals.
Course code and Name: 401014 f: Elective VI: Rural Water Supply Engineering	
401014f.1	Understand issues related to rural water supply with respect to source, water related issues in rural areas.
401014f.2	Understand role of various government departments and importance of participatory approach.
401014f.3	Understand various types of rural water supply scheme and infrastructure requirements therein.
401014f.4	Understand interdisciplinary requirements in RWS including Software
401014f.5	Understand Automation requirements for a Water Supply Project

401014f.6	Understand Documentation and O and M issues related Water Supply Project including Leak